

## Compilation of Changes to the CPC Scheme Between 2015.07 and 2015.09

### Presentation Details

- Entries for new symbols and headings: *Black text in italics*
- Entries for existing symbols and headings
- text insertions: *Green text in italics with yellow background*
  - text deletions: ~~Red strikethrough text with grey background~~
- Entries for deleted symbols and headings: ~~Black strikethrough text~~
- Entries arranged by project.
  - In cases when the originating project cannot be found, "N/A" is given for the Project information (e.g. the change could be due to an Editorial Correction).
  - Projects ending in "-F" indicate finalisation after reclassification was completed.

### Project: MP0125 (B65D)

- U B65D 2519/00 Pallets or like platforms, with or without side walls, for supporting loads to be lifted or lowered (not used)**
- U B65D 2519/00004 . Details relating to pallets (not used)
  - U B65D 2519/00258 . . Overall construction (not used)
  - U B65D 2519/00368 . . . of the non-integral separating spacer
  - M B65D 2519/00373 . . . . *whereby at least one spacer is* made of one piece
  - M B65D 2519/00378 . . . . *whereby at least one spacer is* made of *two or* more ~~than one piece~~ *pieces*
  - U B65D 2519/00492 . . . of the side walls
  - M B65D 2519/00497 . . . . *whereby at least one side wall is* made of one piece
  - M B65D 2519/00502 . . . . *whereby at least one side wall is* made of *two or* more ~~than one~~ *piece* *pieces*

### Project: MP0126 (C13)

**C13**

**SUGAR INDUSTRY (polysaccharides, e.g. starch, derivatives thereof [C08B](#); malt [C12C](#))**

#### NOTE

1. In class [C13](#), the following terms or expressions are used with the meanings indicated:

- "sugars" are a class of edible, water-soluble crystalline carbohydrates, having a characteristic sweet taste, including mono-, di- and oligosaccharides, e.g. sucrose, lactose and fructose. A more specific meaning of the term "sugar" is defined in the note of subclass [C13B](#).

~~2. Processes using enzymes or micro-organisms in order to :~~

- ~~i. to liberate, separate or purify a pre-existing compound or composition, or to~~
- ~~ii. to treat textiles or clean solid surfaces of materials are further classified in subclass [C12S](#).~~

### Project: RP0033 (G06F)

- U G06F 11/14 . . Error detection or correction of the data by redundancy in operation ([G06F 11/16](#) takes precedence)
- U G06F 11/1402 . . . {Saving, restoring, recovering or retrying}
- D G06F 11/1412 . . . . {of data}

- M G06F 17/30008 · · {Concurrency control and recovery ([G06F 11/1412](#)[G06F 11/1402](#) takes precedence; transaction processing [G06F 9/466](#))}
- WARNING**  
This group is no longer used for the classification of new documents as from April 15, 2012. The backlog of this group is being continuously reclassified to subgroups of [G06F 17/30067](#) and [G06F 17/30286](#)

**Project: RP0035 (F24H)**

- U F24H 1/00 **Water heaters having heat generating means, e.g. boiler, flow- heater, water-storage heater ([F24H 7/00](#), [F24H 8/00](#) take precedence; details [F24H 9/00](#); steam boilers [F22B](#); domestic stoves or ranges with additional provisions for heating water [F24B 9/00](#), [F24C 13/00](#))**
- U F24H 1/22 · Water heaters other than continuous-flow or water storage heaters, e.g. water-heaters for central heating ([F24H 1/50](#) takes precedence)
- U F24H 1/24 · · with water mantle surrounding the combustion chamber or chambers ([F24H 1/40](#), [F24H 1/44](#) take precedence)
- U F24H 1/26 · · · the water mantle forming an integral body
- D F24H 2001/266 · · · · {with a water-cooled element coaxial in combustion chamber}

**Project: RP0056 (G05D)**

- U G05D 23/00 **Control of temperature (automatic switching arrangements for electric heating apparatus [H05B 1/02](#) ; controlling induction heating [H05B 6/06](#) ; regulating temperature of anode of X-ray tube [H05G 1/36](#))**
- NOTE**  
Within groups [G05D 23/01](#) to [G05D 23/32](#) , an invention is classified in the last appropriate place in the absence of an indication of the contrary
- M G05D 23/19 · characterised by the use of electric means {([G05D 23/1393](#) takes precedence)}
- NOTE**  
*In this group, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its subgroups, which is considered to represent information of interest for search, should be classified in each of those subgroups. Temperature control arrangements are classified in subgroups [G05D 23/20](#) to [G05D 23/275](#) on the base of the type of temperature sensor and in the subgroups directly under [G05D 23/19](#) for each aspect related to temperature control in general.*
- U G05D 23/20 · · with sensing elements having variation of electric or magnetic properties with change of temperature ([G05D 23/13](#) takes precedence)
- D G05D 23/2002 · · · {characterised by the use of a variable reference value}
- D G05D 23/2003 · · · · {variable in time}
- D G05D 23/2004 · · · · {associated with tele-control}
- D G05D 23/2006 · · · {using an analogue comparing device}
- D G05D 23/2008 · · · · {whose output amplitude can only take two discrete values}
- D G05D 23/2011 · · · · {whose output amplitude can take more than two discrete values}
- D G05D 23/2012 · · · · {delivering a series of pulses}
- D G05D 23/2015 · · · {using digital means}
- D G05D 23/2017 · · · {characterised by the type of controller}
- D G05D 23/2018 · · · · {using a modification of the thermal impedance between a source and the load}

D	G05D 23/2019	. . . . {using a thermal motor}
D	G05D 23/202	. . . . {using thermal energy the cost of which varies in function of time}
D	G05D 23/2022	. . . . {using thermal energy, the availability of which is aleatory}
D	G05D 23/2023	. . . {using a combination of auxiliary electric and non-electric power}
D	G05D 23/2024	. . . {using a plurality of sensors (G05D 23/2002, G05D 23/2015, G05D 23/2017 take precedence)}
D	G05D 23/2025	. . . . {sensing the temperature of one space}
D	G05D 23/2026	. . . . {sensing the temperature in different places in thermal relationship with one or more spaces}
D	G05D 23/2028	. . . . . {to control the temperature of one space}
D	G05D 23/2029	. . . . . {to control the temperature of a plurality of spaces}
D	G05D 23/203	. . . . . {each space being provided with one sensor acting on one or more control means}
D	G05D 23/2031	. . . . . {using sequential control}
U	G05D 23/22	. . . the sensing element being a thermocouple
D	G05D 23/2202	. . . . {characterised by the use of a variable reference value}
D	G05D 23/2203	. . . . . {variable in time}
D	G05D 23/2204	. . . . . {associated with tele control}
D	G05D 23/2206	. . . . {using an analog comparing device}
D	G05D 23/2208	. . . . . {whose output amplitude can only take two discrete values}
D	G05D 23/2211	. . . . . {whose output amplitude can take more than two discrete values}
D	G05D 23/2212	. . . . . {delivering a series of pulses}
D	G05D 23/2215	. . . . {using digital means}
D	G05D 23/2217	. . . . {characterised by the type of controller}
D	G05D 23/2218	. . . . . {using a modification of the thermal impedance between a source and the load}
D	G05D 23/2219	. . . . . {using a thermal motor}
D	G05D 23/222	. . . . . {using thermal energy the cost of which varies in function of time}
D	G05D 23/2222	. . . . . {using thermal energy the availability of which is aleatory}
D	G05D 23/2223	. . . . {using a combination of auxiliary electric and non-electric power}
D	G05D 23/2224	. . . . {using a plurality of sensors (G05D 23/2202, G05D 23/2215, G05D 23/2217 take precedence)}
D	G05D 23/2225	. . . . . {sensing the temperature of one space}
D	G05D 23/2226	. . . . . {sensing the temperature in different places in thermal relationship with one or more spaces}
D	G05D 23/2228	. . . . . . {to control the temperature of one space}
D	G05D 23/2229	. . . . . . {to control the temperature of a plurality of spaces}
D	G05D 23/223	. . . . . . {each space being provided with one sensor acting on one or more control means}
D	G05D 23/2231	. . . . . . {using sequential control}
U	G05D 23/24	. . . the sensing element having a resistance varying with temperature, e.g. a thermistor
D	G05D 23/2403	. . . . {characterised by the use of a variable reference value}
D	G05D 23/2405	. . . . . {variable in time}
D	G05D 23/2406	. . . . . {associated with telecontrol}
D	G05D 23/2408	. . . . {using an analog comparing device}

D	G05D 23/241	. . . . . {using circuits with semiconductor devices}
D	G05D 23/2412	. . . . . {whose output amplitude can only take two discrete values}
D	G05D 23/2413	. . . . . {using circuit with semiconductor devices}
D	G05D 23/2415	. . . . . {whose output amplitude can take more than two discrete values}
D	G05D 23/2417	. . . . . {delivering a series of pulses}
D	G05D 23/2418	. . . . . {using circuits with semiconductor devices}
D	G05D 23/242	. . . . . {using bimetallic elements}
D	G05D 23/2422	. . . . . {using digital means}
D	G05D 23/2424	. . . . . {characterised by the type of controller}
D	G05D 23/2425	. . . . . {using a modification of the thermal impedance between a source and the load}
D	G05D 23/2427	. . . . . {using a thermal motor}
D	G05D 23/2429	. . . . . {using thermal energy, the cost of which varies in function of time}
D	G05D 23/243	. . . . . {using thermal energy the availability of which is aleatory}
D	G05D 23/2432	. . . . . {using a combination of auxiliary electric and non-electric power}
D	G05D 23/2434	. . . . . {using a plurality of sensors (G05D 23/2403, G05D 23/2422 and G05D 23/2424 take precedence)}
D	G05D 23/2436	. . . . . {sensing the temperature of one space}
D	G05D 23/2437	. . . . . {sensing the temperature in different places in thermal relationship with one or more space}
D	G05D 23/2439	. . . . . {to control the temperature of one space}
D	G05D 23/2441	. . . . . {to control the temperature of a plurality of spaces}
D	G05D 23/2442	. . . . . {each space being provided with one sensor acting on one or more control means}
D	G05D 23/2444	. . . . . {using sequential control}
U	G05D 23/26	. . . the sensing element having a permeability varying with temperature
D	G05D 23/2602	. . . . . {characterised by the use of a variable reference value}
D	G05D 23/2605	. . . . . {using an analogue comparing device}
D	G05D 23/2615	. . . . . {using digital means}
D	G05D 23/2616	. . . . . {characterised by the type of controller}
D	G05D 23/2622	. . . . . {using a combination of auxiliary electric and non-electric power}
D	G05D 23/2623	. . . . . {using a plurality of sensors (G05D 23/2602, G05D 23/2615, G05D 23/2616 take precedence)}
U	G05D 23/27	. . with sensing element responsive to radiation
D	G05D 23/2702	. . . {characterised by the use of a variable reference value}
D	G05D 23/2705	. . . {using an analog comparing device}
D	G05D 23/2715	. . . {using digital means}
D	G05D 23/2716	. . . {characterised by the type of controller}
D	G05D 23/2722	. . . {using a combination of auxiliary electric and non-electric power}
D	G05D 23/2723	. . . {using a plurality of sensors}
U	G05D 23/275	. . with sensing element expanding, contracting, or fusing in response to changes of temperature
D	G05D 23/27502	. . . {using a variable reference value}
D	G05D 23/27503	. . . . . {variable in time}
D	G05D 23/27505	. . . . . {associated with tele-control}
D	G05D 23/27506	. . . {using an analogic regulator}

- D G05D 23/27509 . . . . {whose output amplitude can only take two discrete values}
- D G05D 23/27511 . . . . {whose output amplitude can take more than two discrete values}
- D G05D 23/27513 . . . . {delivering a series of pulses}
- D G05D 23/27516 . . . {using digital means}
- D G05D 23/27518 . . . {characterised by the type of controller}
- D G05D 23/27519 . . . . {using a modification of the thermal impedance between a source and the load}
- D G05D 23/2752 . . . . {using a thermal motor}
- D G05D 23/27522 . . . . {using thermal energy the cost of which varies in function of time}
- D G05D 23/27523 . . . . {using thermal energy the availability of which is aleatory}
- D G05D 23/27524 . . . {using a combination of auxiliary electric and non-electric power}
- D G05D 23/27526 . . . {using a plurality of sensors (G05D 23/27502 , G05D 23/27516 , G05D 23/27518 take precedence)}
- D G05D 23/27527 . . . . {sensing the temperature of one space}
- D G05D 23/27528 . . . . {sensing the temperature in different places in thermal relationship with one or more spaces}
- D G05D 23/27529 . . . . . {to control the temperature of one space}
- D G05D 23/27531 . . . . . {to control the temperature of a plurality of spaces}
- D G05D 23/27532 . . . . . . {each space being provided with one sensor acting on one or more control means}
- D G05D 23/27533 . . . . . {using sequential control}

**Project: RP0089 (C11D)**

- U C11D 3/32 . . . Amides; Substituted amides
- D C11D 2003/326 . . . . {granulated, coated or protected}

**Project: RP0097 (G11B)**

- U G11B 5/4806 . . {specially adapted for disk drive assemblies, e.g. assembly prior to operation, hard or flexible disk drives ([G11B 5/488](#) to [G11B 5/54](#) take precedence)}
- U G11B 5/4813 . . . {Mounting or aligning of arm assemblies, e.g. actuator arm supported by bearings, multiple arm assemblies, arm stacks or multiple heads on single arm ([G11B 5/484](#) takes precedence)}
- D G11B 5/482 . . . . {Piezo-electric devices between head and arm e.g. for fine adjustment}
- M G11B 5/4826 . . . {Mounting, aligning or attachment of the transducer head relative to the arm assembly, e.g. slider holding members, gimbals, adhesive ([G11B 5/484](#) takes precedence; details of head housings or structures [G11B 5/10](#)-, [G11B 5/127](#)-; adjustment relative to the record carrier [G11B 5/56](#))}
- N G11B 5/483 . . . . {Piezo-electric devices between head and arm, e.g. for fine adjustment}
- U G11B 5/4833 . . . {Structure of the arm assembly, e.g. load beams, flexures, parts of the arm adapted for controlling vertical force on the head ([G11B 5/484](#) takes precedence)}
- D G11B 7/1201 . . {Protecting the head, e.g. against dust or impact with the record carrier}
- D G11B 7/1203 . . {Flying-type heads, e.g. analogous to Winchester type in magnetic recording}
- D G11B 7/1205 . . {Integrated head arrangements, e.g. source and detectors mounted on the same substrate}
- D G11B 7/1206 . . . {where the integrated structure includes a waveguide}

- D G11B 7/1208 . . . . {where the waveguide includes means for electro- or acousto-optical deflection (electro- or acousto-optical deflection in general G02F 1/29, G02F 1/33)}

**Project: RP0120 (A61B)**

- U A61B 17/29 . . . . Forceps for use in minimally invasive surgery
- U A61B 17/295 . . . . combined with cutting implements
- D A61B 17/2955 . . . . {for cutting or punching bone or cartilage, e.g. rongeurs (A61B 17/32002 takes precedence; forceps for biopsy A61B 10/06; non-endoscopic rongeurs A61B 17/1604)}
- U A61B 17/7014 . . . . . {with means for adjusting the distance between two screws or hooks}
- U A61B 17/7017 . . . . . {pneumatic or hydraulic means}
- M A61B 17/7019 . . . . . {Longitudinal elements **which have having** flexible parts, or **are parts** connected together, such that **in use they after implantation the elements** can move relative to each other}
- U A61B 17/7047 . . . . . {Clamps comprising opposed elements which grasp one vertebra between them}
- M A61B 17/7049 . . . . . {Connectors, not bearing on the vertebrae, for **rigidly**-linking longitudinal elements together (A61B 17/7055, A61B 17/7053, A61B 17/7019 take precedence)}
- U A61B 17/705 . . . . . {for linking adjacent ends of longitudinal elements}
- M A61B 17/7052 . . . . . {of variable **angle or length**}
- U A61B 17/7062 . . . . . {Devices acting on, attached to, or simulating the effect of, vertebral processes, vertebral facets or ribs (rib fixation devices A61B 17/8076); Tools for such devices}
- U A61B 17/707 . . . . . {Devices acting on, or attached to, a transverse process or rib; Tools therefor}
- M A61B 17/7071 . . . . . {**Implants** for expanding or repairing the vertebral arch or wedged between laminae or pedicles; **Tools therefor**}
- U A61B 17/742 . . . . . {having one or more longitudinal elements oriented along or parallel to the axis of the neck}
- U A61B 17/748 . . . . . {with means for adapting the angle between the longitudinal elements and the shaft axis of the femur}
- M A61B 17/80 . . . . . Cortical plates {, i.e. bone plates; Instruments for holding or positioning cortical plates, or for compressing **bone bones** attached to **them-cortical plates** (A61B 17/70 takes precedence)}
- M A61B 17/8085 . . . . . {with pliable or malleable elements or having a mesh-like structure, e.g. small strips for craniofacial surgery (A61B 17/8071, A61B 17/8076 take precedence; connecting prostheses with the body A61F 2/00)}
- M A61B 17/809 . . . . . {with bone-penetrating elements, e.g. **blade blades** or **prong for osteotomy prongs** (bone staples A61B 17/0642)}
- M A61B 17/8095 . . . . . {**Osteotomy wedges Wedge osteotomy devices**}
- U A61B 17/8833 . . . . . {Tools for preparing, e.g. curing, cement or other fluid fillers (B01F takes precedence); Means for supplying cement or other fluid fillers to an introducing tool, e.g. cartridge handling means}
- U A61B 2017/8838 . . . . . {for mixing, with or without means for supplying the mixed filler to an injecting tool}
- M A61B 17/8841 . . . . . {**the tool being Tools** specially adapted to engage a prosthesis}

**Project: RP0130 (E02B)**

- U E02B 3/00** Engineering works in connection with control or use of streams, rivers, coasts, or other marine sites (barrages or weirs [E02B 7/00](#)); Sealing or joints for engineering works in general
- C E02B 3/04** · Structures or apparatus for, or methods of, protecting banks, coasts, or harbours (~~sealings or joints E02B 3/16~~; ~~{E02B 1/003 takes precedence};~~ *sealing or joints E02B 3/16* )
- N E02B 3/041** · *{using active mechanical means, e.g. fluidizing or pumping}*

**Project: RP0133 (A61M)**

- D A61M 1/0263** · · · ~~{prior to or for conservation, e.g. for freezing, drying, centrifuging}~~  
WARNING  
Not complete, see also A61M 1/02
- D A61M 1/0268** · · · ~~{prior to transfusion, e.g. for washing, filtering, thawing}~~  
WARNING  
Not complete, see also A61M 1/02

**Project: N/A (A01B)****A01B**

**SOIL WORKING IN AGRICULTURE OR FORESTRY; PARTS, DETAILS, OR ACCESSORIES OF AGRICULTURAL MACHINES OR IMPLEMENTS, IN GENERAL (making or covering furrows or holes for sowing, planting, or manuring [A01C 5/00](#); soil working for engineering purposes [E01](#), [E02](#), [E21](#); ~~{measuring areas for agricultural purposes [G01B](#)}~~)**

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">A01B 69/04</a>	covered by	<a href="#">A01B 69/008</a>
<a href="#">A01B 69/06</a>	covered by	<a href="#">A01B 69/005</a>
<a href="#">A01B 69/08</a>	covered by	<a href="#">A01B 69/006</a>

- A01B 1/00** **Hand tools (edge trimmers for lawns [A01G 3/06](#); ~~{machines for working soil [A01B 35/00](#); making hand tools [B21D](#)}~~)**
- A01B 1/06** · Hoes; Hand cultivators ~~{(rakes [A01D 7/00](#); forks [A01D 9/00](#); picks [B25D](#))}~~
- A01B 13/00** **Ploughs or like machines for special purposes (for drainage [E02B 11/02](#); ~~{Ditch diggers, trench ploughs, forestry ploughs, ploughs for land or marsh reclamation (machines for aerating meadows [A01B 45/02](#); making furrows [A01C 5/00](#); dredging machines in general [E02F](#))}~~)**
- A01B 25/00** **Harrows with special additional arrangements, e.g. means for distributing fertilisers; Harrows for special purposes ([A01B 39/00](#) takes precedence; ~~{fertiliser distributors [A01C 15/00](#)}~~)**
- A01B 35/00** **Other machines for working soil {not specially adapted for working soil on which crops are growing} ([A01B 37/00](#), [A01B 39/00](#), [A01B 77/00](#) take precedence; ~~{hand tools [A01B 1/00](#)}~~)**
- U A01B 49/00** **Combined machines (auxiliary devices attached to machines of a different kind, e.g. harrows attached to ploughs, see the relevant groups for the machines)**
- A01B 49/04** · Combinations of soil-working tools with non-soil-working tools, e.g. planting tools ~~{(seeding machines [A01C 7/00](#); harvesters combined with soil-working implements [A01D 43/12](#))}~~

A01B 51/00 - A01B 79/00	<b>Parts, details or accessories of agricultural machines or implements, in general (seat constructions <a href="#">A47C</a>; wheels <a href="#">B60B</a>; shelters for drivers <a href="#">B60J</a>; seats specially adapted for vehicles <a href="#">B60N 2/00</a>; wheel scrapers <a href="#">B60S 1/68</a>)</b>
A01B 63/00	<b>Lifting or adjusting devices or arrangements for agricultural machines or implements (lifting mechanisms for the cutter-bar of a mower <a href="#">A01D 34/24</a>; adjusting devices for the cutter-bar of a mower <a href="#">A01D 34/28</a>; constructional features of lifting devices per se <a href="#">B66F</a>)</b>
A01B 63/002	<ul style="list-style-type: none"> <li>· {Devices for adjusting or regulating the position of tools or wheels (preventing overstrain <a href="#">A01B 61/00</a>; wheels adjustable relatively to the frame for drawn implements <a href="#">A01B 3/16</a>; tools or tool holders adjustable relatively to the frame for drawn implements <a href="#">A01B 63/24</a>)}</li> </ul> <p><u>WARNING</u> Documents of group <a href="#">A01B 63/002</a> and subgroups are in the process of being reorganised to groups <a href="#">A01B 63/111</a>, <a href="#">A01B 63/16</a>, <a href="#">A01B 63/24</a></p>
U A01B 63/02	· for implements mounted on tractors
U A01B 63/10	· · operated by hydraulic or pneumatic means
A01B 63/118	<ul style="list-style-type: none"> <li>· · · Mounting implements on power-lift linkages (<a href="#">A01B 59/043</a> takes precedence; preventing or limiting side-play of implements <a href="#">A01B 59/041</a>; preventing overstrain <a href="#">A01B 61/00</a>)</li> </ul>
U A01B 71/00	<b>Construction or arrangement of setting or adjusting mechanisms, of implement or tool drive or of power take-off; Means for protecting parts against dust, or the like; Adapting machine elements to or for agricultural purposes {(adjusting mechanisms in general <a href="#">G05G</a>)}</b>
A01B 71/04	· Bearings of rotating parts, e.g. for soil-working discs ({discs <a href="#">A01B 15/16</a> , <a href="#">A01B 23/06</a> }; bearings in general <a href="#">F16C</a> )
A01B 71/08	· Means for protecting against dust, or the like, or for cleaning agricultural implements ( <a href="#">A01B 15/16</a> , <a href="#">A01B 19/10</a> and <a href="#">A01B 23/06</a> take precedence; screening of rotary driven tilling tools <a href="#">A01B 33/12</a> ; screening of rotary parts in general <a href="#">F16P 1/00</a> )
A01B 73/00	<b>Means or arrangements to facilitate transportation of agricultural machines or implements, e.g. folding frames to reduce overall width (arrangements of lifting devices for soil working implements <a href="#">A01B 63/00</a>; {-carriers for harvesters or mowers <a href="#">A01D 75/002</a>; arrangements or carriers for haymakers <a href="#">A01D 78/1007</a>, <a href="#">A01D 80/005</a>}; vehicles adapted for load transportation or to transport, to carry or to comprise special loads or objects <a href="#">B60P</a>; motor vehicles, trailers <a href="#">B62D</a>)</b>
A01B 77/00	<b>Machines for lifting and treating soil (biocides, pest repellants or attractants, plant growth regulators <a href="#">A01N 25/00</a> to <a href="#">A01N 65/00</a>; fertilisers <a href="#">C05</a>; soil-conditioning or soil-stabilising materials <a href="#">C09K 17/00</a>)</b>
<b>Project: N/A (A01C)</b>	
A01C 1/00	<b>Apparatus, or methods of use thereof, for testing or treating seed, roots, or the like, prior to sowing or planting (chemicals therefor <a href="#">A01N 25/00</a> to <a href="#">A01N 65/00</a>; {irradiation in general <a href="#">B01J 19/08</a>)}</b>
A01C 1/04	· Arranging seeds on carriers, e.g. on tapes, on cords {-Carrier compositions}
A01C 3/00	<b>Treating manure; Manuring ({ploughs with additional arrangements for putting manure under the soil <a href="#">A01B 17/002</a>}; dung forks <a href="#">A01D 9/00</a>; {-treating of waste water, sewage or sludge <a href="#">C02F</a>} organic fertilisers from waste or refuse <a href="#">C05F</a>)</b>

A01C 21/00 **Methods of fertilizing, {-sowing or planting}(fertilisers [C05](#); soil-conditioning or soil-stabilising materials [C09K 17/00](#))**

## Project: N/A (A01D)

A01D **HARVESTING; MOWING {(parts, details or accessories of agricultural machines or implements in general [A01B 51/00](#) to [A01B 75/00](#))}**

## NOTES

1. This subclass covers the shredding or pulverising of stubble, e.g. for the purpose of producing mulch, but does not cover other mechanical destruction of unwanted vegetation, which is covered by group [A01M 21/02](#)

2. In this subclass, in groups [A01D 34/00](#)-, [A01D 42/00](#)-, [A01D 43/00](#)-, [A01D 57/00](#)-, [A01D 67/00](#)-, [A01D 69/00](#) and [A01D 75/00](#)-, it is desirable to add the indexing code of group [A01D 2101/00](#)

A01D 1/00 - **Hand implements (devices for picking apples or like fruit [A01D 46/24](#); soil-working implements not specially adapted for harvesting [A01B 1/00](#))**

A01D 1/00 **Hand-cutting implements for harvesting (hedge trimming means [A01G 3/04](#);- {-hand-cutting in general [B26](#);- making from sheet metal [B21D 53/72](#);- making by rolling [B21H 7/10](#))}**

A01D 7/00 **Rakes (mowers convertible to rakes or capable of raking [A01D 42/02](#);- mowers combined with rakes [A01D 43/02](#);- haymakers, crop conditioners [A01D 76/00](#) to [A01D 84/00](#);- {-making rakes from sheet metal [B21D 53/68](#);- making rakes by rolling [B21H 7/08](#))}**

A01D 9/00 **Forks {(making forks from sheet metal [B21D 53/68](#);- making forks by rolling [B21H 7/08](#))}**

A01D 11/00 **Other hand implements {(for maize [A01D 45/026](#);- for cotton [A01D 46/087](#))}**

U A01D 23/00 **Topping machines**

A01D 23/04 **· cutting the tops after being lifted (processing of harvested produce in bulk [A01F 29/00](#)-, [A23N](#))**

A01D 34/00 - **Harvesters or mowers for grass, cereals, or other crops (component parts thereof [A01D 57/00](#) to [A01D 69/00](#);- accessories therefor [A01D 75/00](#))**

A01D 34/00 **Mowers (combined with apparatus performing additional operations while mowing [A01D 37/00](#) to [A01D 41/00](#)-, [A01D 43/00](#);- convertible to apparatus for purposes other than mowing or capable of performing operations other than mowing [A01D 42/00](#)); Mowing apparatus of harvesters**

U A01D 34/835 **· specially adapted for particular purposes**

A01D 34/8355 **· · {for cutting up or crushing remaining standing stalks, e.g. stubble (mowers combined with means for cutting up, crushing or bruising, the mown crop [A01D 43/08](#)-, [A01D 43/10](#);- apparatus for crushing or bruising mown stalks [A01D 82/00](#);- apparatus for cutting up the mown crop [A01F 29/00](#))}**

A01D 34/84 **· · for edges of lawns or fields, e.g. for mowing close to trees or walls ({for embankments [A01D 34/86](#) takes precedence; } hand-held edge trimmers [A01G 3/06](#))**

A01D 34/86 **· · for use on sloping ground, e.g. on embankments {or in ditches} (undercarriages or frames specially adapted for harvesters or mowers [A01D 67/00](#);- control mechanisms for harvesters or mowers when moving on slopes [A01D 75/28](#))**

A01D 37/00 **Reaper-binders (features relating to mowing only [A01D 34/00](#)-, to binding only [A01D 39/00](#);- equipment thereon for binding harvested produce, e.g. knotters, [A01D 59/00](#);- {-bundling articles [B65B 13/00](#))}**

- A01D 39/00** Independent binders, e.g. for hay; Binders attachable to mowers (equipment thereon for binding harvested produce, e.g. knotters, [A01D 59/00](#); stationary apparatus or hand tools for forming or binding hay or straw into bundles [A01F 1/00](#); {-bundling articles [B65B 13/00](#); knotting [D04G](#)})
- A01D 43/00** **Mowers combined with apparatus performing additional operations while mowing ([A01D 37/00](#), [A01D 39/00](#), [A01D 41/00](#), take precedence)**
- A01D 43/08
- with means for cutting up the mown crop, {e.g. forage harvesters (threshing machines having chaff-cutters [A01F 12/40](#); cutting apparatus of chaff-cutters or of apparatus for cutting up mown crop [A01F 29/00](#))}
- A01D 43/10
- with means for crushing or bruising the mown crop {(stalk crushers or bruisers per se for standing stalks or stubbles [A01D 34/8355](#), for mown crop [A01D 82/00](#), for straw [A01F 12/40](#))}
- U A01D 46/00** **Picking of fruits, vegetables, hops, or the like; Devices for shaking trees or shrubs**
- NOTE  
In this group, group [A01D 46/30](#) takes precedence over groups [A01D 46/02](#) to [A01D 46/28](#)
- A01D 46/24
- Devices for picking apples or like fruit ([A01D 46/28](#) {and [A01D 46/005](#)} takes precedence)
- A01D 57/00 - A01D 75/00** **Components of harvesters or mowers for grass or cereals (mowing apparatus [A01D 34/00](#); wheels [B60B](#); wheel scrapers [B60S 1/68](#))**
- A01D 59/00** **Equipment for binding harvested produce (specially adapted for baling presses [A01F 15/14](#); bundling articles for packaging in general [B65B 13/00](#))**
- U A01D 75/00** **Accessories for harvesters or mowers**
- A01D 75/08
- Sharpening apparatus fixed to the harvester or mower (sharpening machines or devices per se [B24B](#), [B24D](#))
- A01D 76/00 - A01D 93/00** **Haymakers (combined with mowers [A01D 43/04](#)); Crop Conditioners**
- NOTE  
In groups [A01D 76/00](#) to [A01D 87/00](#), the following terms are used with the meanings indicated:
- "hay" includes all mowed forage crop in a dry or partially dry state;
  - "haymakers" covers all apparatus working on mowed forage crop lying on the ground with the intention to make hay, with the exception of "rakes" which are covered by group [A01D 7/00](#)
- A01D 76/006
- {Hay-sweeps (rakes for making stacks [A01D 85/001](#); sweep rakes [A01D 87/08](#))}
- U A01D 78/00** **Haymakers with tines moving with respect to the machine**
- U A01D 78/08
- with tine-carrying rotary heads or wheels
- U A01D 78/10
- • the tines rotating about a substantially vertical axis
- A01D 78/1007
- • • {Arrangements to facilitate transportation specially adapted therefor ([A01D 78/1021](#) takes precedence; for other agricultural machines or implements [A01B 73/00](#); carriers [A01D 80/005](#))}
- U A01D 85/00** **Arrangements for making or setting stacks**
- A01D 85/001
- {making or setting stacks of cereals or grass, e.g. rack formers, fixed haystacks (rakes for making windrows, haysweeps [A01D 76/006](#); drying racks [A01F 25/12](#))}

- A01D 85/005 · {Forming groups of bales, e.g. bale sledges (loaders for bales [A01D 87/12](#); vehicles for loading bales [A01D 90/08](#))}
- A01D 87/00** **Loaders for hay or like field crops (combined with mowers [A01D 43/06](#); {-loading in forage silos [A01F 25/18](#); } ; loading in general [B65G](#), [B66](#))**
- A01D 87/0007 · {with chopping devices (harvesters with loaders [A01D 43/06](#); forage harvesters [A01D 43/08](#); special adaptations of cutting machines for hay, straw or fodder [A01F 29/00](#))}
- A01D 87/0053 · {Tractor-mounted loaders (buck-rakes, transporting rakes [A01D 87/08](#); manure loaders [A01C 3/04](#); fork loaders, fork lifts [B66F](#); earth-moving machines [E02F](#))}
- A01D 87/08 · with sweep rakes, {i.e. buck-rakes, e.g. transporting rakes (gripping or clamping devices [A01D 87/003](#); fork loaders [A01D 87/0053](#))}
- A01D 87/10 · with blowers {(blowing and conveying [B65G 53/00](#); loading or distributing arrangements in forage silos [A01F 25/18](#))}
- U A01D 89/00** **Pick-ups for loaders, chaff-cutters, balers, field-threshers, or the like {i.e. attachments for picking-up hay or the like field crops (field threshers with windrow pick-up apparatus [A01D 41/10](#))}**
- A01D 89/006 · {Accessories (feeding devices for baling presses [A01F 15/10](#); for cutting machines [A01F 29/10](#))}
- A01D 90/00** **Vehicles for carrying harvested crops with means for self-loading or unloading (combined with mowers [A01D 43/06](#); load transporting vehicles modified to facilitate loading in general [B60P](#); bucket cars, i.e. having scraper bowls [E02F 3/64](#))**
- A01D 90/02 · Loading means {(loaders [A01D 87/00](#); pick-ups [A01D 89/00](#))}

**Project: N/A (A01F)**

- U A01F 7/00** **Threshing apparatus**
- U A01F 7/02 · with rotating tools (threshing cylinders or concaves [A01F 12/18](#))
- A01F 7/06 · · with axles in line with the feeding direction; {-Axial threshing machines}

**Project: N/A (A01G)**

- U A01G 9/00** **Cultivation of flowers, vegetables or rice in receptacles, forcing-frames, or greenhouses (cultivation without soil [A01G 31/00](#); {turbing of roofs [E04D 11/002](#))}**
- A01G 9/08 · Devices for filling-up flower-pots {-or pots for seedlings}; Devices for setting plants {-or seeds} in pots
- A01G 9/10 · Pots {(or other receptacles)} for seedlings, {saplings, cuttings or other young plants (foldable pots)}; Soil {(or like)} blocks for seedlings; {Plant substrate bodies}; Means for forming soil-blocks
- U A01G 13/00** **Protecting plants (apparatus for the destruction of vermin or noxious animals [A01M](#); use of chemical materials therefor, composition of protective materials, e.g. grafting wax, [A01N](#); {coverings around trees forming part of a road [E01C 9/005](#))}**
- A01G 13/02 · Protective coverings for plants; {-Coverings for the ground;} Devices for laying-out {-or removing} coverings {(covering materials [A01G 9/1438](#))}
- A01G 13/04 · · Cloches {-i.e. protective full coverings for individual plants (dismountable or portable greenhouses [A01G 9/16](#); individual canopies [A01G 13/0212](#))}

**Project: N/A (A01K)**

A01K 5/00

**Feeding devices for stock or game (A01K 1/10 takes precedence; for poultry A01K 39/00 )**{Feeding wagons; Feeding stacks}

U A01K 89/00

**Reels (devices for casting lines A01K 91/02)**

WARNING

Group [A01K 89/00](#) is impacted by reclassification into group [A01K 89/004](#). Groups [A01K 89/00](#) and [A01K 89/004](#) should be considered in order to perform a complete search.

A01K 89/015

- with {a} rotary drum {i.e. with a rotating spool} ([A01K 89/033](#) takes precedence)

WARNING

Group [A01K 89/015](#) is impacted by reclassification into groups [A01K 89/0175](#), [A01K 89/0176](#), [A01K 89/0178](#), [A01K 89/0179](#), [A01K 89/018](#), [A01K 89/0181](#), [A01K 89/0182](#), [A01K 89/0183](#), [A01K 89/0184](#)~~-~~, [A01K 89/0185](#)~~-~~, [A01K 89/0186](#), [A01K 89/0187](#)~~-~~, [A01K 89/0188](#)~~-~~, [A01K 89/0189](#), [A01K 89/01901](#), [A01K 89/01902](#), [A01K 89/01903](#), [A01K 89/01904](#), [A01K 89/01905](#), [A01K 89/01906](#), [A01K 89/01907](#), [A01K 89/01908](#), [A01K 89/01909](#), [A01K 89/0191](#), [A01K 89/01911](#), [A01K 89/01912](#), [A01K 89/019125](#), [A01K 89/01913](#), [A01K 89/01914](#), [A01K 89/01915](#), [A01K 89/01916](#), [A01K 89/01917](#), [A01K 89/01918](#), [A01K 89/01919](#), [A01K 89/0192](#), [A01K 89/01921](#), [A01K 89/01922](#)~~-~~, [A01K 89/01923](#), [A01K 89/01924](#)~~-~~, [A01K 89/01925](#), [A01K 89/01928](#), [A01K 89/01929](#), [A01K 89/0193](#), and [A01K 89/01931](#).

All groups listed in this Warning should be considered in order to perform a complete search.

A01K 89/0175

- - {Axial unwinding}

WARNING

Groups [A01K 89/0175](#), [A01K 89/0176](#), [A01K 89/0178](#), [A01K 89/0179](#), [A01K 89/018](#), [A01K 89/0181](#), [A01K 89/0182](#), [A01K 89/0183](#), [A01K 89/0184](#)~~-~~, [A01K 89/0185](#)~~-~~, [A01K 89/0186](#), [A01K 89/0187](#)~~-~~, [A01K 89/0188](#)~~-~~, [A01K 89/0189](#), [A01K 89/01901](#), [A01K 89/01902](#), [A01K 89/01903](#), [A01K 89/01904](#), [A01K 89/01905](#), [A01K 89/01906](#), [A01K 89/01907](#), [A01K 89/01908](#), [A01K 89/01909](#), [A01K 89/0191](#), [A01K 89/01911](#), [A01K 89/01912](#), [A01K 89/019125](#), [A01K 89/01913](#), [A01K 89/01914](#), [A01K 89/01915](#), [A01K 89/01916](#), [A01K 89/01917](#), [A01K 89/01918](#), [A01K 89/01919](#), [A01K 89/0192](#), [A01K 89/01921](#), [A01K 89/01922](#)~~-~~, [A01K 89/01923](#), [A01K 89/01924](#)~~-~~, [A01K 89/01925](#), [A01K 89/01928](#), [A01K 89/01929](#), [A01K 89/0193](#), [A01K 89/01931](#) are incomplete pending reclassification of documents from group [A01K 89/015](#).

All groups listed in this Warning should be considered in order to perform a complete search.

A01K 89/0178

- - {with unwinding indicators, e.g. a bell or a flashing light}

WARNING

Groups [A01K 89/0175](#), [A01K 89/0176](#), [A01K 89/0178](#), [A01K 89/0179](#), [A01K 89/018](#), [A01K 89/0181](#), [A01K 89/0182](#), [A01K 89/0183](#), [A01K 89/0184](#)~~-~~, [A01K 89/0185](#)~~-~~, [A01K 89/0186](#), [A01K 89/0187](#)~~-~~, [A01K 89/0188](#)~~-~~, [A01K 89/0189](#), [A01K 89/01901](#), [A01K 89/01902](#), [A01K 89/01903](#), [A01K 89/01904](#), [A01K 89/01905](#), [A01K 89/01906](#), [A01K 89/01907](#), [A01K 89/01908](#), [A01K 89/01909](#), [A01K 89/0191](#), [A01K 89/01911](#), [A01K 89/01912](#), [A01K 89/019125](#), [A01K 89/01913](#), [A01K 89/01914](#), [A01K 89/01915](#), [A01K 89/01916](#), [A01K 89/01917](#), [A01K 89/01918](#), [A01K 89/01919](#), [A01K 89/0192](#), [A01K 89/01921](#), [A01K 89/01922](#)~~-~~, [A01K 89/01923](#), [A01K 89/01924](#)~~-~~, [A01K 89/01925](#), [A01K 89/01928](#),

[A01K 89/01929](#), [A01K 89/0193](#), [A01K 89/01931](#) are incomplete pending reclassification of documents from group [A01K 89/015](#).  
All groups listed in this Warning should be considered in order to perform a complete search.

A01K 89/0182

- - {with line unwinding limiters}

**WARNING**

Groups [A01K 89/0175](#), [A01K 89/0176](#), [A01K 89/0178](#), [A01K 89/0179](#), [A01K 89/018](#), [A01K 89/0181](#), [A01K 89/0182](#), [A01K 89/0183](#), [A01K 89/0184](#), [A01K 89/0185](#), [A01K 89/0186](#), [A01K 89/0187](#), [A01K 89/0188](#), [A01K 89/0189](#), [A01K 89/01901](#), [A01K 89/01902](#), [A01K 89/01903](#), [A01K 89/01904](#), [A01K 89/01905](#), [A01K 89/01906](#), [A01K 89/01907](#), [A01K 89/01908](#), [A01K 89/01909](#), [A01K 89/0191](#), [A01K 89/01911](#), [A01K 89/01912](#), [A01K 89/019125](#), [A01K 89/01913](#), [A01K 89/01914](#), [A01K 89/01915](#), [A01K 89/01916](#), [A01K 89/01917](#), [A01K 89/01918](#), [A01K 89/01919](#), [A01K 89/0192](#), [A01K 89/01921](#), [A01K 89/01922](#), [A01K 89/01923](#), [A01K 89/01924](#), [A01K 89/01925](#), [A01K 89/01928](#), [A01K 89/01929](#), [A01K 89/0193](#), [A01K 89/01931](#) are incomplete pending reclassification of documents from group [A01K 89/015](#).  
All groups listed in this Warning should be considered in order to perform a complete search.

A01K 89/0183

- - {Drive mechanism details}

**WARNING**

Groups [A01K 89/0175](#), [A01K 89/0176](#), [A01K 89/0178](#), [A01K 89/0179](#), [A01K 89/018](#), [A01K 89/0181](#), [A01K 89/0182](#), [A01K 89/0183](#), [A01K 89/0184](#), [A01K 89/0185](#), [A01K 89/0186](#), [A01K 89/0187](#), [A01K 89/0188](#), [A01K 89/0189](#), [A01K 89/01901](#), [A01K 89/01902](#), [A01K 89/01903](#), [A01K 89/01904](#), [A01K 89/01905](#), [A01K 89/01906](#), [A01K 89/01907](#), [A01K 89/01908](#), [A01K 89/01909](#), [A01K 89/0191](#), [A01K 89/01911](#), [A01K 89/01912](#), [A01K 89/019125](#), [A01K 89/01913](#), [A01K 89/01914](#), [A01K 89/01915](#), [A01K 89/01916](#), [A01K 89/01917](#), [A01K 89/01918](#), [A01K 89/01919](#), [A01K 89/0192](#), [A01K 89/01921](#), [A01K 89/01922](#), [A01K 89/01923](#), [A01K 89/01924](#), [A01K 89/01925](#), [A01K 89/01928](#), [A01K 89/01929](#), [A01K 89/0193](#), [A01K 89/01931](#) are incomplete pending reclassification of documents from group [A01K 89/015](#).  
All groups listed in this Warning should be considered in order to perform a complete search.

A01K 89/0192

- - {Frame details}

**WARNING**

Groups [A01K 89/0175](#), [A01K 89/0176](#), [A01K 89/0178](#), [A01K 89/0179](#), [A01K 89/018](#), [A01K 89/0181](#), [A01K 89/0182](#), [A01K 89/0183](#), [A01K 89/0184](#), [A01K 89/0185](#), [A01K 89/0186](#), [A01K 89/0187](#), [A01K 89/0188](#), [A01K 89/0189](#), [A01K 89/01901](#), [A01K 89/01902](#), [A01K 89/01903](#), [A01K 89/01904](#), [A01K 89/01905](#), [A01K 89/01906](#), [A01K 89/01907](#), [A01K 89/01908](#), [A01K 89/01909](#), [A01K 89/0191](#), [A01K 89/01911](#), [A01K 89/01912](#), [A01K 89/019125](#), [A01K 89/01913](#), [A01K 89/01914](#), [A01K 89/01915](#), [A01K 89/01916](#), [A01K 89/01917](#), [A01K 89/01918](#), [A01K 89/01919](#), [A01K 89/0192](#), [A01K 89/01921](#), [A01K 89/01922](#), [A01K 89/01923](#), [A01K 89/01924](#), [A01K 89/01925](#), [A01K 89/01928](#), [A01K 89/01929](#), [A01K 89/0193](#), [A01K 89/01931](#) are incomplete pending reclassification of documents from group [A01K 89/015](#).  
All groups listed in this Warning should be considered in order to perform a complete search.

- A01K 89/01931 · · {Spool or spool shaft details (spool details in reel with pick-up [A01K 89/0111](#))}

**WARNING**

Groups [A01K 89/0175](#), [A01K 89/0176](#), [A01K 89/0178](#), [A01K 89/0179](#), [A01K 89/018](#), [A01K 89/0181](#), [A01K 89/0182](#), [A01K 89/0183](#), [A01K 89/0184](#), [A01K 89/0185](#), [A01K 89/0186](#), [A01K 89/0187](#), [A01K 89/0188](#), [A01K 89/0189](#), [A01K 89/01901](#), [A01K 89/01902](#), [A01K 89/01903](#), [A01K 89/01904](#), [A01K 89/01905](#), [A01K 89/01906](#), [A01K 89/01907](#), [A01K 89/01908](#), [A01K 89/01909](#), [A01K 89/0191](#), [A01K 89/01911](#), [A01K 89/01912](#), [A01K 89/019125](#), [A01K 89/01913](#), [A01K 89/01914](#), [A01K 89/01915](#), [A01K 89/01916](#), [A01K 89/01917](#), [A01K 89/01918](#), [A01K 89/01919](#), [A01K 89/0192](#), [A01K 89/01921](#), [A01K 89/01922](#), [A01K 89/01923](#), [A01K 89/01924](#), [A01K 89/01925](#), [A01K 89/01928](#), [A01K 89/01929](#), [A01K 89/0193](#), [A01K 89/01931](#) are incomplete pending reclassification of documents from group [A01K 89/015](#).

All groups listed in this Warning should be considered in order to perform a complete search.

**U A01K 97/00**

A01K 97/04

**Accessories for angling (landing-nets, landing-spoons [A01K 77/00](#))**

- Containers for bait; Preparation of bait {; {Dispensers}} (feeding-stuffs for particular animals [A23K 1/18](#));

**Project: N/A (A01M)****U A01M 1/00****Stationary means for catching or killing insects {(for repelling [A01M 29/00](#))}**

U A01M 1/20

- Poisoning, narcotising, or burning insects {(fumigation apparatus [A01M 13/00](#))}

A01M 1/2005

- · {Poisoning insects using bait stations (~~A01M 1/10~~[A01M 1/10](#) takes precedence)-takes precedence}

**Project: N/A (A01N)**

A01N 3/00

**Preservation of plants or parts thereof, e.g. inhibiting evaporation, improvement of the appearance of leaves {-or protection against physical influences such as UV radiation using chemical compositions; Grafting wax} (preservation of foodstuffs [A23](#); preservation or chemical ripening of fruit or vegetables [A23B 7/00](#)); {(protective coverings [A01G 13/02](#))} Grafting wax**

A01N 3/04

- Grafting-wax

**NOTES**

1.

Attention is drawn to the definitions of groups of chemical elements following the title of section C.

In groups [A01N 27/00](#) to [A01N 65/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place for an active ingredient.

Where a compound is described as existing in tautomeric forms, it is classified as if existing in the form which is classified last in the system.

Compounds covered by different main groups according to alternatively specified parts of their formulae are classified in every one of the relevant main groups.

Salts formed between two or more organic compounds are classified as the compound providing the essential ion and it is also classified as the compound providing the other ion.

Salts or metal chelates of an organic compound are classified as that compound.

In this subclass, a foodstuff is not considered as an active ingredient.

Different materials applied in sequence, at different times, are considered as a mixture of all materials employed

Synergistic or potentiated compositions are classified as if the synergist or potentiator were an active ingredient.

In groups [A01N 25/00](#) to [A01N 65/00](#), the symbol X means nitrogen, oxygen, sulfur or a halogen; Y means nitrogen, oxygen or sulfur. A dotted line between atoms indicates an optional bond, e.g.  $\text{---}$  indicates one or two single bonds or a double bond.

- In groups [A01N 25/00](#) to [A01N 65/00](#), it is required to use Combination Sets for classifying mixtures of (active or formulation-relevant) ingredients. Symbols relating to additional ingredients of mixtures or specific formulation types are added to the Combination Set of the main ingredient. The additional ingredient may be a further active ingredient (for example in case of synergistic mixtures) or may relate to a particular special formulation-ingredient (such as a surfactant or safener) or to a special formulation embodiment (like a wettable powder or microcapsule).
- For compositions containing more than one known active ingredients (e.g. synergistic mixtures) the symbol [A01N 2300/00](#) is additionally given to the symbol of the main ingredient.

#### A01N 25/00

**Biocides, pest repellants or attractants, or plant growth regulators, characterised by their forms, or by their non-active ingredients or by their methods of application, {e.g. seed treatment or sequential application;} (apparatus for the destruction of noxious animals or noxious plants [A01M](#); fungicidal, bactericidal, insecticidal, disinfecting or antiseptic paper [D21H](#)); Substances for reducing the noxious effect of the active ingredients to organisms other than pests**

- U A01N 25/02  
A01N 25/04
  - containing liquids as carriers, diluents or solvents
  - • Dispersions, {-emulsions, suspoemulsions, suspension concentrates} or gels (foams [A01N 25/16](#))
- U A01N 25/26  
A01N 25/28
  - in coated particulate form
  - • Microcapsules {-or nanocapsules}

#### A01N 43/00

**Biocides, pest repellants or attractants, or plant growth regulators containing heterocyclic compounds (containing cyclic anhydrides, cyclic imides [A01N 37/00](#); containing compounds of the formula  $X_m=C_n-N\langle C \rangle$  containing only one heterocyclic ring, wherein  $m \geq 1$  and  $n \geq 0$  and  $-N\langle C \rangle$  is unsubstituted or alkylsubstituted pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine or a polymethyleneimine with four or more  $\text{CH}_2$  groups, [A01N 33/00](#) to [A01N 41/12](#))**

#### NOTES

- In group [A01N 43/00](#), the following terms or expressions are used with the meanings indicated:
  - "Hetero ring" is a ring having at least one halogen nitrogen, oxygen or sulfur atom as a ring member.
  - "Bridged" means the presence of at least one fusion other than ortho, peri and spiro.

- Two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed.
- "Condensed ring system" is a ring system in which all rings are condensed among themselves.

2. In group [A01N 43/00](#), the number of rings in a condensed system equals the number of scissions necessary to convert the ring system into one acyclic chain. The relevant rings in a condensed system are chosen according to the following criteria consecutively:

- lowest number of ring members,
  - highest number of hetero atoms as ring members.
- Ring members shared by two or more rings are regarded as being a member of each of these rings.

## Project: N/A (A21D)

### A21D 13/00

#### Finished or partly finished ~~{(par-baked)}~~ bakery products

A21D 13/04

- Bread from materials other than rye or wheat flour {e.g. rice flour}

A21D 13/06

- Bread with modified starch or protein content, ~~{with modified nutritive value}~~

A21D 13/08

- Pastry, e.g. cake, biscuits, ~~{cookies}~~

### A21D 15/00

#### Preserving finished ~~{or partly finished (par-baked)}~~ bakery products (refreshing [A21D 17/00](#), packaging or wrapping bakery products [B65B](#), [B65D](#))

A21D 15/02

- by cooling, ~~{e.g. refrigeration, freezing}~~

A21D 15/04

- by heat treatment, ~~{e.g. sterilisation, pasteurisation}~~

A21D 15/06

- by irradiation, ~~{e.g. with microbiocidal agents, with protective films}~~

A21D 15/08

- by coating, ~~{e.g. with microbiocidal agents, with protective films}~~

### A21D 17/00

#### Refreshing bakery products ~~{or recycling bakery products}~~

## Project: N/A (A22B)

### U A22B 5/00

#### Accessories for use during or after slaughtering

A22B 5/0005

- {Eviscerating devices, e.g. removing rectum, anus, intestines, brain tissue, hypophysis (for poultry [A22C 21/06](#); for fish [A22C 25/14](#))}

U A22B 5/0064

- {for classifying or grading carcasses; for measuring back fat}

A22B 5/007

- • {Non-invasive scanning of carcasses, e.g. using image recognition, tomography, X-rays, ultrasound (analysing meat e.g. search for foreign embedded objects [G01N 33/12](#); image analysis [G06T 7/00](#))}

U A22B 5/16

- Skinning instruments or knives

A22B 5/163

- • {Skinning knives with disc-shaped blades (disc cutters [B26D 1/14](#); motor-driven hand tools with disc blades [B26B 25/00](#))}

U A22B 5/20

- Splitting instruments ~~{(cutting operations on carcasses other than splitting [A22B 5/0017](#))}~~

U A22B 5/203

- • {Meat or bone saws for splitting carcasses (Cutting meat [A22C 17/0006](#))}

A22B 5/206

- • • {Disc or circular saws (motor-driven hand tools with disc blades [B26B 25/00](#); for skinning [A22B 5/163](#))}

### U A22B 7/00

#### Slaughterhouse arrangements

U A22B 7/001

- {Conveying arrangements}

A22B 7/003

- • {Positioning, orienting or supporting carcasses as they are being conveyed (influencing the position of articles during transit by conveyers [B65G 47/22](#); during feeding [B65G 47/14](#))}

**Project: N/A (A22C)**

- U A22C 11/00 Sausage making {(chemical aspects [A23L 1/31](#)); Apparatus for handling or conveying sausage products during manufacture}**
- A22C 11/10 • Apparatus for twisting {-or linking} sausages {(subdividing filled flexible tubes to form packages, involving displacement of contents [B65B 9/12](#), by applying pressure and heat successively [B65B 51/26](#))}
- A22C 11/12 • Apparatus for tying sausage skins; {-Clipping sausage skins (applying clips or binding material to package folds or closures, e.g. to twisted bag necks [B65B 51/04](#), [B65B 51/08](#))}
- U A22C 17/00 Other devices for processing meat or bones**
- A22C 17/14 • Working-up animal intestines; {-Treatment thereof for the manufacture of natural sausage casings (making artificial casings [A22C 13/0003](#); chemical treatment of natural casings [A22C 13/0026](#)); Apparatus for cutting intestines; Machines for pulling intestines to pieces

**Project: N/A (A23C)**

**A23C DAIRY PRODUCTS, e.g. MILK, BUTTER, CHEESE; MILK OR CHEESE SUBSTITUTES; MAKING THEREOF (obtaining protein compositions for foodstuffs, {e.g. from milk} , [A23J 1/00](#); preparation of peptides, e.g. of proteins, in general [C07K 1/00](#))**

**NOTE**

This subclass covers:

- the chemical aspects of making dairy products
- the apparatus used for performing techniques provided for therein, e.g. for concentration, evaporation, drying, preservation, or sterilisation, unless such apparatus is specifically provided for in another subclass, e.g. [A01J](#) for treatment of milk or cream for manufacture of butter or cheese.

**A23C 1/00 Concentration, evaporation or drying (products obtained thereby [A23C 9/00](#); making butter powder [A23C 15/14](#), cheese powder [A23C 19/086](#); evaporating in general [B01D 1/00](#))**

- A23C 1/10 • Foam drying ([A23C 1/04](#), [A23C 1/08](#) take precedence)
- A23C 1/14 • combined with other treatment ([A23C 3/00](#), [A23C 9/00](#) take precedence)

**A23C 3/00 Preservation of milk or milk preparations (of cream [A23C 13/08](#); of butter [A23C 15/18](#); of cheese [A23C 19/097](#))**

- A23C 3/08 • by addition of preservatives (addition of micro-organisms or enzymes [A23C 9/12](#), of other substances [A23C 9/152](#))

**U A23C 7/00 Other dairy technology**

- A23C 7/02 • Chemical cleaning of dairy apparatus (cleaning in general [B08B](#), e.g. [B08B 3/08](#)); Use of sterilisation methods therefor (sterilisation methods per se [A61L](#))
- A23C 7/04 • Removing unwanted substances {other than lactose or milk proteins} from milk (by filtering [A01J 9/02](#), [A01J 11/06](#))

**A23C 9/00 Milk preparations; Milk powder or milk powder preparations ([A23C 21/06](#) takes precedence; preservation [A23C 3/00](#); chocolate milk [A23G 1/00](#); ice-cream, mixtures for preparation of ice-cream [A23G 9/00](#); puddings, dry powder puddings [A23L 1/187](#))**

- A23C 9/15 • Reconstituted or recombined milk products containing neither non-milk fat nor non-milk proteins (containing thickening substances [A23C 9/154](#); mixtures of whey, with milk products or milk components [A23C 21/06](#))

- A23C 9/16 · Agglomerating or granulating milk powder; Making instant milk powder; Products obtained thereby ([A23C 1/05](#), [A23C 9/18](#) take precedence)
- A23C 11/00 Milk substitutes, e.g. coffee whitener compositions (cheese substitutes [A23C 20/00](#); butter substitutes [A23D](#); cream substitutes [A23L 1/19](#))**
- A23C 11/02 · containing at least one non-milk component as source of fats or proteins ([A23C 19/055](#), [A23C 21/04](#) take precedence)
- A23C 11/04 · · containing non-milk fats but no non-milk proteins ([A23C 11/08](#), [A23C 11/10](#) take precedence)
- A23C 11/06 · · containing non-milk proteins ([A23C 11/08](#), [A23C 11/10](#) take precedence)
- A23C 13/00 Cream; Cream preparations; Making thereof (coffee whitener compositions [A23C 11/00](#); cream substitutes [A23L 1/19](#))**
- U A23C 13/08 · Preservation
- A23C 13/10 · · by addition of preservatives ([A23C 13/14](#), [A23C 13/16](#) take precedence)
- A23C 19/00 Cheese; Cheese preparations; Making thereof (cheese substitutes [A23C 20/00](#); casein [A23J 1/20](#))**
- U A23C 19/097 · Preservation
- A23C 19/10 · · Addition of preservatives {(enzymes or micro-organisms, see [A23C 19/032](#), [A23C 19/04](#), [A23C 19/061](#) and [A23C 19/063](#))}
- A23C 20/00 Cheese substitutes ([A23C 19/055](#), [A23C 19/093](#) take precedence)**
- A23C 21/00 Whey; Whey preparations ([A23C 1/00](#), [A23C 3/00](#), [A23C 9/14](#) take precedence)**

**Project: N/A (A23G)****A23G****COCOA; COCOA PRODUCTS, e.g. CHOCOLATE; SUBSTITUTES FOR COCOA OR COCOA PRODUCTS; CONFECTIONERY; CHEWING GUM; ICE-CREAM; PREPARATION THEREOF****NOTES**

- In this subclass, the following term is used with the meaning indicated:
  - "ice-cream" includes any edible frozen or congealed semi-liquid or pasty substance, e.g. slush ice
- In this subclass, subject matter which cannot be completely classified in a single one of the main groups should be classified in each relevant main group
- The classification symbols of groups:
  - [A23G 1/305](#), [A23G 1/56](#), [A23G 3/343](#), [A23G 3/346](#), [A23G 4/062](#), [A23G 9/322](#) and [A23G 9/52](#)
  - can be followed by additional symbols preceded by the sign "+", e.g. [A23G 1/56 +D8](#). The symbols give further information concerning structure, composition or form and have the meaning as listed below:
  - D . . Containing organic compounds
  - D2 .. containing micro-organisms, enzymes
  - D4 .. containing vitamins, antibiotics
  - D6 .. containing beet sugar or cane sugar if specifically mentioned; containing other carbohydrates, e.g. starches, gums, alcohol sugar, polysaccharides, dextrans
  - D8 .. containing cocoa fat if specifically mentioned; containing products of cocoa fat; containing other fats, e.g. fatty acid, fatty alcohol, their esters, lecithin, paraffins
  - D10 .. containing amino-acids, proteins, e.g. gelatine, polypeptides
  - D12 .. containing dairy products
  - D14 .. containing fruits, nuts, e.g. almonds, seeds, plants or their extracts (gums D6)

F . Containing inorganic compounds  
H . Products with special structure  
H2 .. foamed, gas-expanded or cellular products  
H4 .. products with a supported structure  
H4D ... products with an inedible support, e.g. a stick  
H4F ... products with an edible support, e.g. a cornet  
H6 .. products with a composite structure, e.g. laminated products  
H8 .. hollow products, e.g. with inedible or edible filling, fixed or movable within the cavity

**A23G 1/00**

**Cocoa; Cocoa products, e.g. chocolate; Substitutes therefor (kitchen equipment for cocoa preparation [A47J](#), e.g. apparatus for making beverages [A47J 31/00](#))**

NOTE

Attention is drawn to the internal note after the subclass title

- A23G 1/04
  - Apparatus specially adapted for manufacture or treatment of cocoa or cocoa products (machines for roasting cocoa [A23N 12/00](#); crushing or grinding apparatus in general [B02C](#))
- U A23G 1/20
  - • Apparatus for moulding, cutting, or dispensing chocolate
- A23G 1/201
  - • • {Apparatus not covered by groups [A23G 1/21](#) to [A23G 1/28](#) (not used)}
- U A23G 1/30
  - Cocoa products, e.g. chocolate; Substitutes therefor
- U A23G 1/32
  - • characterised by the composition {containing organic or inorganic compounds}
- A23G 1/48
  - • • containing plants or parts thereof, e.g. fruits, seeds, extracts (containing gums [A23G 1/40](#), {-vegetal cocoa substitutes [A23G 1/34](#) or [A23G 1/38](#)})

**U A23G 3/00**

**Sweetmeats; Confectionery; Marzipan; Coated or filled products (chewing gum [A23G 4/00](#))**

NOTE

Attention is drawn to the internal note after the subclass title

- U A23G 3/0002
  - {Processes of manufacture not relating to composition and compounding ingredients}
- A23G 3/0063
  - • {Coating or filling sweetmeats or confectionery (coating by casting [A23G 3/0091](#), by dipping [A23G 3/0093](#), by tumbling [A23G 3/0095](#))}

**Project: N/A (A23K)**

**A23K**

**FODDER**

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups are classified in the following CPC groups:

<a href="#">A23K 1/20</a>	covered by	<a href="#">A23K 1/003</a>
<a href="#">A23K 1/24</a>	covered by	<a href="#">A23K 1/003</a> ,
<a href="#">A23K 1/1826</a>		
<a href="#">A23K 3/04</a>	covered by	<a href="#">A23K 1/143</a>

**U A23K 1/00**

**Animal feeding-stuffs (detoxicating or removing bitter tastes from seeds, e.g. lupin seeds for fodder or food [A23L 1/211](#))**

- U A23K 1/006
  - {Animal feeding-stuffs obtained by microbiological or biochemical processes}

- A23K 1/007 · · {by fermentation of natural products, or vegetable or animal offal materials, e.g. biomasses (single cell proteins as additives [A23K 1/008](#); live micro-organisms as additives [A23K 1/009](#))}
- A23K 1/008 · · {Addition of micro-organisms to feeding-stuff compositions, e.g. single cell proteins (biomasses [A23K 1/007](#); enzymes [A23K 1/165](#))}
- A23K 1/14 · · from vegetable materials, e.g. potatoes or roots without ensilaging (preserving food [A23B](#), [A23L](#))
- A23K 1/146 · · {from vegetable offal material (molasses [A23K 1/02](#); distillers` and brewers` waste [A23K 1/06](#); from wood or straw [A23K 1/12](#))}
- A23K 1/16 · · supplemented with accessory food factors; Salt blocks {(steroids, hormones or enzymes [A23K 1/165](#); antibiotics [A23K 1/17](#); inorganic additions [A23K 1/175](#))}
- A23K 1/175 · · with inorganic substances; Salt blocks

**NOTE**

In groups [A23K 1/1751](#) to [A23K 1/1758](#), in the absence of an indication to the contrary, an invention is classified in the last appropriate place

- U A23K 3/00**
- A23K 3/02

**Preservation of materials to produce animal feeding-stuffs**

- of green fodder (processing and storing [A01F 25/00](#); silos [E04H](#))

**Project: N/A (A23L)**

- U A23L 1/00**

**Foods or foodstuffs; Their preparation or treatment (preservation thereof in general [A23L 3/00](#); {mechanical aspects [A23P](#)})****WARNING**

Groups [A23L 1/0002](#) to [A23L 1/0097](#) might be incomplete as a number of documents presently classified in groups [A23P 1/00](#) to [A23P 1/16](#), still needs reclassification to groups [A23L 1/0002](#) to [A23L 1/0097](#)

- U A23L 1/0014 · · {Specially shaped or worked food or foodstuffs}
- A23L 1/0073 · · · {Shaped or worked products not covered by groups [A23L 1/0017](#) to [A23L 1/0044](#), [A23L 1/0082](#) or [A23L 1/0097](#), e.g. moulded}
- U A23L 1/10 · · containing cereal-derived products (treating or baking of doughs containing flour [A21D](#))
- A23L 1/1025 · · · {Treatment of whole grains not provided for in groups [A23L 1/164](#) to [A23L 1/182](#) (preservation [A23B 9/00](#))}
- A23L 1/22 · · Spices; Flavouring agents or condiments; Artificial sweetening agents; Table salts; Dietetic salt substitutes; {-Other taste or flavour affecting agents}

**Project: N/A (A23V)**

- A23V 2002/00**

**Food compositions, function of food ingredients or processes for food or foodstuffs****NOTES**

1. Indexing codes of main groups [A23V 2200/00](#), [A23V 2250/00](#) and [A23V 2300/00](#) are used in combination with the base symbol [A23V 2002/00](#) to indicate the composition, function of ingredients or processes.

2.

The indexing codes of this group are used in combination with the ingredients compositions codes

- U A23V 2250/00**

**Food ingredients (not used; see subgroups)**

- U A23V 2250/18 · · Lipids
- A23V 2250/184 · · · Emulsifier (emulsifier as function [A23V 2200/222](#); not used, see subgroups)

**Project: N/A (A24F)**

A24F 47/00

Smokers` requisites not provided for elsewhere, {e.g. devices to assist in stopping or limiting smoking (devices for opening cigarette packages [B65B 69/0033](#))}

**Project: N/A (A41D)**

U A41D 13/00

Professional, industrial, or sporting protective garments, e.g. garments affording protection against blows or punches, surgeon`s gowns (helmets [A42B 3/00](#); clothing affording protection against {heat or harmful} chemical agents or for use at high altitudes [A62B 17/00](#); life-saving garments for use at sea, diving-bell suits [B63C](#); bulletproof or armoured clothing [F41H](#); clothing affording protection against radiation [G21F 3/02](#); electric heating elements [H05B](#))

A41D 13/0015

- {Sports garments other than provided for in groups [A41D 13/0007](#) to [A41D 13/088](#) (sports overalls [A41D 13/02](#))}

**Project: N/A (A41H)**

U A41H 43/00

**Other methods, machines or appliances**

A41H 43/04

- Joining garment parts or blanks by gluing or welding; {-Gluing presses} (mending garments by adhesives or adhesive patches [A41H 27/00](#); joining during the manufacture of particular garments, except by gluing or welding, see the relevant subclasses for those garments, e.g. [A41D](#); {-hems or seams made by welding or gluing [A41D 27/245](#)}; adhesive processes in general [C09J 5/00](#); joining by sewing [D05B](#))

**Project: N/A (A42B)**

A42B 3/00

Helmets; Helmet covers; {-Other protective head coverings}{protective garments [A41D 13/00](#); hoods for welders [A61F 9/06](#)}; hoods as protection against chemical agents or for use at high altitudes [A62B 17/00](#); gas helmets [A62B 18/04](#); swimming helmets [A63B 33/00](#); {-head guards for sporting purposes [A63B 71/10](#)}; defence protection helmets [F41H 1/04](#))

**Project: N/A (A43B)**

U A43B 7/00

**Footwear with health or hygienic arrangements**

U A43B 7/14

- Footwear with foot-supporting parts

A43B 7/28

- · Adapting the inner sole {-or the side of the upper} of the shoe to the sole of the foot

A43B 17/00

{Inserted} insoles, e.g. footbeds or inlays, for attachment to the shoe after the upper has been joined (-special medical insertions for shoes [A61F 5/14](#))

A43B 21/00

**Heels; Top-pieces, {e.g. high heels, heel distinct from the sole, high heels monolithic with the sole (sole and heel units [A43B 13/37](#))}**

U A43B 21/36

- characterised by their attachment; Securing devices for the attaching means (combined with soles [A43B 13/28](#))

A43B 21/42

- · Heels with replaceable or adjustable parts, {-e.g. top lift}

**Project: N/A (A43D)**

U A43D 95/00

**Shoe-finishing machines**

A43D 95/14

- incorporating marking, printing, or embossing apparatus (ornamentation of shoe part blanks [A43D 8/16](#); printing *per se*, stamping *per se* [B41](#))

**Project: N/A (A44B)**

- A44B 1/00** **Buttons (setting on garments [A41H 37/10](#); setting on footwear [A43D 100/08](#); making buttons: see the relevant groups in the classes for making articles from particular materials)**
- U A44B 1/08 · Constructional characteristics
- A44B 1/14 · · with replaceable {or protective} coverings {(removable fabric coverings [A44B 1/123](#); sleeve-links concealing a sewed-on button [A44B 5/007](#))}
- A44B 6/00** **Retainers or tethers for neckties, cravats, neckerchiefs, or the like, e.g. tie-clips, spring clips with attached tie-tethers, woggles, pins with associated sheathing members tetherable to clothing (tie-pins [A44B 9/08](#); decorative or ornamental aspects [A44C](#))**
- A44B 9/00** **Hat, scarf, or safety pins or the like (decorative or ornamental aspect [A44C](#); hair pins [A45D 8/02](#); sewing needles [D05B 85/00](#))**
- U A44B 11/00** **Buckles; Similar fasteners for interconnecting straps or the like, e.g. for safety belts**
- U A44B 11/02 · frictionally engaging surface of straps
- U A44B 11/06 · · with clamping devices
- A44B 11/065 · · · {with strap tightening means ([A44B 11/125](#) takes precedence; tighteners for securing of load on vehicles [B60P 7/0823](#); buckles attached to the end of a strap for bundling articles [B65D 63/16](#))}
- U A44B 11/25 · with two or more separable parts
- A44B 11/2503 · · {Safety buckles (safety belts in vehicles [B60R 22/00](#); safety belts for aircraft [B64D 25/02](#))}
- A44B 11/2569 · · · {Safety measures (buckles for releasing in a vehicle emergency [B60R 22/32](#); control, alarm, or interlock systems for the correct application of safety belt buckles in vehicles [B60R 22/48](#))}
- A44B 11/2592 · · {fastening by sliding in the main plane or a plane parallel to the main plane of the buckle ([A44B 11/2503](#), [A44B 11/2584](#) take precedence)}
- A44B 18/00** **Fasteners of the touch-and-close type; Making such fasteners (making pile fabrics [D03](#), [D04](#))**
- A44B 18/0003 · {Fastener constructions ([A44B 18/0023](#), [A44B 18/0046](#) take precedence)}
- U A44B 18/0046 · {Fasteners made integrally of plastics}
- A44B 18/0049 · · {obtained by moulding processes (compression moulding or articles of indefinite length characterised by the shape of the surface [B29C 43/222](#); screen moulding [B29C 67/08](#))}
- U A44B 19/00** **Slide fasteners**
- U A44B 19/24 · Details
- A44B 19/34 · · Stringer tapes ([A44B 19/40](#) takes precedence); Flaps secured to stringers for covering the interlocking members ([A44B 19/32](#) takes precedence; {-setting slide or glide fastener elements on garments [A41H 37/06](#))}
- A44B 19/42 · Making by processes not fully provided for in one other class, e.g. [B21D 53/50](#), [B21F 45/18](#), [B22D 17/16](#), [B29D 5/00](#) {(attaching closure devices, e.g. slide fasteners, to bags [B31B 19/00](#); making package opening by applying or incorporating profile strips, e.g. for reclosable bags [B65B 61/188](#))}
- U A44B 19/44 · · Securing metal interlocking members to ready-made stringer tapes (making metal slide fastener parts combined with attaching [B21D 53/52](#))
- U A44B 19/46 · · · Securing separate interlocking members

- A44B 19/48
- · · Arranging interlocking members before securing (article handling devices associated with conveyers in general [B65G 47/00](#)-, e.g. [B65G 47/14](#))

**Project: N/A (A44C)**

- U A44C 15/00** **Other forms of jewellery**  
A44C 15/0045
- {Jewellery specially adapted to be worn on a specific part of the body not fully provided for in groups [A44C 1/00](#) to [A44C 9/00](#) ([A44C 15/0035](#) takes precedence)}
- U A44C 17/00** **Gems or the like**  
A44C 17/02
- Settings for holding gems {-or the like, e.g. for ornaments or decorations}
- A44C 25/00 **Miscellaneous fancy ware for personal wear, e.g. {-pendants,} crosses, crucifixes, charms {(suspension loops or rings [A44C 3/008](#); settings for holding gems or the like [A44C 17/02](#))}**

**Project: N/A (A45C)**

- A45C 3/00 **Flexible luggage; Handbags (collapsible or extensible luggage, bags or the like [A45C 7/00](#); handbag mirrors [A45D 42/04](#); {-bags for midwives [A61B 17/48](#); doctors' or nurses' bags [A61B 19/0266](#))}**
- A45C 7/00 **Collapsible or extensible {-purses,} luggage {-hand carried} bags or the like**
- A45C 9/00 **{Purses,} Luggage or {-hand carried} bags convertible into {-other articles or into} objects for other use (trunk-wardrobes [A47B 61/06](#); trunks convertible into tables [A47B 85/00](#); trunk-beds [A47C 17/82](#))**
- A45C 11/00 **Receptacles for purposes not provided for in groups [A45C 1/00](#) to [A45C 9/00](#) (specially adapted for toilet or cosmetic equipment [A45D](#); travelling sewing kits [A45F 3/48](#); {devices for carrying bowling balls [A63B 47/007](#))}**
- U A45C 13/00** **Details; Accessories (haberdashery [A44](#); hinged lids for containers [B65D 43/16](#); hinges [E05D](#))**  
A45C 13/02
- Interior fittings; Means, {-e.g. inserts,} for holding and packing articles
- A45C 13/18
- Devices to prevent theft or loss of {-purses,} luggage or {-hand carried} bags
- A45C 15/00 **Purses, bags, luggage or other receptacles covered by groups [A45C 1/00](#) to [A45C 11/00](#), combined with other {-objects or} articles ([A45C 1/08](#), [A45C 3/14](#), {[A45C 11/321](#) and [A45C 13/28](#)} take precedence; {-Purses combined with sticks [A45B 3/10](#))}**

**Project: N/A (A45D)**

- U A45D 2/00** **Hair-curling or hair-waving appliances (heated curling-tongs, curling-irons [A45D 1/00](#)); {Appliances for hair dressing treatment not otherwise provided for}**
- U A45D 2/12**
- Hair winders or hair curlers for use parallel to the scalp, i.e. flat-curlers ([A45D 6/14](#), [A45D 6/16](#) take precedence; with internal electric heating means [A45D 2/36](#); heating devices designed for use external to, and in connection with, hair curlers or hair winders [A45D 4/08](#))
- A45D 2/122
- - {Means for fastening the hair on the curler body}}
- A45D 2/125
- · - {Flexible fastening means}}
- U A45D 27/00** **Shaving accessories (containers for handling shaving soap [A45D 40/00](#); shaving mirrors [A45D 42/08](#))**
- U A45D 27/22**
- Containers or carriers for storing shaving appliances

A45D 27/24

- • for storing {-thin flat} razor blades, e.g. after use (devices for collecting used scalpel blades [A61B 17/3217](#); devices for dispensing new razor-blades [B65D 83/10](#))

**Project: N/A (A45F)**

A45F 4/00

Travelling or camp articles which may be converted into {-other} articles {-or into objects} for other use; Sacks or packs carried on the body and convertible into other articles {-or into objects for other use}

**Project: N/A (A46B)**

U A46B 5/00

**Brush bodies; Handles integral with brushware**

A46B 5/04

- shaped as gloves or finger-stalls {-or other special holding ways e.g. by the tongue}

U A46B 7/00

**Bristle carriers arranged in the brush body**

A46B 7/04

- interchangeably {-removable bristle carriers}

A46B 11/00

**Brushes with reservoir or other means for applying substances, e.g. paints, pastes, water (driven brush bodies [A46B 13/00](#); {-massage apparatus with liquid delivery [A61H 7/002](#), [A61H 2201/105](#)}; applying liquids or other fluent materials to surfaces by liquid carrying members in general, e.g. by pads [B05C 1/00](#), [B05D 1/28](#))**

**Project: N/A (A47C)**

A47C

**CHAIRS (seats specially adapted for vehicles [B60N 2/00](#); {-hunting stands, e.g. hunting seats [A01M 31/02](#); seats adapted for angling, e.g. fisherman's seats [A01K 97/22](#); bath seats [A47K 3/12](#); shower seats [A47K 3/282](#); chairs with toilet means [A47K 11/04](#); seats for surgeons, dentists [A61B 19/28](#); chairs for disabled persons [A61G 5/00](#); operating chairs, dental chairs, physiotherapeutic chairs, gynaecological chairs [A61G 15/00](#); chairs with massage means [A61H 2201/0149](#); ski-lift seats [B61B 12/002](#); rail vehicles seats [B61D 33/00](#); vessel furniture, e.g. boat seats [B63B 29/04](#); aircraft seats [B64D 11/06](#)); SOFAS; BEDS (upholstery in general [B68G](#); {-beds specially adapted for nursing [A61G 7/00](#); sleeping accommodation for caravans [B60P 3/38](#), sleeping accommodation for rail vehicles [B61D 31/00](#); sleeping accommodation for load-carrying vehicles [B62D 33/0612](#); berths for vessels [B63B 29/10](#))**

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[A47C 1/038](#) covered by [A47C 1/0355](#)

[A47C 23/053](#) covered by [A47C 23/05](#), [A47C 23/0507](#), [A47C 23/0515](#)

U A47C 1/00

**Chairs adapted for special purposes (features relating to vertical adjustability [A47C 3/20](#); convertible chairs [A47C 13/00](#); chairs or personal conveyances specially adapted for patients or disabled persons [A61G 5/00](#); operating chairs, dental chairs [A61G 15/00](#))**

U A47C 1/02

- Reclining or easy chairs (supports for parts of body [A47C 7/36](#), [A47C 7/50](#), [A47C 7/54](#))

U A47C 1/022

- • having independently-adjustable supporting parts

A47C 1/024

- • • the parts, being the back-rest, or the back-rest and seat unit, having adjustable {-and lockable} inclination

A47C 1/025

- • • • by means of a {-rack-and-pinion} or like gearing mechanism

- A47C 1/026
  - • • by means of peg-and-notch or {-pawl-and-ratchet} mechanism
- A47C 1/028
  - • • for changing a straight chair into an easy chair, {-e.g. by inverting or tilting seat and back-rest in the base frame or by overturning the whole chair}
- U A47C 1/031
  - • having coupled adjustable supporting parts
- A47C 1/034
  - • • the parts including a leg-rest or foot-rest ([A47C 1/037](#) takes precedence; {-supports for the feet or the legs coupled to fixed parts of the chair [A47C 7/50](#); independent foot-rests or leg-rests [A47C 16/02](#)})
- A47C 1/035
  - • • • in combination with movably coupled seat and back-rest, {-i.e. the seat and back-rest being movably coupled in such a way that the extension mechanism of the foot-rest is actuated at least by the relative movements of seat and backrest}
- A47C 1/04
  - Hairdressers` or similar chairs, {-e.g. beauty salon chairs}
- A47C 1/12
  - Theatre, auditorium, or similar chairs (seats {-detachably mounted on} stadium benches [A47C 1/16](#))
- U **A47C 3/00**

**Chairs characterised by structural features; Chairs or stools with rotatable or vertically-adjustable seats ([A47C 1/00](#), [A47C 4/00](#) take precedence)**
- U A47C 3/02
  - Rocking chairs (specially for children [A47D 13/10](#))
- A47C 3/025
  - • with seat, or seat and back-rest unit elastically {-or pivotally} mounted in a rigid {-base} frame
- A47C 3/027
  - • • with curved rocking members between seat and {-base} frame
- A47C 3/16
  - of legless type, e.g. with seat directly resting on the floor ([A47C 3/14](#) takes precedence; detachably mounted on stadium benches [A47C 1/16](#); children's chairs mounted on back-rest of chair [A47D 1/10](#), {-legless beach chairs [A47C 1/146](#); inflatable chairs [A47C 4/54](#)}); Hassocks; Pouffes
- U A47C 3/20
  - Chairs or stools with vertically-adjustable seats (tables with variable height [A47B 9/00](#); {-locking of telescopic systems in general [F16B 7/10](#)})
- A47C 3/26
  - • with vertical, {-or inclined} toothed rack;{ {with peg-and-notch mechanism}
- U **A47C 4/00**

**Foldable, collapsible or dismantlable chairs (of tubular metal type [A47C 5/10](#); children`s foldable chairs [A47D 1/02](#))**
- U A47C 4/02
  - Dismantlable chairs
- A47C 4/03
  - • Non-upholstered {-chairs, e.g. metal, plastic or} wooden chairs
- A47C 4/52
  - Trunk chairs, i.e. chairs collapsible to {-self contained carrying case, e.g.} trunk shape (trunk tables [A47B 3/10](#))
- U **A47C 7/00**

**Parts, details, or accessories of chairs or stools (attaching to floor [A47B 91/08](#))**
- U A47C 7/02
  - Seat parts (adaptation of seats to mounting in tubular chairs [A47C 5/06](#); such parts not restricted to chairs [A47C 23/00](#); removable upholstered units or cushions [A47C 27/00](#))
- A47C 7/22
  - • Straps or the like for {-direct user support or for} carrying upholstery
- U A47C 7/24
  - Upholstered seats ([A47C 7/18](#) takes precedence)
- A47C 7/26
  - • • with reinforcement {-of the external layer of the upholstery, e.g. vandal resistant}
- A47C 7/35
  - • Combinations of different types of springs; Adjustable springs; Attachment of springs to other springs or to {-the base} frame;{ {Springs for seat parts not provided for in other groups of this subclass}
- U A47C 7/36
  - Support for the head or the back
- U A47C 7/40
  - • for the back
- A47C 7/42
  - • • of detachable {-or loose} type {(detachable or loose back supports associated with beds [A47C 20/027](#))}

A47C 7/44	• • • with elastically-mounted {-back-rest or backrest-seat unit in the base} frame
A47C 7/46	• • • with special, e.g. adjustable, {-lumbar region support} profile; "Ackerblom" profile chairs
A47C 7/50	• Supports for the feet or the legs {-coupled to fixed parts of the chair}(coupled to other adjustable parts {-of the chair} <a href="#">A47C 1/034</a> , <a href="#">A47C 1/037</a> ; {-stand-alone rests or supports for the feet or the legs, e.g.} footstools <a href="#">A47C 16/02</a> )
<b>A47C 17/00 - A47C 31/00</b>	<b><u>Sofas; Beds</u></b>
	<b><u>NOTE</u></b>
	In groups <a href="#">A47C 17/00</a> to <a href="#">A47C 27/00</a> , the following terms or expressions are used with the meaning indicated:
	<ul style="list-style-type: none"> <li>• "bedstead" is used only for the frame of a bed;</li> <li>• "bed" includes bedsteads combined with spring mattresses, stuffed mattresses, or similar means to enable the lying of persons thereon;</li> <li>• "spring mattresses" do not include any stuffed material;</li> <li>• "stuffed mattresses" may include metal springs.</li> </ul>
U A47C 17/04	• {Seating furniture, e.g.} sofas, couches, settees, or the like, with movable parts [changeable to beds]; Chair beds
A47C 17/13	• • {Seating furniture having non-movable backrest} changeable {-to beds} by increasing the available {-seat} part, e.g. by drawing {-seat cushion} forward
U A47C 17/16	• • {Seating furniture} changeable to beds by tilting or pivoting the back-rest
U A47C 17/20	• • • thereby uncovering one or more auxiliary parts previously hidden ( <a href="#">A47C 17/22</a> takes precedence)
A47C 17/207	• • • • with seat cushion consisting of {-multiple} superposed parts, at least one lower {-hidden} part being used to form part of the {-bed} surface
A47C 17/213	• • • • the surface, when used for lying down {-in a bed position}, consisting of one side of the {-seating furniture} seat frame and the back-rest frame
U A47C 17/22	• • {Seating furniture having non-movable back-rest changeable to beds} with means for uncovering a previously hidden mattress or similar bed part
A47C 17/23	• • • the lying down {-bed} surface partly consisting of one side of the seat
U A47C 17/38	• Wall beds
A47C 17/48	• • characterised by two or more relatively-movable {-mattress-support} parts
<b>U A47C 19/00</b>	<b>Bedsteads (spring mattresses with rigid frame or forming part of the bedstead <a href="#">A47C 23/00</a>; bed jointing members or fittings for bedsteads <a href="#">F16B</a>)</b>
A47C 19/20	• Multi-stage bedsteads; {-e.g. bunk beds}(multiple-wall beds <a href="#">A47C 17/50</a> ; suspended beds <a href="#">A47C 17/84</a> ); Bedsteads stackable to multi-stage bedsteads
<b>U A47C 20/00</b>	<b>Head -, foot -, or like rests for beds, sofas or the like (book rests or bed tables <a href="#">A47B 23/00</a>; bed-rests specially adapted for nursing <a href="#">A61G 7/065</a>)</b>
A47C 20/02	• of detachable {-or loose} type ( <a href="#">A47C 20/04</a> , <a href="#">A47C 20/08</a> take precedence; {-for chairs <a href="#">A47C 7/00</a> ; pillows <a href="#">A47G 9/10</a> })
<b>U A47C 23/00</b>	<b>Spring mattresses with rigid frame or forming part of the bedstead; Divan bases; {Slatted bed bases}(unframed spring units <a href="#">A47C 25/00</a>; spring units forming part of stuffed mattresses <a href="#">A47C 27/00</a>)</b>
U A47C 23/04	• using springs in compression, e.g. coiled
A47C 23/05	• • Frames therefor; Connecting the springs to the frame; {-Interconnection of springs, e.g. in spring units}
<b>U A47C 27/00</b>	<b>Stuffed or fluid mattresses specially adapted for chairs, beds or sofas (arrangements for preventing bed-sores or for supporting patients with burns, e.g. mattresses specially adapted therefor, <a href="#">A61G 7/057</a>; ready-made upholstery pads in general <a href="#">B68G 5/00</a>; making mattresses <a href="#">B68G 7/00</a>)</b>

- U A47C 27/04  
A47C 27/045  
A47C 27/05  
A47C 27/08
- with spring inlays ([A47C 27/20](#) takes precedence)
  - Attachment of spring inlays to coverings (upholstery attaching means [A47C 31/02](#)); Use of stiffening sheets, lattices or grids {-in, on, or} under spring inlays
  - with {-padding material, e.g.} foamed material, in top, bottom, or side layers
  - {Fluid mattresses, e.g.} pneumatic mattresses, {-Liquid mattresses or mattresses with fluid-like particles}{connecting valves to inflatable elastic bodies [B60C 29/00](#)}
- U A47C 27/14  
A47C 27/16  
A47C 27/20
- with foamed material inlays
  - reinforced with sheet-like {-or rigid} elements, e.g. profiled
  - with springs moulded in, or situated in {-cavities or} openings in foamed material
- U A47C 31/00  
A47C 31/10
- Details or accessories for chairs, beds, or the like, not provided for in other groups of this subclass, e.g. upholstery fasteners, mattress protectors, stretching devices for mattress nets**
- Loose {-or removable} furniture covers

**Project: N/A (A47D)**

- A47D 5/00
- Dressing-tables {-or diaper changing supports} for children (chests of drawers [A47B 67/00](#))**
- U A47D 13/00  
A47D 13/06  
A47D 13/08  
A47D 13/10  
A47D 15/00
- Other nursery furniture (auxiliary or portable toilet seats for children [A47K 13/06](#))**
- Children's {-play-} pens
  - Devices for use in guiding or supporting children, e.g. safety harness, {-feeding cushions (harnesses for helping babies to walk [A47D 13/046](#); restraining devices in chairs [A47D 15/006](#); restraining devices in beds, playpens or cradles [A47D 15/008](#))}
  - Rocking-chairs (in general [A47C 3/02](#); rocking horses [A63G 15/00](#)); {-Indoor} swings (in general [A63G 9/00](#)); {-Baby bouncers}
- Accessories for children's furniture, e.g. safety belts (holders for {-baby bottles or} bottles for medicinal feeding [A61J 9/06](#); safety belts or body harnesses, in general [A62B 35/00](#); {-infant exercisers attachable to playpens, beds or cradles [A63H 33/006](#)}; safety belts or body harnesses in land vehicles [B60R 22/00](#); harnessing in aircraft [B64D 25/06](#))**

**Project: N/A (A47F)**

- U A47F 1/00  
A47F 1/02
- Racks for dispensing merchandise (racks in general [A47B](#); storing means for workshops [B25H](#)); Containers for dispensing merchandise (show or display aspects [A47F 3/00](#); for workshop fittings [B25H 3/00](#); containers in general [B65D](#); {for liquids [B67D](#)}; coin-freed dispensers [G07F](#))**
- for granulated or powdered materials, {-i.e. bulk materials}
- U A47F 3/00  
A47F 3/14
- Show cases or show cabinets**
- Display trays {-or containers (combined with racks [A47F 5/0025](#); tray partitions [A47F 5/005](#); as racks and transportable with merchandise [A47F 5/108](#); made of cardboard [A47F 5/11](#); stackable [A47B 87/02](#))}; (packing boxes used subsequently as display trays [B65D](#))
- U A47F 5/00
- Show stands, hangers, or shelves characterised by their constructional features**
- U A47F 5/08
- secured to the wall, ceiling, or the like; Wall-bracket display devices

- U A47F 5/0807
- {Display panels, grids or rods used for suspending merchandise or cards supporting articles; Movable brackets therefor (with fixed brackets [A47F 5/0876](#); packages comprising articles attached to cards [B65D 73/00](#); labels [G09F](#))}
- A47F 5/0869
- • {Accessories for article-supporting brackets, e.g. price- indicating means, not covered by a single one of groups [A47F 5/08](#) (pushing means therefor [A47F 1/128](#))}
- A47F 5/10
- Adjustable or foldable {-or dismountable} display stands {(foldable racks in general [A47B 43/00](#); dismountable racks in general [A47B 47/00](#); assemblies of elements of the same kind, e.g. stackable [A47B 87/00](#); publicity panels [G09F 15/0068](#))}

**Project: N/A (A47G)**

- U A47G 21/00
- Table-ware (crumb trays [A47L 13/52](#); table knives [B26B](#))**
- A47G 21/18
- Drinking straws or the like ({as integral parts of drinking containers [A47G 19/2266](#);} for therapeutic purposes [A61J 15/00](#){[G](#)}; adapted to emerge from drinking containers when opened [B65D 77/283](#))}
- U A47G 23/00
- Other table equipment**
- A47G 23/04
- Containers with means for keeping food cool or hot ({[A47G 19/027](#), [A47G 19/127](#), [A47G 19/2288](#), [A47G 19/285](#), [A47G 23/0313](#) take precedence); for butter or cheese [A47G 19/26](#); {-thermally insulated vessels [A47J 41/00](#))}
- U A47G 23/10
- Devices for counting or marking the number of consumptions (on beverage-dispensing apparatus [B65D](#), [B67D](#); counting in general [G06M](#))
- A47G 23/12
- • Consumption counters combined with table-ware {-or table-service}
- A47G 23/14
- • • combined with underlays {-or holders}, e.g. for glasses
- U A47G 29/00
- Miscellaneous supports, holders, or containers for household use (for drying towels [A47K 10/04](#); stands, racks, or the like for airing beds, garments, or the like, clothes, drying devices [D06F 57/00](#))**
- WARNING**
- The following IPC group is not used in the CPC scheme. Subject matter covered by this group is classified in the following CPC group:
- [A47G 29/02](#) covered by [A47B 97/001](#)
- A47G 29/12
- Mail or newspaper receptacles, e.g. letter-boxes; Openings in doors or the like for delivering mail or newspapers ([A47G 29/14](#) takes precedence; chutes for mail in buildings [B65G 11/04](#); {-for desktop use [B42F 7/10](#))}
- A47G 29/14
- Deposit receptacles for food, e.g. breakfast, milk, {-or large parcels}; Similar receptacles for {-food or} large parcels with appliances for preventing unauthorised removal of the deposited articles,{[f](#) {i.e. food or large parcels}

**Project: N/A (A47J)**

- A47J 9/00
- Apparatus or utensils for shaping {-or dispensing portions of} butter or the like (for use in dairies [A01J 19/00](#), [A01J 21/00](#), {[A01J 23/00](#)}; moulding plastic material in general [B29C](#))**
- U A47J 31/00
- Apparatus for making beverages (household machines or implements for straining foodstuffs [A47J 19/00](#); preparation of non-alcoholic beverages, e.g. by adding ingredients to fruit or vegetable juices, [A23L 2/00](#); coffee or tea pots [A47G 19/14](#); tea infusers [A47G 19/16](#); dispensing beverages on draught [B67D 1/00](#); brewing of beer [C12C](#); preparation of wine or other alcoholic beverages [C12G](#))**
- A47J 31/06
- Filters or strainers for coffee or tea makers; {-Holders therefor}

- A47J 31/08      · · Paper filter inlays therefor {-to be disposed after use}
- U A47J 36/00**      **Parts, details or accessories of cooking-vessels ([A47J 27/00](#) to [A47J 33/00](#) take precedence insofar as these parts, details or accessories are restricted to a particular kind of cooking-vessel provided for in a single one of these groups; heating devices for cooking-vessels in general [F24](#))**
- A47J 36/06      · Lids or covers for cooking-vessels (specially adapted for pressure-cookers [A47J 27/08](#); {preventing boiling over of milk [A47J 27/56](#); for draining liquids from cooking-vessels [A47J 36/08](#); lids for frying-pans [A47J 37/101](#); for deep fat fryers [A47J 37/128](#));

**Project: N/A (A47K)**

- U A47K 3/00**      **Baths; Douches; Appurtenances therefor (for curative purposes [A61H](#), [A61M](#), e.g. bathing devices for special therapeutic or hygienic purposes [A61H 33/00](#); {spray heads [B05B](#); devices for suspending or supporting the supply pipe or supply hose of a shower bath [E03C 1/06](#); heated bath tubs [F24H 1/0072](#))}**
- A47K 3/001      · {Accessories for baths, not provided for in other subgroups of group [A47K 3/00](#) (bath lifting devices for sick persons and invalids [A61G 7/10](#)); Insertions, e.g. for babies; Tubs suspended or inserted in baths; Security or alarm devices; Protecting linings or coverings; Devices for cleaning or disinfecting baths; Bath insulation}
- A47K 3/28      · Showers {-or bathing douches}(combined with baths [A47K 3/20](#); nozzles, spray heads [B05B 1/00](#); {-means for suspending or supporting the supply pipe or supply hose [E03C 1/06](#))}
- U A47K 3/30**      · · Screens or {collapsible} cabinets {for showers or baths ([A47K 3/283](#) takes precedence)}
- U A47K 3/32**      · · · Collapsible cabinets
- A47K 3/325      · · · · **{movable, e.g. for easy transportation to the site of use}**
- U A47K 17/00**      **Other equipment {, e.g. separate apparatus for deodorising, disinfecting or cleaning devices without flushing for toilet bowls, seats or covers; Holders for toilet brushes}{portable urinating aids [A61F 5/4556](#); devices for receiving spittle [A61J 19/00](#) {; disinfecting apparatus for medical, surgical or hygienic purposes [A61L](#); cleaning devices with flushing for toilet bowls, seats or covers [E03D 9/00](#); for emptying or cleaning chamber-pots, bed pans, bed urinals or the like [E03D 11/025](#))}**
- U A47K 17/02**      · Body supports, other than seats, for closets, e.g. handles, back-rests, foot-rests; Accessories for closets, e.g. reading tables; {(devices for lifting patients or disabled persons [A61G 7/10](#))}
- A47K 17/026      · · {Armrests mounted on or around the toilet ([A47K-17/022 takes precedence](#)[A47K 17/022 takes precedence](#))}

**Project: N/A (A47L)**

- U A47L 9/00**      **Details or accessories of suction cleaners, e.g. mechanical means for controlling the suction or for effecting pulsating action; Storing devices specially adapted to suction cleaners or parts thereof; Carrying-vehicles specially adapted for suction cleaners**
- U A47L 9/10**      · Filters (in general [B01D](#); cyclones [B04C](#)); Dust separators; Dust removal; Automatic exchange of filters {(for machines for cleaning floors [A47L 11/40](#))}
- A47L 9/14      · · Bags or the like; {-Rigid filtering receptacles;} Attachment of, or closures for, bags{ {or receptacles}
- U A47L 11/00**      **Machines for cleaning floors, carpets, furniture, walls, or wall coverings**

- A47L 11/40
- Parts or details of machines not {provided for in} groups [A47L 11/02](#) to [A47L 11/38](#), {or not restricted to one of these groups}, e.g. handles, arrangement of switches, skirts, buffers, levers

**U A47L 15/00 Washing or rinsing machines for crockery or tableware**

U A47L 15/42

- Details

NOTE

Details specific to a particular type of dishwasher should also get a classification symbol for the relevant type of dishwasher

A47L 15/44

- • Devices for adding cleaning agent; {Devices for dispensing cleaning agents, rinsing aids or deodorants}

A47L 15/46

- • Devices for the automatic control of the different phases of cleaning; {Controlling devices ([A47L 15/449](#) takes precedence)}

**Project: N/A (A61B)**

**A61B**

**DIAGNOSIS; SURGERY; IDENTIFICATION (analysing biological material [G01N](#), e.g. [G01N 33/48](#); obtaining records using waves other than optical waves, in general [G03B 42/00](#))**

NOTE

This subclass covers instruments, implements and processes for diagnostic, surgical and person-identification purposes, including obstetrics, instruments for cutting corns, vaccination instruments, finger-printing, psycho-physical tests.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">A61B 5/0295</a>	covered by	<a href="#">A61B 5/026</a>	
<a href="#">A61B 5/151</a>	covered by	<a href="#">A61B 5/1411</a>	
<a href="#">A61B 5/153</a>	covered by	<a href="#">A61B 5/1405</a>	
<a href="#">A61B 5/154</a>	covered by	<a href="#">A61B 5/1438</a>	
<a href="#">A61B 5/157</a>	covered by	<a href="#">A61B 5/00</a>	and s. gr.
<a href="#">A61B 17/03</a>	covered by	<a href="#">A61B 17/00</a>	
<a href="#">A61B 17/125</a>	covered by	<a href="#">A61B 17/122</a>	
<a href="#">A61B 17/138</a>	covered by	<a href="#">A61B 17/12</a>	
<a href="#">A61B 17/76</a>	covered by	<a href="#">A61B 17/744</a>	
<a href="#">A61B 17/78</a>	covered by	<a href="#">A61B 17/744</a>	
<a href="#">A61B 17/90</a>	covered by	<a href="#">A61B 17/88</a>	
<a href="#">A61B 17/94</a>	covered by	<a href="#">A61B 17/29</a>	

**A61B 1/00**

**Instruments for performing medical examinations of the interior of cavities or tubes of the body by visual or photographic inspection, e.g. endoscopes (examination of body cavities or body tracts using ultrasonic, sonic or infrasonic waves [A61B 8/12](#); instruments, e.g. endoscopes, for taking a cell sample [A61B 10/00](#); endoscopic cutting instruments [A61B 17/32](#); surgical instruments using a laser beam being directed along or through a flexible conduit [A61B 18/22](#); technical endoscopes [G02B 23/24](#)); illuminating arrangements therefor (for the eyes [A61B 3/00](#))**

A61B 1/00163

- {Optical arrangements ([A61B 1/002](#), [A61B 1/06](#) take precedence)}

A61B 1/24

- for the mouth, i.e. stomatoscopes, e.g. with tongue depressors (tongue depressors per se [A61B 13/00](#)); Instruments for opening or keeping open the mouth (combined with saliva removers [A61C 17/00](#); mouth openers for animals [A61D 15/00](#))

- A61B 3/00**      **Apparatus for testing the eyes; Instruments for examining the eyes (eye inspection using ultrasonic, sonic or infrasonic waves [A61B 8/10](#); devices for treatment of the eyes [A61F 9/00](#); exercisers for the eyes [A61H 5/00](#); optical systems in general [G02B](#))**
- A61B 3/0008      · {provided with illuminating means ([A61B 3/117](#) takes precedence; goniolescopes used for laser treatment [A61F 9/009](#); illuminating means for optical instruments [G02B 27/00](#))}
- A61B 5/00**      **Detecting, measuring or recording for diagnostic purposes (radiation diagnosis [A61B 6/00](#); diagnosis by ultrasonic, sonic or infrasonic waves [A61B 8/00](#)); Identification of persons {(measuring or recording in general subclasses of [G01](#); medical informatics [G06F 19/30](#))}**
- WARNING**
- Groups [A61B 5/40](#) - [A61B 5/748](#) do not correspond to former or present IPC groups. Concordance CPC : IPC for these groups is as follows: [A61B 5/40](#) : [A61B 5/00A61B 5/41](#) : [A61B 5/00A61B 5/42](#) : [A61B 5/00A61B 5/43](#) : [A61B 5/00A61B 5/44](#) : [A61B 5/00A61B 5/45](#) : [A61B 5/00A61B 5/48](#) : [A61B 5/00A61B 5/68](#) : [A61B 5/00A61B 5/70](#) : [A61B 5/00A61B 5/72](#) : [A61B 5/00A61B 5/74](#) : [A61B 5/00](#)
- U    A61B 5/0002      · {Remote monitoring of patients using telemetry, e.g. transmission of vital signals via a communication network ([A61B 5/07](#) takes precedence; transmission systems for measured values [G08C](#); transmission [H04B](#); transmission of digital information [H04L](#); wireless communication networks [H04W](#))}
- U    A61B 5/0004      · · {characterised by the type of physiological signal transmitted}
- A61B 5/0013      · · · {Medical image data ([A61B 1/00011](#), [A61B 6/56](#), [A61B 8/56](#) take precedence)}
- A61B 5/0033      · {Features or image-related aspects of imaging apparatus classified in [A61B 5/00](#), e.g. for MRI, optical tomography or impedance tomography apparatus; arrangements of imaging apparatus in a room (image data processing or generation [G06T](#))}
- WARNING**
- Group [A61B 5/0033](#) and subgroups are not complete pending a reorganisation
- A61B 5/0048      · {Detecting, measuring or recording by applying mechanical forces or stimuli ([A61B 5/021](#), [A61B 5/4884](#) and [A61B 9/00](#) take precedence)}
- A61B 5/0059      · {using light, e.g. diagnosis by transillumination, diascopy, fluorescence ([A61B 5/0093](#), [A61B 5/1455](#), [A61B 5/02416](#) and [A61B 5/0261](#) take precedence)}
- A61B 5/01      · Measuring temperature of body parts; {Diagnostic temperature sensing, e.g. for malignant or inflamed tissue} (clinical thermometers [G01K 5/22](#); thermometers for special purposes [G01K 13/00](#))
- U    A61B 5/02      · Detecting, measuring or recording pulse, heart rate, blood pressure or blood flow; Combined pulse/heart-rate/blood pressure determination; Evaluating a cardiovascular condition not otherwise provided for, e.g. using combinations of techniques provided for in this group with electrocardiography or electroauscultation; Heart catheters for measuring blood pressure
- U    A61B 5/021      · · Measuring pressure in heart or blood vessels ([A61B 5/0205](#) takes precedence)
- A61B 5/02141      · · · {Details of apparatus construction, e.g. pump units or housings therefor, cuff pressurising systems, arrangements of fluid conduits or circuits ([A61B 5/02233](#), [A61B 5/0235](#) take precedence)}

- A61B 5/024
  - • Detecting, measuring or recording pulse rate or heart rate ([A61B 5/0205](#)-, [A61B 5/021](#) take precedence)
- A61B 5/026
  - • Measuring blood flow {([A61B 3/1233](#)-, [A61B 3/1241](#) take precedence)}
- U A61B 5/04
  - Detecting, measuring or recording bioelectric signals of the body or parts thereof
- U A61B 5/0402
  - • Electrocardiography, i.e. ECG
- A61B 5/0408
  - • • Electrodes specially adapted therefor (for foetal cardiography [A61B 5/0448](#)-, for electroencephalograph signals [A61B 5/0478](#)-, for electromyography [A61B 5/0492](#))
- A61B 5/04085
  - • • • {Multiple electrode holders ([A61B 5/04286](#)-, [A61B 5/0422](#) take precedence)}
- U A61B 5/0428
  - • • Input circuits specially adapted therefor
- A61B 5/04282
  - • • • {using insulating or floating elements, e.g. transformers, opto-couplers (transformers for specific applications [H01F 38/00](#)-, amplifiers [H03F](#)-, optocouplers [H04B 10/80](#))}
- A61B 5/05
  - Detecting, measuring or recording for diagnosis by means of electric currents or magnetic fields; {Measuring using microwaves or radiowaves} ([A61B 5/02](#)-, [A61B 5/04](#)-, [A61B 5/11](#) take precedence)
- U A61B 5/07
  - Endoradiosondes
- A61B 5/076
  - • {Permanent implantations} (telemetry using implanted circuitry [A61B 5/0031](#)-, implanted stimulators for therapy [A61N 1/362](#)-, [A61N 1/372](#));
- U A61B 5/08
  - Detecting, measuring or recording devices for evaluating the respiratory organs ([A61B 5/0205](#) takes precedence)
- A61B 5/0806
  - • {by whole-body plethysmography (measuring blood flow using plethysmography [A61B 5/0295](#)-, impedance plethysmography [A61B 5/053](#)-, measuring volume of the body or parts thereof [A61B 5/1073](#))}
- A61B 5/082
  - • {Evaluation by breath analysis, e.g. determination of the chemical composition of exhaled breath ([A61B 5/083](#)-, [A61B 5/091](#) take precedence)}

WARNING  
Group [A61B 5/082](#) is not complete pending a reorganisation, see also group [A61B 5/083](#)
- A61B 5/103
  - Detecting, measuring or recording devices for testing the shape, pattern, {colour,} size or movement of the body or parts thereof, for diagnostic purposes ([A61B 5/08](#) takes precedence; measuring aids for tailors [A41H 1/00](#)-, measuring instruments specially adapted for dentistry [A61C 19/04](#))
- U A61B 5/11
  - • Measuring movement of the entire body or parts thereof, e.g. head or hand tremor, mobility of a limb (for measuring pulse [A61B 5/02](#) {; [A61B 5/1038](#) takes precedence; motion detection to correct for motion artifacts in physiological signals [A61B 5/721](#))}
- A61B 5/1123
  - • • {Discriminating type of movement, e.g. walking or running ([A61B 5/1116](#)-, [A61B 5/112](#) take precedence)}
- A61B 5/117
  - Identification of persons, e.g. finger-printing, foot-printing, impression techniques (dental impression cups or articulators [A61C 9/00](#)-, [A61C 11/00](#)-, recognition of data [G06K](#)-, recognising finger-prints [G06K 9/00](#)-, identification tags [G09F 3/00](#))
- A61B 5/12
  - Audiometering {Evaluation or the auditory system, not limited to hearing capacity ([A61B 5/04845](#)-, [A61B 5/4023](#) take precedence)}

- A61B 5/14
- Devices for taking samples of blood (hypodermic syringes [A61M 5/00](#)); Measuring characteristics of blood in vivo, e.g. gas concentration within the blood, pH-value of blood (measuring of blood pressure [A61B 5/02](#); non-radiation detecting or locating of foreign bodies in blood [A61B 5/06](#))
- WARNING
- This group and its subgroups are no longer used for the classification of new documents as from April 1st, 2010. The backlog of these group is being continuously reclassified to [A61B 5/15](#) and subgroups
- A61B 5/145
- Measuring characteristics of blood in vivo, e.g. gas concentration, pH value; {Measuring characteristics of body fluids or tissues, e.g. interstitial fluid, cerebral tissue} (measuring of blood pressure or blood flow [A61B 5/02](#); non-radiation detecting or locating of foreign bodies in blood [A61B 5/06](#))
- A61B 5/14503
- {invasive, e.g. introduced into the body by a catheter or needle or using implanted sensors ([A61B 5/1459](#), [A61B 5/1464](#), [A61B 5/1473](#), [A61B 5/1482](#), [A61B 5/14865](#) take precedence)}
- A61B 5/15
- Devices for taking samples of blood (hypodermic syringes [A61M 5/178](#))
- NOTE
- In these subgroups, the following terms are used with the meaning indicated:
- "piercing element" means skin penetrating component e.g. blade, needle, lancet, laser beam;
  - "piercing or lancing device" means device ready to be used for lancing;
  - "driving device" means device for driving a piercing element e.g. spring
- WARNING
- This group and its subgroups are not complete pending a reorganisation. See also [A61B 5/14](#), [A61B 5/1405](#) and subgroups
- U A61B 5/150007
- {Details}
- U A61B 5/150175
- • {Adjustment of penetration depth}
- A61B 5/15019
- • • {Depth adjustment mechanism using movable stops located inside the piercing device housing and limiting the travel of the drive mechanism (mechanisms using distal end caps [A61B 5/150183](#), mechanisms at the piercing element carrier proximal end [A61B 5/150198](#))}
- U A61B 5/150206
- • • {Construction or design features not otherwise provided for; manufacturing or production; packages; sterilisation of piercing element, piercing device or sampling device}
- A61B 5/150251
- • • {Collection chamber divided into at least two compartments, e.g. for division of samples (injection syringes having more than one chamber [A61M 5/19](#); syringes for injection of two or more media [A61M 5/2448](#), [A61M 5/284](#); sample preparation for further analysis [A61B 5/150755](#))}
- U A61B 5/150274
- • • {Manufacture or production processes or steps for blood sampling devices}
- A61B 5/150297
- • • • {for piercing devices i.e. devices ready to be used for lancing or piercing (for piercing elements [A61B 5/150282](#), for driving devices [A61B 5/15029](#))}
- A61B 5/150305
- • • • {Packages specially adapted for piercing devices or blood sampling devices (kits for diabetes [A61M 5/003](#); packaging in general [B65D](#))}
- A61B 5/150343
- • • {Collection vessels for collecting blood samples from the skin surface, e.g. test tubes, cuvettes (test tubes in general [B01L 3/14](#), sampling from within body cavities [A61B 5/150015](#), [A61B 5/150045](#))}
- A61B 5/150358
- • • {Strips for collecting blood, e.g. absorbent (optical reagent test strips [G01N 21/8483](#); chemical reagent test strips [G01N 33/4875](#), [G01N 33/52](#))}

- A61B 5/150366
  - • • {Blood collection bags, e.g. connected to the patient by a catheter comprising means for removing a small sample of collected blood from the bag (collection bags as such [A61J 1/05](#)~~-~~, [A61M 1/0209](#))}
- A61B 5/150374
  - • • {Details of piercing elements or protective means for preventing accidental injuries by such piercing elements (double-ended hollow needles [A61B 5/150473](#)~~-~~, [A61B 5/150389](#)~~-~~; single-ended hollow needles [A61B 5/150503](#)~~-~~, [A61B 5/150389](#))}
- U A61B 5/150381
  - • • • {Design of piercing elements}
- A61B 5/150473
  - • • • • {Double-ended needles e.g. used with pre-evacuated sampling tubes (hollow piercing element tip design [A61B 5/150396](#)~~-~~; needle sets for catheters [A61M 25/06](#)~~-~~; needles for bringing media into the body [A61M 5/32](#))}
- A61B 5/150503
  - • • • • {Single-ended needles (hollow piercing element tip design [A61B 5/150396](#)~~-~~, needle sets for catheters [A61M 25/06](#)~~-~~, needles for bringing media into the body [A61M 5/32](#))}
- A61B 5/150748
  - • • {Having means for aiding positioning of the piercing device at a location where the body is to be pierced (means for aiding positioning of devices for bringing media into the body [A61M 5/427](#)~~-~~, locating blood vessels [A61B 5/489](#))}
- U A61B 5/16
  - Devices for psychotechnics (testing capability [G09B 1/00](#) to [G09B 5/00](#)); Testing reaction times; [Devices for evaluating the psychological state]
- A61B 5/162
  - • {Testing reaction times (reaction-time training with a substantial physical effort [A63B 69/0053](#)~~-~~; reaction-time games [A63F 9/0096](#))}
- A61B 5/40
  - {Detecting, measuring or recording for evaluating the nervous system ([A61B 5/4806](#)~~-~~, [A61B 5/4821](#)~~-~~, [A61B 5/4824](#) take precedence)}

WARNING  
Group [A61B 5/40](#) and subgroups are not complete pending a reorganisation, see also groups also groups [A61B 5/00](#)~~-~~, [A61B 5/02](#)~~-~~, [A61B 5/0476](#)~~-~~, [A61B 5/048](#)~~-~~, [A61B 5/145](#)~~-~~, [A61B 5/16](#)~~-~~, [A61B 5/18](#)~~-~~.
- A61B 5/4005
  - • {for evaluating the sensory system ([A61B 5/12](#)~~-~~, [A61B 5/4058](#) take precedence)}
- A61B 5/4058
  - • {for evaluating the central nervous system ([A61B 5/4806](#)~~-~~, [A61B 5/4821](#) take precedence)}
- A61B 5/4064
  - • • {Evaluating the brain ([A61B 5/031](#)~~-~~, [A61B 5/0476](#)~~-~~, [A61B 5/14553](#) take precedence)}
- A61B 5/4076
  - • {Diagnosing or monitoring particular conditions of the nervous system ([A61B 5/4821](#)~~-~~, [A61B 5/4824](#) take precedence)}
- A61B 5/41
  - {Detecting, measuring or recording for evaluating the immune or lymphatic systems}

WARNING  
Group [A61B 5/41](#) and subgroups are not complete pending a reorganisation, see also groups [A61B 5/00](#)~~-~~, [A61B 5/02](#)~~-~~, [A61B 5/04](#)~~-~~, [A61B 5/05](#)~~-~~, [A61B 5/145](#)~~-~~.
- A61B 5/42
  - {Detecting, measuring or recording for evaluating the gastrointestinal, the endocrine or the exocrine systems ([A61B 1/00](#)~~-~~, [A61B 5/4857](#)~~-~~, [A61B 5/486](#)~~-~~, [A61B 5/4866](#)~~-~~, [A61B 5/4869](#) take precedence)}
- A61B 5/45
  - {For evaluating or diagnosing the musculoskeletal system or teeth ([A61B 5/1036](#)~~-~~, [A61B 5/1074](#)~~-~~, [A61B 7/006](#) take precedence)}
- A61B 5/4519
  - • {Muscles ([A61B 5/0488](#)~~-~~, [A61B 5/224](#) take precedence)}
- A61B 5/4528
  - • {Joints ([A61B 5/4533](#)~~-~~, [A61B 5/4538](#) take precedence)}

- A61B 5/72
- {Signal processing specially adapted for physiological signals or for diagnostic purposes (algorithms for computer assisted diagnosis [G06F 19/34](#); pattern recognition [G06K 9/00](#))}
- A61B 5/7225
- • {Details of analog processing, e.g. isolation amplifier, gain or sensitivity adjustment, filtering, baseline or drift compensation ([A61B 5/04004](#), [A61B 5/04012](#), [A61B 5/0428](#) take precedence; transformers for specific applications [H01F 38/00](#); amplifiers [H03F](#))}
- U A61B 5/7235
- • {Details of waveform analysis ([A61B 5/0452](#) takes precedence)}
- A61B 5/7264
- • • {Classification of physiological signals or data, e.g. using neural networks, statistical classifiers, expert systems or fuzzy systems (neural networks per se [G01N 3/00](#); expert systems per se [G06N 5/00](#))}
- A61B 5/7271
- • {Specific aspects of physiological measurement analysis ([A61B 5/04012](#), [A61B 5/0452](#) and [A61B 5/048](#) take precedence)}
- A61B 5/7282
- • • {Event detection, e.g. detecting unique waveforms indicative of a medical condition ([A61B 5/4094](#), [A61B 5/4818](#), [A61B 5/0452](#), [A61B 5/0823](#) take precedence)}
- A61B 5/7285
- • • {for synchronising or triggering a physiological measurement or image acquisition with a physiological event or waveform, e.g. an ECG signal ([A61B 6/5205](#), [A61B 6/541](#), [A61B 8/5207](#), [A61B 8/543](#) take precedence)}
- U A61B 5/74
- {Details of notification to user or communication with user or patient (indicating measured values [G01D 7/00](#)); user input means (input or output arrangements for computers [G06F 3/00](#))}
- WARNING
- Group [A61B 5/74](#) and subgroups are not complete pending a reorganisation; see also other subgroups of [A61B 5/00](#)
- U A61B 5/742
- • {using visual displays ([A61B 5/044](#) takes precedence)}
- A61B 5/7425
- • • {Displaying combinations of multiple images regardless of image source, e.g. displaying a reference anatomical image with a live image (geometric transforms for image registration [G06T 3/0068](#); enhancement using image fusion [G06T 5/50](#); algorithms for registration of images [G06T 7/0024](#))}
- A61B 6/00**
- Apparatus for radiation diagnosis, e.g. combined with radiation therapy equipment (analysis of materials using radiation [G01N 23/00](#); detecting hidden objects by radiation [G01V 5/0008](#); radiodiagnostic or X-ray contrast preparations [A61K 49/00](#); radiation therapy per se [A61N 5/00](#); instruments measuring radiation intensity for application in the field of nuclear medicine, e.g. in vivo counting [G01T 1/161](#); apparatus for taking X-ray photographs [G03B 42/02](#); X-ray photographic processes [G03C 5/16](#); irradiation devices [G21K](#); X-ray apparatus or circuits therefor [H05G 1/00](#))**
- WARNING
- Groups [A61B 6/40](#) to [A61B 6/58](#) do not correspond to former or current IPC groups. Concordance CPC - IPC for these groups is as follows: - [A61B 6/40](#) : [A61B 6/00](#) - [A61B 6/42](#) : [A61B 6/00](#) - [A61B 6/44](#) : [A61B 6/00](#) - [A61B 6/46](#) : [A61B 6/00](#) - [A61B 6/48](#) : [A61B 6/00](#) - [A61B 6/50](#) : [A61B 6/00](#) - [A61B 6/52](#) : [A61B 6/00](#) - [A61B 6/54](#) : [A61B 6/00](#) - [A61B 6/56](#) : [A61B 6/00](#) - [A61B 6/58](#) : [A61B 6/00](#)
- U A61B 6/02
- Devices for diagnosis sequentially in different planes; Stereoscopic radiation diagnosis
- A61B 6/03
- • Computerised tomographs ({diagnosis by magnetic resonance imaging [A61B 5/055](#); } echo-tomography [A61B 8/14](#); {medical informatics [G06F 19/30](#))}
- A61B 6/037
- • • {Emission tomography (detector details for PET [G01T 1/2985](#); detector details for SPECT [G01T 1/1644](#))}

- A61B 6/04
- Positioning of patients; Tilttable beds or the like (operating tables [A61G 13/00](#); operating chairs [A61G 15/00](#))
- A61B 6/12
- Devices for detecting or locating foreign bodies ([A61B 6/02](#) takes precedence; {radio-opaque markers [A61B 19/54](#)})
- U A61B 6/40
- {with arrangements for generating radiation specially adapted for radiation diagnosis (X-ray tubes or details thereof [H01J 35/00](#))}
- A61B 6/405
- • {Source units adapted to modify characteristics of the beam during the data acquisition process ([A61B 6/4021](#), [A61B 6/4035](#) take precedence; arrangements changing the time structure of an already generated radiation beam [G21K 1/043](#))}
- U A61B 6/42
- {with arrangements for detecting radiation specially adapted for radiation diagnosis (details of radiation detection [G01T 1/00](#))}
- U A61B 6/4208
- • {characterised by using a particular type of detector}
- A61B 6/4233
- • • {using matrix detectors (for semiconductor radiation detectors [G01T 1/24](#), [G01T 1/2928](#))}
- A61B 6/4241
- • • {using energy resolving detectors, e.g. photon counting (detectors for nuclear medicine [G01T 1/16](#), [G01T 1/29](#))}
- U A61B 6/46
- {with special arrangements for interfacing with the operator or the patient}
- U A61B 6/461
- • {Displaying means of special interest}
- A61B 6/466
- • • {adapted to display 3D data (3D image rendering [G06T 15/00](#); manipulating 3D models for computer graphics [G06T 19/00](#))}
- A61B 6/48
- {Diagnostic techniques ([A61B 6/022](#), [A61B 6/032](#), [A61B 6/037](#) take precedence)}
- A61B 6/52
- {Devices using data or image processing specially adapted for radiation diagnosis (image processing per se [G06T](#))}
- WARNING**  
Groups of [A61B 6/52](#) are not complete pending a reorganisation; see [A61B 6/00](#), [A61B 6/50](#), [A61B6/00F](#), [A61B 6/03](#), [A61B 6/032](#) and [A61B 6/04](#)
- U A61B 6/5211
- • {involving processing of medical diagnostic data}
- A61B 6/5217
- • • {extracting a diagnostic or physiological parameter from medical diagnostic data (details of algorithms to analyse biomedical images [G06T 7/0012](#); algorithms for computer assisted diagnosis [G06F 19/34](#))}
- U A61B 8/00**
- Diagnosis using ultrasonic, sonic or infrasonic waves (imaging of objects using sonar [G01S 15/00](#))**
- WARNING**  
Groups [A61B 8/40](#) - [A61B 8/58](#) do not correspond to former or current IPC groups. Concordance CPC : IPC groups is as follows: - [A61B 8/40](#) - [A61B 8/4444](#) : [A61B 8/00](#) - [A61B 8/445](#) : [A61B 8/12](#) - [A61B 8/4455](#) - [A61B 8/46](#) : [A61B 8/00](#) - [A61B 8/48](#) - [A61B 8/52](#) : [A61B 8/08](#) - [A61B 8/54](#) - [A61B 8/58](#) : [A61B 8/00](#)
- A61B 8/06
- Measuring blood flow (measuring volume flow in general [G01F](#), e.g. [G01F 1/66](#), [G01F 1/72](#); measuring speed of fluids in general [G01P 5/00](#))
- A61B 8/13
- Tomography ([A61B 8/10](#), [A61B 8/12](#) take precedence; tomography for radiation diagnosis [A61B 6/02](#))
- U A61B 8/44
- {Constructional features of the ultrasonic, sonic or infrasonic diagnostic device}
- WARNING**  
This subgroup is not complete pending a reorganisation, see [A61B 8/00](#)
- U A61B 8/4483
- • {characterised by features of the ultrasound transducer}

- A61B 8/4494
- • • {characterised by the arrangement of the transducer elements (devices for short-range imaging using particular transducer elements arrangements under [G01S 15/8909](#); arrangements of transducers in generation of mechanical vibrations of infrasonic, sonic or ultrasonic frequency [B06B 1/0607](#))}
- U A61B 8/46
- {Ultrasonic, sonic or infrasonic diagnostic devices with special arrangements for interfacing with the operator or the patient}
- WARNING  
This subgroup is not complete pending a reorganisation, see [A61B 8/00](#)
- U A61B 8/461
- • {Displaying means of special interest}
- A61B 8/466
- • • {adapted to display 3D data (3D imaging and stereoscopic displays in devices for short-range imaging with acoustic waves [G01S 15/8993](#) and [G01S 7/52068](#), respectively; 3D image rendering [G06T 15/00](#); manipulating 3D models for computer graphics [G06T 19/00](#))}
- U A61B 8/52
- {Devices using data or image processing specially adapted for diagnosis using ultrasonic, sonic or infrasonic waves (image processing per se [G06T](#))}
- WARNING  
This subgroup is not complete pending a reorganisation, see [A61B 8/08](#) and [A61B 8/14](#)
- U A61B 8/5215
- • {involving processing of medical diagnostic data}
- A61B 8/5223
- • • {for extracting a diagnostic or physiological parameter from medical diagnostic data (for algorithms to analyse biomedical images [G06T 7/0012](#); for algorithms for computer assisted diagnosis [G06F 19/34](#))}
- U **A61B 10/00**
- Other methods or instruments for diagnosis, e.g. instruments for taking a cell sample, for biopsy, for vaccination diagnosis (vaccination prophylaxis, vaccination therapy [A61B 17/20](#)); Sex determination; Ovulation-period determination (menstruation tables [G06C 3/00](#)); Throat striking implements**
- NOTE  
Attention is drawn to group [A61F 13/15](#) which provides for swabs
- A61B 10/0041
- {Detection of breast cancer (mammography by transillumination [A61B 5/0091](#)-, by X-rays [A61B 6/502](#)-, by ultrasonic means [A61B 8/0825](#))}
- U A61B 10/0045
- {Devices for taking samples of body liquids (devices for taking blood samples [A61B 5/1405](#))}
- A61B 10/0058
- • {for taking sperm samples (artificial insemination [A61B 17/43](#)-, for animals [A61D 19/021](#)-, genital receptacles for the male member [A61F 5/453](#)-, massage of the genitals [A61H 19/00](#))}
- A61B 10/007
- • {for taking urine samples (measuring urological functions [A61B 5/20](#)-, genital receptacles [A61F 5/451](#)-, urinals for bed-ridden persons [A61G 9/006](#))}
- A61B 10/0096
- {Casings for storing test samples ([A61B 10/0038](#) and [A61B 10/0045](#) take precedence; preservation of living parts of the human or animal body [A01N 1/02](#)-, containers for retaining a material to be analysed [B01L 3/50](#)-, test tubes [B01L 3/14](#)-, containers for enzymology or microbiology [C12M 1/16](#)-, swab-sampler being part of enzymology or microbiology container [C12M 1/30](#))}
- A61B 10/02
- {Instruments for taking a cell sample or for biopsy ([A61B 10/0038](#) and [A61B 10/0045](#) take precedence; needle locating or guiding means [A61B 17/3403](#)-, samplers for enzymology or microbiology [C12M 1/26](#)-, sampling or preparing biological specimens [G01N 33/48](#))}
- U A61B 10/0233
- • {Pointed or sharp biopsy instruments}
- A61B 10/0283
- • • {with vacuum aspiration, e.g. caused by retractable plunger or by connected syringe ([A61B 10/025](#)-, [A61B 10/0266](#) take precedence)}

A61B 16/00	Devices specially adapted for vivisection or autopsy (similar devices for medical purposes, see the relevant groups for such devices; <del>{autopsy tables <a href="#">A61G 13/0027</a>}</del> )
A61B 17/00	Surgical instruments, devices or methods, e.g. tourniquets ( <a href="#">A61B 18/00</a> takes precedence; contraceptive devices, pessaries, or applicators therefor <a href="#">A61F 6/00</a> ; eye surgery <a href="#">A61F 9/007</a> ; ear surgery <a href="#">A61F 11/00</a> )
A61B 17/00234	• {for minimally invasive surgery ( <a href="#">A61B 17/0218</a> ; <a href="#">A61B 17/0469</a> ; <a href="#">A61B 17/12013</a> ; <a href="#">A61B 17/1285</a> ; <a href="#">A61B 17/29</a> ; <a href="#">A61B 17/320016</a> take precedence)}
A61B 2017/00353	• {one mechanical instrument performing multiple functions, e.g. cutting and grasping (channel for multiple instruments <a href="#">A61B 2017/3445</a> ; instrument channel <a href="#">A61B 2017/22072</a> ; replaceable heads <a href="#">A61B 2017/2931</a> ; suction <a href="#">A61M 1/00</a> )}
A61B 17/00491	• {Surgical glue applicators (surgical adhesives <a href="#">A61L 24/00</a> ; two-component delivery syringes <a href="#">A61M 5/19</a> )}
A61B 2017/00535	• {pneumatically or hydraulically operated ( <a href="#">A61B 2017/22051</a> ; <a href="#">A61B 2019/385</a> take precedence)}
A61B 17/0057	• {Implements for plugging an opening in the wall of a hollow or tubular organ, e.g. for sealing a vessel puncture or closing a cardiac septal defect (sutures <a href="#">A61B 17/04</a> ; closing rectum or urethra near body surface <a href="#">A61F 2/0009</a> )}
U A61B 2017/00743	• {Type of operation; Specification of treatment sites ( <a href="#">A61B 2017/00238</a> takes precedence)}
A61B 2017/00778	• {Operations on blood vessels ( <a href="#">A61B 2017/22097</a> ; <a href="#">A61B 2017/320741</a> take precedence)}
U A61B 17/02	• for holding wounds open; Tractors ({specula <a href="#">A61B 1/32</a> }; drainage appliances for wounds <a href="#">A61M 27/00</a> )
A61B 17/0218	• {for minimally invasive surgery ( <a href="#">A61B 17/0218</a> ; <a href="#">A61B 17/0281</a> ; <a href="#">A61B 17/0469</a> ; <a href="#">A61B 17/12013</a> ; <a href="#">A61B 17/1285</a> ; <a href="#">A61B 17/29</a> ; <a href="#">A61B 17/320016</a> take precedence)}
A61B 2017/0237	• {for heart surgery (endoscopic heart surgery <a href="#">A61B 2017/00243</a> ; endoscopic access devices, i.e. trocars, <a href="#">A61B 17/34</a> )}
U A61B 17/04	• for suturing wounds; Holders or packages for needles or suture materials (suture materials <a href="#">A61L 17/00</a> )
A61B 17/0482	• {Needle or suture guides (guides for drills, pins or wire <a href="#">A61B 17/17</a> ; for puncturing needles <a href="#">A61B 17/3403</a> )}
A61B 17/0483	• {Hand-held instruments for holding sutures ( <a href="#">A61B 17/0469</a> takes precedence; other holders for needles or sutures <a href="#">A61B 17/06061</a> ; surgical forceps <a href="#">A61B 17/28</a> ; surgical pincettes <a href="#">A61B 17/30</a> )}
A61B 17/0487	• {Suture clamps, clips or locks, e.g. for replacing suture knots; Instruments for applying or removing suture clamps, clips or locks (suture anchors <a href="#">A61B 17/0401</a> ; wound clamps or clips <a href="#">A61B 17/08</a> ; ligaturing clamps or clips <a href="#">A61B 17/122</a> )}
A61B 2017/0488	• • {Instruments for applying suture clamps, clips or locks (for applying suture anchors <a href="#">A61B 2017/0409</a> ; for applying wound clamps <a href="#">A61B 17/10</a> ; for applying ligaturing clamps or clips <a href="#">A61B 17/128</a> )}
A61B 2017/049	• • {Instruments for removing suture clamps, clips or locks (for removing suture anchors <a href="#">A61B 2017/0411</a> ; for removing wound clamps <a href="#">A61B 17/10</a> ; for removing ligaturing clamps or clips <a href="#">A61B 17/128</a> )}
A61B 17/06	• • Needles; {Sutures; Needle-suture combinations}; Holders or packages for needles or suture materials (puncturing needles <a href="#">A61B 17/34</a> ; nerve needles <a href="#">A61C 5/02</a> ; hypodermic needles <a href="#">A61M 5/32</a> ; {-sewing needles <a href="#">D05B 85/00</a> )}

- A61B 17/06004
  - • • {Means for attaching suture to needle (tipping [A61B 17/06195](#); connecting wire to other metallic objects [B21F 15/00](#))}
- A61B 2017/06033
  - • • • {using adhesives (glue applicators [A61B 17/00491](#); for connecting prosthetic parts [A61F 2002/30448](#))}
- A61B 17/06061
  - • • {Holders for needles or sutures, e.g. racks, stands (hand-held holding instruments [A61B 17/0483](#); holders for articles [A61B 19/0256](#); racks for syringes or for hypodermic or infusion needles [A61M 5/008](#))}
- U A61B 17/06066
  - • • {Needles, e.g. needle tip configurations (making needles [B21G 1/00](#))}
- A61B 2017/0609
  - • • • {having sharp tips at both ends, e.g. shuttle needle alternately retained and released by first and second facing jaws of a suturing instrument (MIS suturing instruments [A61B 17/0469](#); jaws of MIS forceps [A61B 2017/2926](#))}
- A61B 2017/061
  - • • • {hollow or tubular (suture extending inside a hollow needle [A61B 2017/06052](#); hollow sutures [A61B 2017/06185](#))}
- A61B 17/06114
  - • • {Packages or dispensers for needles or sutures (packages for sharps [A61B 19/0262](#); for dental floss [A61C 15/043](#); packages for needles in general [B65D 85/24](#))}
- A61B 17/06166
  - • • {Sutures (suture materials [A61L 17/00](#); manufacture of artificial threads [D01D](#); treatment of threads [D06M](#))}
- A61B 2017/0619
  - • • • {thermoplastic, e.g. for bonding, welding, fusing or cutting the suture by melting it (suture cutters [A61B 17/0467](#); ultrasonic cutters [A61B 17/320068](#); electrically heated instruments [A61B 18/08](#))}
- A61B 17/068
  - {Surgical staplers, e.g. containing multiple staples or clamps} (staplers containing only one staple [A61B 17/10](#); magazines or containers for staples [A61B 17/105](#); for performing anastomosis [A61B 17/115](#); {-staplers in general [B25C 5/00](#)})
- U A61B 17/08
  - Wound clamps {or clips, i.e. not or only partly penetrating the tissue (suture bridges [A61B 17/0466](#)); Devices for bringing together the edges of a wound}
- A61B 2017/081
  - • {Tissue approximator ([A61B 2017/1103](#); [A61B 17/8866](#) take precedence)}
- A61B 17/10
  - for applying or removing wound clamps, {e.g. containing only one clamp or staple ([A61B 17/076](#) takes precedence; containing multiple wound clamps [A61B 17/068](#))}; Wound clamp magazines (containers, packaging elements or packages specially adapted for particular articles or with special means for dispensing contents [B65D 83/00](#); [B65D 85/00](#))}
- A61B 17/12
  - for ligaturing or otherwise compressing tubular parts of the body, e.g. blood vessels, umbilical cord (specially adapted for vas deferens or fallopian tubes [A61F 6/20](#); materials for ligaturing blood vessels [A61L 17/00](#))}
- A61B 17/12022
  - • {Occluding by internal devices, e.g. balloons or releasable wires (plugging an opening in the wall of an organ [A61B 17/0057](#); occluders for the cervical canal [A61F 6/146](#); vas deferens occluders [A61F 6/20](#))}
- U A61B 17/122
  - • Clamps or clips, {e.g. for the umbilical cord (for the vas deferens [A61F 6/206](#))}
- A61B 17/1222
  - • • {Packages or dispensers therefor (clip magazines incorporated in a clip-applying instrument [A61B 17/128](#); for surgical articles [A61B 19/026](#))}
- U A61B 17/132
  - • Tourniquets {(sphygmometers [A61B 5/02](#))}
- A61B 17/135
  - • • inflatable (for measuring blood pressure [A61B 5/022](#); inflatable pressure pads [A61F 5/34](#))}

- A61B 17/14
- Surgical saws (~~{A61B 17/1637 takes precedence }~~ ; tooth saws [A61C 3/12](#); ~~{saws for jaw bone A61C 8/0089}~~ ; cast-cutting saws [A61F 15/02](#)); ~~{Accessories therefor}~~
- WARNING  
New subgroups of [A61B 17/14](#) are not complete, pending a reorganisation. See provisionally also group [A61B 17/14](#)
- A61B 17/16
- {Bone cutting, breaking or removal means other than saws, e.g.} Osteoclasts; Drills or chisels for bones; Trepanns ~~{(arthroscopic bone cutters A61B 17/320016-; dental implant drills potentially for other surgical use A61C 8/0089-; bone grinders A61F 2/4644-, A22C 17/06-; A61B 17/1662 takes precedence over all other subgroups except A61B 17/17)}~~
- WARNING  
New groups ~~A61B 17/1679-, A61B 17/1682-, A61B 17/1684-, A61B 17/1686-, A61B 17/1688-, A61B 17/1691 and A61B 17/1693~~ are not complete, pending a reorganisation. See provisionally also group [A61B 17/16](#) and subgroups
- U A61B 17/1613
- • {Component parts (not used, see subgroups)}
- A61B 17/1622
- • • {Drill handpieces (~~A61B 17/1626-, A61B 17/1628~~ take precedence)}
- A61B 17/1631
- • • {Special drive shafts, e.g. flexible shafts (~~A61B 17/1642-, A61B 17/164~~ take precedence)}
- A61B 17/1637
- • {Hollow drills or saws producing a curved cut, e.g. cylindrical (~~A61B 10/025-, A61B 17/1695~~ take precedence)}
- A61B 17/1662
- • {for particular parts of the body}
- WARNING  
Subgroups ~~A61B 17/1679-, A61B 17/1682-, A61B 17/1684-, A61B 17/1686-, A61B 17/1688-, A61B 17/1691 and A61B 17/1693~~ are not complete pending a reorganisation. See also [A61B 17/16](#) and subgroups thereof especially [A61B 17/1662](#)
- A61B 17/20
- for vaccinating or cleaning the skin previous to the vaccination (diagnosis by vaccination ~~{~~ other than by injuring the skin [A61B 10/0035](#)); apparatus for injections [A61M](#))
- NOTE  
Cleaning the skin previous to the vaccination is classified in [A61B 19/36](#)
- U A61B 17/22
- Implements for squeezing-off ulcers or the like on {the inside of} inner organs of the body; Implements for scraping-out cavities of body organs, e.g. bones; Calculus removers; Calculus smashing apparatus; {Apparatus for removing obstructions in blood vessels, not otherwise provided for (dilators [A61M 29/00](#))}
- A61B 2017/22051
- • {with an inflatable part, e.g. balloon, for positioning, blocking, or immobilisation (~~A61B 2017/22048-, A61B 2017/3486~~ take precedence)}
- U A61B 17/225
- • for extracorporeal shock wave lithotripsy [ESWL], e.g. by using ultrasonic waves
- A61B 17/2255
- • • {Means for positioning patient, shock wave apparatus or locating means, e.g. mechanical aspects, patient beds, support arms, aiming means (positioning of patients for radiation diagnosis ~~A61B 6/04-~~; positioning of locating means inside shock wave apparatus [A61B 17/2256](#))}
- A61B 17/28
- Surgical forceps (~~{for holding suture needles or materials A61B 17/0483-; for removing or smashing calculi A61B 17/221-; surgical scissors A61B 17/3201}~~ ; obstetrical forceps [A61B 17/44-](#); for inserting intraocular lenses [A61F 2/1662-](#); hand-held gripping tools in general [B25B 7/00](#) )

- A61B 17/30
  - Surgical pincettes {without pivotal connections} {{for holding suture needles or materials [A61B 17/0483](#)}; wound clamps [A61B 17/08](#); {-hand-held gripping tools without pivotal connections in general [B25B 9/02](#)}}
- A61B 17/32
  - Surgical cutting instruments {{([A61B 18/042](#) takes precedence; suture cutters [A61B 17/0467](#); instruments for ligaturing or cutting [A61B 17/128](#); instruments for rupturing the amniotic membrane [A61B 17/4208](#); specially adapted knives for eye surgery [A61F 9/0133](#))}}
- A61B 17/320016
  - • {Endoscopic cutting instruments e.g. arthroscopes, resectoscopes ([A61B 10/0233](#), [A61B 17/29](#), [A61B 17/3207](#) take precedence)}
- A61B 17/320068
  - • {using mechanical vibrations, e.g. ultrasonic ([A61B 17/22012](#), [A61C 3/03](#) and [A61F 9/00745](#) take precedence)}
- U A61B 17/3205
  - • Excision instruments
- A61B 17/32053
  - • • {Punch like cutting instruments, e.g. using a cylindrical or oval knife ([A61B 17/326](#) takes precedence; trepans [A61B 17/1695](#); for use on the cornea [A61F 9/007](#))}
- A61B 17/32056
  - • • {Surgical snare instruments (for removing or smashing calculi [A61B 2017/2212](#); tonsillotomes [A61B 17/26](#))}
- U A61B 17/3207
  - • • Atherectomy devices {working by cutting or abrading; Similar devices specially adapted for non-vascular obstructions ([A61B 17/32037](#) takes precedence; endoscopic cutting instruments [A61B 17/320016](#))}
- A61B 17/320758
  - • • • {with a rotating cutting instrument, e.g. motor driven ([A61B 17/320725](#), [A61B 17/32075](#) and [A61B 17/320783](#) take precedence; for removing intra-ocular material [A61F 9/00763](#); endoscopic rotatable cutting instruments [A61B 17/32002](#))}
- A61B 17/34
  - Trocars; Puncturing needles {{(pointed biopsy instruments [A61B 10/0233](#); devices for piercing the ear-lobes [A44C 7/001](#); seals or hemostasis valves [A61M 39/06](#))}}
- A61B 17/3403
  - • {Needle locating or guiding means (guides for suture needles [A61B 17/0482](#); guiding or tracking by nuclear magnetic resonance [G01R 33/285](#))}
- A61B 17/3417
  - • {Details of tips or shafts, e.g. grooves, expandable, bendable; Multiple coaxial sliding cannulas, e.g. for dilating (syringe needles [A61M 5/32](#); dilators [A61M 29/00](#))}
- U A61B 17/3421
  - • • {Cannulas}
- A61B 17/3439
  - • • • {with means for changing the inner diameter of the cannula, e.g. expandable ([A61B 17/3423](#), [A61B 17/3431](#) take precedence; catheters [A61M 25/0662](#))}
- A61B 17/3478
  - • {Endoscopic needles, e.g. for infusion (biopsy needles [A61B 10/0233](#); catheters with injection needles [A61M 25/0067](#))}
- A61B 17/3498
  - • {Valves therefor, e.g. flapper valves, slide valves (haemostasis valves [A61M 39/06](#); check valves [A61M 39/24](#))}
- A61B 17/42
  - Gynaecological or obstetrical instruments or methods {{(ligaturing clamps or clips for the umbilical cord [A61B 17/122](#); curettage [A61B 17/3207](#)); dilators [A61M 29/00](#))}}
- A61B 17/425
  - • for reproduction or fertilisation (specially adapted for use with animals [A61D 19/00](#)){(not used, see subgroups)}
- A61B 17/50
  - Instruments, other than pincettes or toothpicks, for removing foreign bodies from the human body (locating otherwise [A61B 5/06](#); locating by radiation [A61B 6/00](#); {-removing calculi [A61B 17/22](#); from the eyes [A61F 9/00709](#)})}

- U A61B 17/56
- Surgical instruments or methods for treatment of bones or joints; Devices specially adapted therefor {{(orthopaedic methods or devices for non-surgical treatment of bones or joints [A61F 5/00](#))}}
- NOTES
1. Documents concerning exclusively surgical methods are classified only in this group.
  2. Surgical instruments or devices are classified only in the relevant subgroups
- A61B 17/58
- • for osteosynthesis, e.g. bone plates, screws, {setting implements} or the like ([A61B 17/14](#)-, [A61B 17/16](#) take precedence; {-splints [A61B 5/01](#)-, traction bandages [A61F 13/10](#))}
- U A61B 17/60
- • • for external osteosynthesis, e.g. distractors, contractors
- U A61B 17/64
- • • • Devices extending alongside the bones to be positioned {{(not used, see subgroups and [A61B 17/60](#))}}
- A61B 17/6416
- • • • • {with non-continuous, e.g. hinged, pin-clamp connecting element ([A61B 17/6425](#)-, [A61B 17/6441](#) take precedence)}
- A61B 17/645
- • • • • {comprising a framework ([A61B 17/6425](#)-, [A61B 17/6441](#) take precedence)}
- A61B 17/68
- • • Internal fixation devices, {including fasteners and spinal fixators, even if a part thereof projects from the skin (bone staples [A61B 17/0642](#)-, dental regeneration membranes [A61C 8/0006](#))}
- WARNING
- Subgroups [A61B 17/686](#) and [A61B 17/688](#) are not complete pending a reorganisation. See also [A61B 17/68](#)-, [A61B 17/683](#) and [A61B 17/86](#)
- U A61B 17/70
- • • • Spinal positioners or stabilisers; {Bone stabilisers comprising fluid filler in an implant}
- U A61B 17/7001
- • • • • {Screws or hooks combined with longitudinal elements which do not contact vertebrae ([A61B 17/7058](#) takes precedence)}
- U A61B 17/7002
- • • • • • {Longitudinal elements, e.g. rods}
- A61B 17/701
- • • • • • • {Longitudinal elements with a non-circular, e.g. rectangular, cross-section ([A61B 17/7005](#)-, [A61B 17/7007](#) take precedence)}
- A61B 17/7011
- • • • • • • {Longitudinal element being non-straight, e.g. curved, angled or branched (adjustable length longitudinal elements [A61B 17/7014](#)-, [A61B 17/7019](#) takes precedence, e.g. coil springs)}
- A61B 17/7074
- • • • • {Tools specially adapted for spinal fixation operations other than for bone removal or filler handling ([A61B 17/7062](#)-, [A61B 17/808](#)-, [A61B 17/8858](#) take precedence; for spinal image producing devices [A61B 19/52](#)-, markers [A61B 19/54](#))}
- A61B 17/7097
- • • • • {Stabilisers comprising fluid filler in an implant, e.g. balloon; devices for inserting or filling such implants (disc prostheses made of inflatable chambers or pockets filled with fluid [A61F 2/441](#)-, replacing the nucleus pulposus [A61F 2002/444](#))}
- A61B 17/74
- • • • Devices for the head {or neck or trochanter} of the femur {{(trochanteric devices connected to the proximal part of an endoprosthetic femoral shaft [A61F 2/30739](#)-, endoprosthetic internal fixation devices for the head or neck of the femur [A61F 2/3601](#))}}
- A61B 17/82
- • • • for bone cerclage {{(apparatus for manipulating wires or straps [A61B 17/8861](#)-, wires, bands or straps other than cerclage [A61B 17/842](#))}}
- U A61B 17/84
- • • • Fasteners therefor {or fasteners being internal fixation devices}
- A61B 17/842
- • • • • {Flexible wires, bands or straps ([A61B 17/72](#)-, [A61B 17/82](#)-, [A61B 17/86](#) take precedence)}

- A61B 17/846 . . . . {Nails or pins, i.e. anchors without movable parts, holding by friction only, with or without structured surface ([A61B 17/72](#)-, [A61B 17/86](#) take precedence)}
- A61B 17/86 . . . . {Threaded wires}, pins or screws; {Nuts therefor ([A61B 17/72](#)-, [A61B 17/74](#)-, [A61F 2/4455](#) take precedence)}
- WARNING**  
Subgroups [A61B 17/861](#)-, [A61B 17/865](#), [A61B 17/8665](#), [A61B 17/869](#) and [A61B 17/8695](#) are not complete pending a reorganisation. See also [A61B 17/68](#)-, [A61B 17/86](#)-, [A61B 17/8605](#) and [A61B 19/026](#)
- A61B 17/8695 . . . . . {Washers (surrounding screw head in plate hole [A61B 17/8047](#)-, between bone plate and bone [A61B 17/8028](#))}
- U A61B 17/88 . . . {Osteosynthesis instruments;} Methods or means for implanting or extracting internal {or external} fixation devices
- U A61B 17/8802 . . . . {Equipment for handling bone cement or other fluid fillers (plugs or restrictors for bone cement [A61F 2/30723](#))}
- A61B 17/8805 . . . . . {for introducing fluid filler into bone or extracting it ([A61B 17/7097](#)-, [A61B 17/8833](#) take precedence; for introducing bone graft [A61F 2/4601](#))}
- A61B 17/8825 . . . . . {characterised by syringe details ([A61B 17/8822](#)-, [A61B 17/8827](#) take precedence)}
- A61B 17/8847 . . . . . {for removing cement from a bone cavity (using surgical bone chisels, drills, mills, rasps, reamers or scrapers [A61B 17/16](#)-, using laser [A61B 18/20](#)-, using ultrasonic surgical instruments [A61N 7/00](#))}
- A61B 17/885 . . . . {Tools for expanding or compacting bones or discs or cavities therein ([A61B 17/8805](#)-, [A61B 17/7097](#) take precedence)}
- A61B 17/8872 . . . . {Instruments for putting said fixation devices against or away from the bone ([A61B 17/7074](#)-, [A61B 17/808](#) take precedence)}
- U A61B 17/8875 . . . . {Screwdrivers, spanners or wrenches}
- A61B 17/8894 . . . . . {holding the implant into or through which the screw is to be inserted ([A61B 17/7082](#)-, [A61B 17/7091](#) take precedence)}
- A61B 18/00** **Surgical instruments, devices or methods for transferring non-mechanical forms of energy to or from the body (eye surgery [A61F 9/007](#)-, ear surgery [A61F 11/00](#))**
- A61B 18/04 . . . by heating (by applying electromagnetic radiation [A61B 18/18](#)-, hyperthermia using electric or magnetic fields, radiation or ultrasound [A61N](#))
- U A61B 18/18 . . . by applying electromagnetic radiation, e.g. microwaves (radiation therapy [A61N 5/00](#))
- U A61B 18/20 . . . using laser
- U A61B 18/22 . . . the beam being directed along or through a flexible conduit, e.g. an optical fibre; {Couplings}, hand-pieces therefor
- A61B 2018/2238 . . . . {with means for selectively laterally deflecting the tip of the fibre (with balloon [A61B 2017/22051](#))}
- U A61B 2018/2255 . . . . {Optical elements at the distal end of probe tips}
- A61B 2018/2272 . . . . . {with a reflective or refractive surface for deflecting the beam ([A61B 2018/2261](#)-, [A61B 2018/2266](#) take precedence)}
- A61B 18/24 . . . . with a catheter ([A61B 18/26](#)-, [A61B 18/28](#) take precedence)

<b>A61B 19/00</b>	<p><b>Instruments, implements or accessories for surgery or diagnosis not covered by any of the groups <a href="#">A61B 1/00</a> to <a href="#">A61B 17/00</a>, e.g. for stereotaxis, sterile operation, luxation treatment, wound edge protectors ({surgeon`s or patient`s gowns or dresses, surgical masks <a href="#">A41D 13/00</a>}; devices for carrying-off, for treatment of, or for carrying-over, body liquids <a href="#">A61M 1/00</a>)</b></p> <p><b>WARNING</b></p> <p>Groups <a href="#">A61B 19/20</a> - <a href="#">A61B 19/56</a> do not correspond to former or current IPC groups.</p> <p>Concordance CPC : IPC for these groups is as follows: - <a href="#">A61B 19/20</a> - <a href="#">A61B 19/56</a> : <a href="#">A61B 19/00</a></p>
A61B 19/02	<ul style="list-style-type: none"> <li>• Protective casings or covers for appliances or instruments, e.g. boxes or sterile covers; Instrument tables or cupboards; Doctors` bags {(cleaning devices for surgical instruments <a href="#">A61B 19/34</a>; instrument-protective drapes <a href="#">A61B 19/081</a>; for sterilising articles <a href="#">A61L 2/00</a>; for cleaning for sterilising hypodermic or infusion needles or syringes <a href="#">A61M 5/001</a>; for preservation of living parts of the human or animal body <a href="#">A01N 1/02</a>)}</li> </ul>
U A61B 2019/0202	<ul style="list-style-type: none"> <li>• • {with a lid or cover}</li> </ul>
U A61B 2019/0221	<ul style="list-style-type: none"> <li>• • • {Types of closures or fasteners (using adhesives <a href="#">A61B 2019/0201</a>)}</li> </ul>
A61B 2019/0229	<ul style="list-style-type: none"> <li>• • • • {Toggle latches or clamps (locking clamps <a href="#">A61B 2019/0225</a>; swingable wire bails <a href="#">A61B 2019/0231</a>)}</li> </ul>
A61B 19/0248	<ul style="list-style-type: none"> <li>• • {Furniture specially adapted for surgery or diagnosis, e.g. cabinets, carts, cupboards or tables (supports for surgeons <a href="#">A61B 19/28</a>; medicine cabinets <a href="#">A47B 67/00</a>; accommodation for nursing <a href="#">A61G 12/00</a>)}</li> </ul>
A61B 19/0256	<ul style="list-style-type: none"> <li>• • {Holders for articles, e.g. magnetic holders, racks, stands (holders for suture needles or materials <a href="#">A61B 17/06061</a>; supports as part of surgical instruments <a href="#">A61B 19/26</a>; drapes with means to hold surgical instruments <a href="#">A61B 19/10</a>; hangers for particular articles <a href="#">A47F 7/00</a>; for tooth drills <a href="#">A61C 3/04</a>; for receptacles and tubing attached to beds <a href="#">A61G 7/0503</a>; for pharmaceutical containers <a href="#">A61J 1/16</a>; for irrigation devices <a href="#">A61M 3/0266</a>; racks for syringes or for hypodermic or infusion needles <a href="#">A61M 5/008</a>; for infusion devices <a href="#">A61M 5/1414</a>; for catheters <a href="#">A61M 25/02</a>; holding devices for laboratory apparatus <a href="#">B01L 9/00</a>; racks for work tools <a href="#">B25H 3/04</a>)}</li> </ul>
A61B 19/026	<ul style="list-style-type: none"> <li>• • {Casings for packaging, protecting or dispensing articles (for endoscopes <a href="#">A61B 1/00142</a>; for test samples <a href="#">A61B 10/0096</a>; for sutures <a href="#">A61B 17/06114</a>; for ligaturing clips <a href="#">A61B 17/1222</a>; for gloves or finger-stalls <a href="#">A61B 19/045</a>; for dental floss <a href="#">A61C 15/043</a>; for dental instruments <a href="#">A61C 19/02</a>; for prostheses <a href="#">A61F 2/0095</a>; for contraceptive devices <a href="#">A61F 6/005</a>; for bandages or the like <a href="#">A61F 15/001</a>; for pharmaceutical products <a href="#">A61J 1/00</a>; for catheters <a href="#">A61M 25/002</a>; in general <a href="#">B65D</a>, e.g. with dispensing means <a href="#">B65D 83/00</a>; for ampoules <a href="#">B65D 85/42</a>; for clinical thermometers <a href="#">G01K 1/083</a>; for optical fibres <a href="#">G02B 6/444</a>; for X-ray films <a href="#">G03C 3/003</a>)}</li> </ul>
A61B 19/0262	<ul style="list-style-type: none"> <li>• • • {for sharps (for suture needles <a href="#">A61B 17/06114</a>; for scalpel-blades <a href="#">A61B 17/3215</a>; for wound clamps <a href="#">A61B 17/105</a>; for used sharps <a href="#">A61B 19/0288</a>; for syringes or for hypodermic or infusion needles <a href="#">A61M 5/002</a>, <a href="#">A61M 5/1626</a>, <a href="#">A61M 5/3202</a>)}</li> </ul>
A61B 19/0264	<ul style="list-style-type: none"> <li>• • • {Carrying bags, cases, trusses (bags for midwives <a href="#">A61B 17/48</a>; bags in general <a href="#">A45C</a>; first-aid kits <a href="#">A61F 17/00</a>)}</li> </ul>
A61B 2019/0286	<ul style="list-style-type: none"> <li>• • • {transparent (for surgical instruments or accessories <a href="#">A61B 2017/00902</a>; for prostheses <a href="#">A61F 2250/0091</a>)}</li> </ul>

- A61B 19/0287
- {Casings for removing or collecting used articles (for sutures [A61B 17/06161](#);-; accessories for operating tables, e.g. for collecting body wastes [A61G 13/10](#);-; combustible sputum cups [A61J 19/06](#);-; sterilising refuse [A61L 11/00](#);-; for destroying hypodermic or infusion needles or syringes [A61M 5/3278](#);-; disposal of medical waste by destroying it or transforming it into something useful or harmless [B09B 3/0075](#);-; for domestic refuse or the like [B65F](#))}
- A61B 19/0288
- • {for sharps (for suture needles [A61B 17/06161](#);-; for scalpel-blades [A61B 17/3217](#);-; for syringes or for hypodermic or infusion needles [A61M 5/3205](#))}
- U A61B 19/20
- {for stereotaxic surgery (using radio-opaque markers [A61B 19/54](#))}
- A61B 19/203
- {Fixators for body parts, e.g. head fixators, skull clamps or bite blocks (tables with compression means for mammography [A61B 6/0414](#);-; tables with patient immobilising means for radiation diagnosis [A61B 6/0421](#)); Constructional details thereof, e.g. fixating pins (bone screws or pins [A61B 17/86](#))}
- A61B 19/24
- {Devices for expanding tissue, e.g. skin tissue (implements for holding wounds open, surgical tractors [A61B 17/02](#);-; implantable mammary prosthesis [A61F 2/12](#);-; dilators [A61M 29/00](#))}
- A61B 19/34
- {Cleaning devices specially adapted for surgical instruments (disinfecting [A61L 2/00](#);-; cleaning in general [B08B](#))}
- U A61B 2019/48
- {Accessories or related features not otherwise provided for}
- A61B 2019/4805
- • {Prevention of accidental cutting or pricking (protective suturing devices [A61B 17/0493](#);-; blunt suture needles [A61B 2017/06085](#);-; blunt dissectors [A61B 2017/320044](#))}
- A61B 2019/4878
- {Implantable devices for insertion in between organs or other soft tissues (plugging wall openings [A61B 17/0057](#);-; retractors [A61B 17/02](#);-; tissue expanders [A61B 19/24](#))}
- U A61B 19/52
- {Image-producing devices or illumination devices not otherwise provided for, e.g. operation microscopes; Operation lamp handles}
- A61B 19/5212
- • {Image-producing devices, e.g. surgical cameras ([A61B 19/5223](#);-; [A61B 19/5225](#) take precedence)}
- A61B 19/54
- {Markers, e.g. radio-opaque or breast lesions markers (mechanical markers for eye-keratomy [A61F 9/0136](#);-; markers in surgical tampons or sponges [A61F 13/44](#);-; markers on catheters [A61M 25/0108](#))}
- U A61B 2562/00**
- Details of sensors; Constructional details of sensor housings or probes; Accessories for sensors**
- U A61B 2562/02
- Details of sensors specially adapted for in-vivo measurements
- A61B 2562/0209
- • Special features of electrodes classified in [A61B 5/04001](#);-; [A61B 5/0408](#);-; [A61B 5/042](#);-; [A61B 5/0478](#);-; [A61B 5/0492](#) or [A61B 5/053](#) (electrodes for stimulation [A61N 1/04](#);-; electrodes for electrosurgery [A61B 18/14](#))
- A61B 2562/0295
- • Strip shaped analyte sensors for apparatus classified in [A61B 5/145](#) or [A61B 5/157](#) (disposable multilayered or laminated electrodes [G01N 27/307](#);-; details of handling chemical test elements [G01N 33/4875](#))
- A61B 2576/00**
- Medical imaging apparatus involving image processing or analysis ([A61B 1/00009](#);-; [A61B 6/52](#) and [A61B 8/52](#) take precedence; image processing per se [G06T](#); details of algorithms for analysing medical images [G06T 7/0012](#))**

## Project: N/A (A61C)

## A61C

**DENTISTRY; APPARATUS OR METHODS FOR ORAL OR DENTAL HYGIENE (non-driven toothbrushes [A46B](#); {tongue scrapers [A61B 17/24](#)}; preparations for dentistry [A61K 6/00](#); preparations for cleaning the teeth or mouth [A61K 8/00](#), [A61Q 11/00](#))**

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[A61C 5/09](#) covered by [A61C 5/08](#)  
[A61C 5/11](#) covered by [A61C 5/08](#)  
[A61C 7/24](#) covered by [A61C 7/20](#)  
[A61C 7/26](#) covered by [A61C 7/20](#)  
[A61C 7/32](#) covered by [A61C 7/28](#)  
[A61C 8/02](#) covered by [A61C 8/0004](#)  
[A61C 11/04](#) covered by [A61C 11/00](#)  
[A61C 13/003](#) covered by [A61C 13/26](#)  
[A61C 13/007](#) covered by [A61C 13/01](#)  
[A61C 13/03](#) covered by [A61C 13/01](#)  
[A61C 13/07](#) covered by [A61C 13/0025](#)  
[A61C 13/093](#) covered by [A61C 13/1006](#)  
[A61C 13/103](#) covered by [A61C 13/1009](#)  
[A61C 13/105](#) covered by [A61C 13/1009](#)  
[A61C 13/107](#) covered by [A61C 13/0001](#)  
[A61C 13/113](#) covered by [A61C 13/0001](#)  
[A61C 13/15](#) covered by [A61C 19/003](#)  
[A61C 13/23](#) covered by [A61C 13/0025](#)  
[A61C 13/263](#) covered by [A61C 13/225](#)  
[A61C 13/271](#) covered by [A61C 13/26](#)  
[A61C 13/32](#) covered by [A61C 13/225](#)  
[A61C 13/36](#) covered by [A61C 13/1016](#)  
[A61C 13/38](#) covered by [A61C 13/12](#)  
[A61C 17/024](#) covered by [A61C 17/02](#)  
[A61C 17/032](#) covered by [A61C 17/02](#)  
[A61C 17/06](#) covered by [A61C 17/00](#)  
[A61C 17/08](#) covered by [A61C 17/00](#)  
[A61C 17/10](#) covered by [A61C 17/00](#)  
[A61C 17/12](#) covered by [A61C 17/00](#)  
[A61C 17/18](#) covered by [A61C 17/16](#)

## A61C 1/00

**Dental machines for boring or cutting; {-General features of dental machines or apparatus, e.g. hand-piece design}**

## U A61C 13/00

**Dental prostheses; Making same (tooth crowns for capping teeth [A61C 5/08](#); dental implants [A61C 8/00](#))**

## U A61C 13/225

• Fastening prostheses in the mouth {([A61C 8/0048](#) takes precedence)}

## A61C 13/273

• • removably secured to residual teeth by using bolts {-or locks}

## A61C 13/277

• • Telescopic anchoring, {-i.e. using spring biased detents}

**A61C 15/00 -  
A61C 17/00** **Tooth-cleaning or mouth-rinsing devices (non-driven toothbrushes [A46B](#); ~~tongue scrapers [A61B 17/24](#);~~ preparations for cleaning the teeth or mouth [A61K 8/00](#), [A61Q 11/00](#))**

**U A61C 17/00** **Devices for cleaning, polishing, rinsing or drying teeth, teeth cavities or prostheses (instruments acting like a sandblast machine [A61C 3/025](#); tooth polishing discs or holders therefor [A61C 3/06](#); devices for cleaning between the teeth [A61C 15/00](#)); Saliva removers; Dental appliances for receiving spittle**

NOTE

Cleaning of prostheses using ultrasonic techniques similar to those used for natural teeth is classified in this group. Other ultrasonic cleaning of prostheses is classified in group [B08B 3/12](#)

A61C 17/02

- Rinsing or air-blowing devices, e.g. using fluid jets ~~{-or comprising liquid medication}~~{air and water supply systems in dental machines in general [A61C 1/0061](#); with particulate material supply [A61C 3/025](#);} combined with power-driven cleaning or polishing devices [A61C 17/16](#))

**Project: N/A (A61F)**

**U A61F 2/00** **Filters implantable into blood vessels; Prostheses, i.e. artificial substitutes or replacements for parts of the body; Appliances for connecting them with the body; Devices providing patency to, or preventing collapsing of, tubular structures of the body, e.g. stents (as cosmetic articles, see the relevant subclasses, e.g. wigs, hair pieces, [A41G 3/00](#), [A41G 5/00](#), artificial nails [A45D 31/00](#); dental prostheses [A61C 13/00](#); materials for prostheses [A61L 27/00](#); artificial hearts [A61M 1/10](#); artificial kidneys [A61M 1/14](#))**

WARNING

Groups [A61F 2/07](#), [A61F 2/844](#) - [A61F 2/97](#) correspond to IPC2013.01

**U A61F 2/02** • Prostheses implantable into the body ~~{(closure means for urethra or rectum or for artificial body openings therefor [A61F 2/0004](#))}~~

A61F 2/14 • • Eye parts, e.g. lenses, corneal implants; ~~{-Implanting instruments specially adapted therefor}~~; Artificial eyes

**U A61F 2/82** • Devices providing patency to, or preventing collapsing of, tubular structures of the body, e.g. stents (stent-grafts for tubular structures of the body other than blood vessels [A61F 2/04](#); stent-grafts for blood vessels [A61F 2/07](#); instruments specially adapted for placement or removal of stents or stent-grafts [A61F 2/95](#); for closing wounds, or holding wounds closed [A61B 17/04](#) to [A61B 17/115](#); dilators [A61M 29/00](#))

A61F 2/92 • • Stents in the form of a rolled-up sheet expanding after insertion into the vessel, ~~{-e.g. with a spiral shape in cross-section}~~

**U A61F 5/00** **Orthopaedic methods or devices for non-surgical treatment of bones or joints (surgical instruments or methods for treatment of bones or joints, devices specially adapted therefor [A61B 17/56](#)); Nursing devices; ~~{Anti-rape devices}~~{bandages, dressings or absorbent pads [A61F 13/00](#)}**

**U A61F 5/0003** • ~~{Apparatus for the treatment of obesity; Anti-eating devices (surgical instruments or methods for treatment of obesity, devices specially adapted therefor [A61B 17/00](#); hollow or tubular parts of organs [A61F 2/04](#))}~~

**U A61F 5/0013** • • ~~{Implantable devices or invasive measures}~~

A61F 5/0083 • • • ~~{Reducing the size of the stomach, e.g. gastroplasty}~~ (surgical interventions [A61B 17/00](#))

- U A61F 7/00** Heating or cooling appliances for medical or therapeutic treatment of the human body (heating or cooling means in connection with bedsteads or mattresses [A47C 21/00](#); {massage, therapeutic baths [A61H](#)}; hyperthermia using electric or magnetic fields or ultrasound [A61N](#); electric heating elements [H05B](#))
- U A61F 7/02 · Compresses or poultices for effecting heating or cooling
- A61F 7/03 · · Thermophore, i.e. self-heating, {-e.g. using a chemical reaction}
- A61F 13/00** Bandages or dressings (suspensory bandages [A61F 5/40](#); {-contact-avoiding wound protectors [A61F 15/008](#); bandages or dressings with incorporated medicaments [A61L 15/44](#), [A61M 35/006](#); radioactive dressings [A61N 5/1029](#)}); Absorbent pads (chemical aspects of, or use of materials for, bandages, dressings or absorbent pads [A61L 15/00](#); {-absorbent pads for tracheostomy [A61M 16/047](#)})
- A61F 13/02 · Adhesive plasters or dressings ([A61F 13/06](#) to [A61F 13/15](#) take precedence; {-for diagnosis, e.g. allergy test patches, [A61B 10/0035](#)}; surgical adhesives or cements [A61L 24/00](#); {-for transdermal drug administration [A61M 35/00](#)})
- U A61F 13/15 · Absorbent pads, e.g. sanitary towels, swabs or tampons for external or internal application to the body (non-absorbent catamenial receptacles [A61F](#)); Supporting or fastening means therefor; Tampon applicators
- U A61F 13/20 · · Tampons, e.g. catamenial tampons; Accessories therefor
- WARNING  
For group [A61F 13/20](#) and subgroups see warning after [A61F 13/00](#)
- A61F 13/34 · · · Means for withdrawing tampons {-, e.g. withdrawal strings}
- U A61F 13/45 · · characterised by the shape (cup-shaped type tampons [A61F 13/2045](#))
- A61F 2013/4512 · · · {folded in special shape during use ([A61F 13/534](#)-, [A61F 13/551](#), [A61F 13/56](#), [A61F 13/15747](#) take precedence)}
- U A61F 13/49 · · · Absorbent articles specially adapted to be worn around the waist, e.g. diapers
- A61F 13/493 · · · · adjustable {-by adding or removing material e.g. umbilical cord arrangements (adjustable by the fastening [A61F 13/5638](#), [A61F 13/5655](#))}
- A61F 13/505 · · with separable parts, e.g. combination of disposable and reusable parts, ([A61F 13/20](#), {[A61F 13/49003](#)} take precedence; supporting or fastening means [A61F 13/56](#); {-belts or the like [A61F 13/64](#)})
- U A61F 13/53 · · characterised by the absorbing medium ([A61F 13/20](#) takes precedence)
- U A61F 13/534 · · · having an inhomogeneous composition through the thickness of the pad ([A61F 13/538](#), [A61F 13/539](#) take precedence; homogeneous cores with tissue wrapping [A61F 13/53](#))
- U A61F 13/537 · · · · characterised by a layer facilitating or inhibiting flow in one direction or plane, e.g. a wicking layer {([A61F 13/538](#) takes precedence)}
- U A61F 13/53743 · · · · · {characterised by the position of the layer relative to the other layers}
- A61F 13/53747 · · · · · · {the layer is facing the topsheet} (layer is part of the topsheet [A61F 13/511](#))}

**Project: N/A (A61G)****A61G**

**TRANSPORT OR ACCOMODATION FOR PATIENTS; OPERATING TABLES OR CHAIRS; CHAIRS FOR DENTISTRY; FUNERAL DEVICES (embalming corpses [A01N 1/00](#); {chairs or beds in general [A47C](#); walking aids [A61H 3/00](#)})**

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">A61G 3/04</a>	covered by	<a href="#">A61G 3/02</a>
<a href="#">A61G 7/043</a>	covered by	<a href="#">A61G 7/05</a>
<a href="#">A61G 7/12</a>	covered by	<a href="#">A61G 7/10</a>
<a href="#">A61G 7/14</a>	covered by	<a href="#">A61G 7/10</a>
<a href="#">A61G 7/16</a>	covered by	<a href="#">A61G 7/10</a>
<a href="#">A61G 15/04</a>	covered by	<a href="#">A61G 15/02</a>
<a href="#">A61G 15/06</a>	covered by	<a href="#">A61G 15/02</a>
<a href="#">A61G 17/013</a>	covered by	<a href="#">A61G 17/00</a>

**U A61G 1/00****Stretchers**

U A61G 1/02  
A61G 1/0287

- with wheels
- • {having brakes, e.g. slowing down and/or holding (Details of brake actuators on castors [B60B 33/0078](#); Brakes on hand carts [B62B 5/04](#); Brakes in general [F16D 49/00](#) - [F16D 65/853](#))}

**U A61G 3/00**

**Ambulance aspects of vehicles; Vehicles with special provisions for transporting patients or disabled persons, or their personal conveyances, e.g. for facilitating access of, or for loading, wheelchairs**

U A61G 3/02  
A61G 3/0218

- Loading or unloading personal conveyances; Facilitating access of patients or disabled persons to, or exit from, vehicles
- • {Loading or unloading stretchers (transfer using ramps, lifts or the like [A61G 3/06](#) - [A61G 3/066](#); accommodating or securing wheelchairs or stretchers [A61G 3/08](#) - [A61G 3/0891](#))}

U A61G 3/06  
A61G 2003/068

- • Transfer using ramps, lifts or the like
- • • {in combination with folding stairs (retractable steps or ladders facilitating access to or on a vehicle [B60R 3/02](#); folding steps for railway vehicles [B61D 23/02](#); collapsible stairs in buildings [E04F 11/06](#))}

U A61G 3/08  
A61G 3/0816

- Accommodating or securing wheelchairs {or stretchers}
- • {Accommodating or securing stretchers (support for stretchers independent from vehicle [A61G 1/06](#); loading stretchers [A61G 3/02](#))}

**A61G 5/00**

**Chairs or personal conveyances specially adapted for patients or disabled persons, e.g. wheelchairs ({chairs with toilet conveniences [A47K 11/04](#); } devices enabling patients or disabled persons to operate an apparatus or device not forming part of the body [A61F 4/00](#); {running gear or propulsion features [B60K](#);} bicycles specially adapted for disabled riders [B62K 3/16](#); {-Invalid chairs having removable seats specially adapted to be transferred with the invalid to a vehicle and support the invalid during use of the vehicle [A61G 3/02](#)})**

**NOTE**

Invalid chairs having removable seats specially adapted to be transferred with the invalid to a vehicle and support the invalid during use of the vehicle are classified in group [A61G 3/00](#)

- A61G 5/04
  - motor-driven ([A61G 5/06](#) takes precedence; motor-operated rests [A61G 5/12](#); for vehicles with handlebars, equipped with three or more wheels [B62K 5/003](#), [B62K 5/023](#))
- U A61G 5/08
  - foldable
- U A61G 2005/0808
  - · {characterised by a particular folding direction}
- U A61G 2005/0816
  - · · {folding left - right, e.g. reducing the overall width of the wheelchair}
- A61G 2005/0825
  - · · · {comprising a scissor-type frame, e.g. having pivoting cross bars for enabling folding (scissor-type frame for folding front-back [A61G 2005/0841](#); scissor-type frame for folding up-down [A61G 2005/0858](#))}
- U A61G 2005/0833
  - · · {folding front - back, e.g. reducing the overall depth of the wheelchair}
- A61G 2005/0841
  - · · · {comprising a scissor-type frame, e.g. having pivoting cross bars for enabling folding (scissor-type frame for folding left-right [A61G 2005/0825](#); scissor-type frame for folding up-down [A61G 2005/0858](#))}
- U A61G 2005/085
  - · · {folding up - down, e.g. reducing the overall height of the wheelchair}
- A61G 2005/0858
  - · · · {comprising a scissor-type frame, e.g. having pivoting cross bars for enabling folding (scissor-type frame for folding left-right [A61G 2005/0825](#); scissor-type frame for folding front-back [A61G 2005/0841](#))}
- U A61G 5/10
  - Parts, details or accessories
- A61G 5/1005
  - · {Wheelchairs having brakes (braking mechanisms; locking devices against movement for hand carts [B62B 5/04](#); details of brake actuators on castors [B60B 33/0078](#); brakes in general [F16D 49/00](#) - [F16D 65/853](#))}
- A61G 5/104
  - · {Devices for lifting or tilting the whole wheelchair (transfer lifts [A61G 3/06](#); arrangements for adjusting the seat height [A61G 5/1059](#))}
- U A61G 7/00**
  - Beds specially adapted for nursing; Devices for lifting patients or disabled persons (equipment for beds, treatment tables, floor frames or the like for extending or stretching [A61F5/045](#) {takes precedence} ; stretchers with facilities for picking up patients or disabled persons [A61G 1/003](#))**
- U A61G 7/002
  - having adjustable mattress frame
  - NOTE  
Combinations of adjustments mentioned in the following subgroups are classified in group [A61G 7/002](#)
- A61G 7/005
  - · tiltable around transverse horizontal axis, e.g. for Trendelenburg position {(rocking beds for physical therapy [A61H 1/003](#); hanging patient inclined downwardly for drawing him out [A61H 2203/0493](#))}
- A61G 7/012
  - · raising or lowering of the whole mattress frame ([A61G 7/005](#), [A61G 7/008](#) take precedence)
- A61G 7/05
  - Parts, details or accessories of beds (devices for prevention against falling out [A47C 21/08](#), [A47D 7/00](#); {-mattresses [A47C 27/00](#))}
- A61G 7/0507
  - · {Side-rails (side-bolsters [A61G 7/0525](#); non medical devices for prevention against falling-out [A47C 21/08](#))}
- A61G 7/0525
  - · {Side-bolsters (side-rails [A61G 7/0507](#); rests specially adapted for beds [A61G 7/065](#); non medical devices for prevention against falling-out [A47C 21/08](#))}
- A61G 7/0526
  - · {Restraining enclosures (side-rails [A61G 7/0507](#); enclosures for maintaining a germ-free environment [A61G 10/005](#); restraining device for the body or for body parts [A61F 5/37](#))}
- A61G 7/057
  - · Arrangements for preventing bed-sores or for supporting patients with burns, e.g. mattresses specially adapted therefor {(ventilation openings in mattresses [A47C 21/042](#); pneumatic or hydraulic mattresses [A47C 27/08](#))}

- A61G 10/00** Treatment rooms {or enclosures} for medical purposes (baby incubators, couveuses [A61G 11/00](#); devices for gas baths with ozone, hydrogen or the like [A61H 33/14](#); {for isolating individuals from external stimuli [A61M 21/0094](#)}; containers or portable cabins for affording breathing protection in general [A62B 31/00](#))
- A61G 10/02
- with artificial climate; with means to maintain a desired pressure, e.g. for germ-free rooms (dust-free laboratory rooms [B01L 1/04](#); decompression arrangements [B63C 11/32](#); arrangements or adaptations in aircraft [B64D 13/00](#); air-conditioning in general [F24F](#))
- A61G 12/00** Accommodation for nursing, e.g. in hospitals, not covered by groups [A61G 1/00](#) to [A61G 11/00](#), e.g. trolleys for transport of medicaments or food {(service or tea-tables, trolleys or wagons [A47B 31/00](#)); Prescription lists
- A61G 12/001
- {Trolleys for transport of medicaments, food, linen, nursing supplies (carts specially adapted for surgery or diagnosis [A61B 19/0248](#); hand carts [B62B 3/00](#))}
- A61G 12/002
- {Supply appliances, e.g. columns for gas, fluid, electricity supply (vertical ducts or channels for receiving utility lines [E04F 17/08](#); installations of electric cables or lines, wall trunking [H02G 3/0431](#); structural combinations of lighting devices with other articles [F21V 33/0068](#); stands or trestles as supports for apparatus or articles [F16M 11/00](#); buildings for public purposes [E04H 3/08](#))}
- A61G 13/00** Operating tables; Auxiliary appliances therefor (illumination of operating tables [F21L](#), [F21S](#) or [F21V](#){ adjustability of tables in general [A47B 9/00](#); tables for radiation diagnosis [A61B 6/04](#), drainage or irrigation pans, bags, or attachments [A61G 7/02](#), [A61G 7/0503](#))
- U A61G 13/10
- Parts, details or accessories (surgical drape sheets [A61B 19/08](#))
- A61G 13/108
- {Means providing sterile air at a surgical operation table or area (treatment rooms [A61G 10/00](#); instruments or implements for sterile operation [A61B 19/00](#); sterilisation of air [A61L 9/00](#); purification of air in air-conditioning systems [F24F 3/16](#))}
- A61G 13/12
- Rests specially adapted therefor; Arrangements of patient-supporting surfaces {(rests for the surgeon [A61B 19/00](#); restraining devices [A61F 5/37](#))}

**Project: N/A (A61H)**

- A61H 3/00** Appliances for aiding patients or disabled persons to walk about (apparatus for helping babies to walk [A47D 13/04](#); {orthopaedic devices for correcting deformities of, or supporting, limbs [A61F 5/0102](#)}; exercising apparatus for the feet or toes [A63B 23/10](#); {stairways or ramps [E04F 11/00](#))}
- A61H 7/00** Devices for suction-kneading massage; Devices for massaging the skin by rubbing or brushing not otherwise provided for (Electro-medical massage devices applying electric current by contact [A61N 1/18](#){ Brushes in general [A46](#); Bathing sponges, brushes, gloves or similar cleaning or rubbing implements not specially for massage [A47K 7/02](#); Suction devices for nursing [A61M 1/06](#), [A61M 1/08](#); Rollers or balls therefore, [A61H 15/00](#))}
- A61H 19/00** Massage for the genitals; {Devices for improving sexual intercourse (penis erection devices [A61F 5/41](#); vibration or percussion related aspects [A61H 23/00](#))}

WARNING

Groups [A61H 19/30](#) to [A61H 19/50](#) do not correspond to former or current IPC groups. Concordance CPC:IPC for these groups is as follows: [A61H 19/30](#) to [A61H 19/50](#): [A61H 19/00](#)

- A61H 21/00** **Massage devices for cavities of the body** {e.g. nose, ears and anus (for the genitals [A61H 19/00](#)); Vibration or percussion related aspects [A61H 23/00](#)}
- U A61H 23/00** **Percussion or vibration massage, e.g. using supersonic vibration; Suction-vibration massage; Massage with moving diaphragms** {(apparatus for passive exercising [A61H 1/00](#); generating or transmitting mechanical vibrations in general [B06B](#))}
- A61H 23/06
- Hand percussion {-, i.e. Hand driven (Chiropractic devices, [A61H 1/008](#), [A61H 1/006](#))}
- A61H 33/00** **Bathing devices for special therapeutic or hygienic purposes** ([A61H 35/00](#) takes precedence; {sprays acting on a body or body part not immersed in water [A61H 9/00](#); means for washing bed-ridden persons [A61G 7/0005](#);} for sub aquatic intestinal cleaning [A61M 9/00](#); {isolation chambers [A61M 21/0094](#); } electric or magnetic baths, applying ionised fluids [A61N 1/44](#) {-; heater for bath tubs [F24H 1/0081](#)})
- A61H 33/60
- {Components specifically designed for the therapeutic baths of groups [A61H 33/00](#) (plumbing [E03C 1/00](#))}
- U A61H 39/00** **Devices for locating or stimulating specific reflex points of the body for physical therapy, e.g. acupuncture (chiropracists' instruments [A61B 17/54](#); {for radiation therapy [A61N 5/0619](#)})**
- A61H 39/04
- Devices for pressing such points, e.g. Shiatsu {-or Acupressure}(Massage or pressure on general areas [A61H 9/00](#) to [A61H 23/00](#))
- A61H 39/08
- Devices for applying needles to such points, i.e. for acupuncture; {-Acupuncture needles or accessories therefor}

**Project: N/A (A61K)****A61K**

**PREPARATIONS FOR MEDICAL, DENTAL, OR TOILET PURPOSES** (devices or methods specially adapted for bringing pharmaceutical products into particular physical or administering forms [A61J 3/00](#); chemical aspects of, or use of materials for deodorisation of air, for disinfection or sterilisation, or for bandages, dressings, absorbent pads or surgical articles [A61L](#); {-compounds per se [C01](#), [C07](#), [C08](#), [C12N](#)} ; soap compositions [C11D](#); {-micro-organisms per se [C12N](#)})

NOTES

1. This subclass covers the following subject matter, whether set forth as a composition (mixture), process of preparing the composition or process of treating using the composition:

a. Drug or other biological compositions which are capable of:

- preventing, alleviating, treating or curing abnormal or pathological conditions of the living body by such means as destroying a parasitic organism, or limiting the effect of the disease or abnormality by chemically altering the physiology of the host or parasite (biocides [A01N 25/00](#) to [A01N 65/00](#));
- maintaining, increasing, decreasing, limiting, or destroying a physiological body function, e.g. vitamin compositions, sex sterilants, fertility inhibitors, growth promoters, or the like (sex sterilants for invertebrates, e.g. insects, [A01N](#); plant growth regulators [A01N 25/00](#) to [A01N 65/00](#));
- diagnosing a physiological condition or state by an in vivo test, e.g. X-ray contrast or skin patch test compositions (measuring or testing processes involving enzymes or micro-organisms [C12Q](#); in vitro testing of biological material, e.g. blood, urine, [G01N](#), e.g. [G01N 33/48](#))

- b. Body treating compositions generally intended for deodorising, protecting, adorning or grooming the body, e.g. cosmetics, dentifrices, tooth filling materials.
2. Attention is drawn to the definitions of groups of chemical elements following the title of section C.
3. Attention is drawn to the notes in class [C07](#), for example the notes following the title of the subclass [C07D](#), setting forth the rules for classifying organic compounds in that class, which rules are also applicable, if not otherwise indicated, to the classification of organic compounds in [A61K](#).
4. In this subclass, with the exception of group [A61K 8/00](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

#### WARNINGS

1.

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">A61K 9/133</a>	covered by	<a href="#">A61K 9/127</a>
<a href="#">A61K 9/18</a>	covered by	<a href="#">A61K 9/14</a>
<a href="#">A61K 9/22</a>	covered by	<a href="#">A61K 9/20</a>
<a href="#">A61K 9/24</a>	covered by	
<a href="#">A61K 9/209</a>		
<a href="#">A61K 9/26</a>	covered by	<a href="#">A61K 9/2077</a>
<del>—</del> ,	<a href="#">A61K 9/2081</a>	
<a href="#">A61K 9/30</a>	covered by	<a href="#">A61K 9/28</a>
<a href="#">A61K 9/32</a>	covered by	<a href="#">A61K 9/28</a>
<a href="#">A61K 9/34</a>	covered by	<a href="#">A61K 9/28</a>
<a href="#">A61K 9/36</a>	covered by	<a href="#">A61K 9/28</a>
<a href="#">A61K 9/38</a>	covered by	<a href="#">A61K 9/28</a>
<a href="#">A61K 9/40</a>	covered by	<a href="#">A61K 9/28</a>
<a href="#">A61K 9/42</a>	covered by	<a href="#">A61K 9/28</a>
<a href="#">A61K 9/44</a>	covered by	
<a href="#">A61K 9/2072</a>		
<a href="#">A61K 9/46</a>	covered by	
<a href="#">A61K 9/0007</a>		
<a href="#">A61K 9/52</a>	covered by	<a href="#">A61K 9/50</a>
<a href="#">A61K 9/54</a>	covered by	<a href="#">A61K 9/5073</a>
<del>—</del> ,	<a href="#">A61K 9/5078</a>	<a href="#">A61K 9/5084</a>
<a href="#">A61K 9/56</a>	covered by	<a href="#">A61K 9/50</a>
<a href="#">A61K 9/58</a>	covered by	<a href="#">A61K 9/50</a>
<a href="#">A61K 9/60</a>	covered by	<a href="#">A61K 9/50</a>
<a href="#">A61K 9/62</a>	covered by	<a href="#">A61K 9/50</a>
<a href="#">A61K 9/64</a>	covered by	<a href="#">A61K 9/50</a>
<a href="#">A61K 9/66</a>	covered by	<a href="#">A61K 9/48</a>
<a href="#">A61K 9/68</a>	covered by	
<a href="#">A61K 9/0058</a>		
<a href="#">A61K 9/72</a>	covered by	
<a href="#">A61K 9/0073</a>		
<a href="#">A61K 45/08</a>	covered by	<a href="#">A61K 31/00</a>
<del>—</del> ,	<a href="#">A61K 47/00</a>	
<a href="#">A61K 47/04</a>	covered by	
<a href="#">A61K 47/02</a>		
<a href="#">A61K 50/00</a>	covered by	<a href="#">A61K 9/0009</a>
<del>—</del> ,	<a href="#">C09J 9/02</a>	

The following IPC indexing codes are not used in the CPC scheme:

[A61K 101/00](#) - [A61K 135/00](#)

2. Subgroups of [A61K 48/00](#) are incomplete (Jan. 2003). Documents are being reclassified from [A61K 48/00](#) to its subgroups

**A61K 6/00**

**Preparations for dentistry (teeth cleaning preparations [A61K 8/00](#), [A61Q 11/00](#); {dental prostheses [A61C 13/00](#); apparatus or methods for oral or dental hygiene [A61C](#)})**

NOTE

In groups [A61K 6/00](#) - [A61K 6/0044](#) and [A61K 6/083](#) - [A61K 6/10](#), the use of specific polymers is indicated by addition of classification symbols of the subclass [C08L](#) preceded by the sign "+", e.g. compositions for taking dental impressions containing alginates are classified in [A61K 6/10](#) + [C08L 5/04](#)

**A61K 8/00**

**Cosmetic or similar toilet preparations (casings or accessories for storing or handling of solid or pasty toilet or cosmetic substances [A45D 40/00](#))**

NOTES

1. Use of cosmetics or similar toilet preparations is further classified in subclass [A61Q](#).
2. Use of cosmetics or similar toilet preparations is mandatorily further classified in subclass [A61Q](#).
3. Attention is drawn to the Notes in class [C07](#), for example the notes following the title of subclass [C07D](#), setting forth the rules for classifying organic compounds in that class, which rules are also applicable, if not otherwise indicated, to the classification of organic compounds in group [A61K 8/00](#).
4. Salts or complexes of organic compounds are classified according to the base compounds. If a complex is formed between two or more compounds, classification is made for each compound.

WARNING

Group [A61K 8/00](#) and subgroups are incomplete. See provisionally also [A61K7/00](#) and subgroups.

U **A61K 8/02**

- characterised by special physical form

NOTE

In this group, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

**A61K 8/0241**

- {Containing particulates characterized by their shape and/or structure (see also [A61K 8/04](#), [A61K 8/11](#), and [A61K 8/14](#), further aspects are classified in [A61K 2800/40](#) and subcodes)}

U **A61K 8/18**

- characterised by the composition

NOTE

In this group, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

U **A61K 8/30**

- containing organic compounds

**A61K 8/63**

- Steroids; Derivatives thereof

NOTE

This group covers steroids, as defined in Note (1) after the title of subclass [C07J](#).

**A61K 9/00**

**Medicinal preparations characterised by special physical form (nuclear magnetic resonance contrast preparations or magnetic resonance imaging contrast preparations [A61K 49/18](#); preparations containing radioactive substances [A61K 51/12](#))**

**NOTE**

Among the one-dot groups of [A61K 9/00](#)-, classification is not made in the last appropriate place.

[A61K 9/00](#) is subdivided according to the following concepts:

- the drug release technique ( [A61K 9/0002](#) and subgroups),
- the site of application ( [A61K 9/0012](#) and subgroups), and
- the physical form ( [A61K 9/0087](#) to [A61K 9/7023](#) ).

Where relevant, documents are classified in more than one of these subdivisions.

- |   |             |   |
|---|-------------|---|
| U | A61K 9/0012 | • {Galenic forms characterised by the site of application}  |
|   | A61K 9/0014 | • • {Skin, i.e. galenic aspects of topical compositions (non-active ingredients are additionally classified in <a href="#">A61K 47/00</a> -, <a href="#">A61K 9/0009</a> -, <a href="#">A61K 9/0021</a> -, <a href="#">A61K 9/7015</a> , <a href="#">A61K 9/7023</a> take precedence; cosmetic preparations <a href="#">A61K 8/00</a> -, <a href="#">A61Q</a> -, preparations for wound dressings or bandages <a href="#">A61L 26/00</a> )} |
| U | A61K 9/0019 | • • {Injectable compositions; Intramuscular, intravenous, arterial, subcutaneous administration; Compositions to be administered through the skin in an invasive manner (non-active ingredients are additionally classified in <a href="#">A61K 47/00</a> )}  |
|   | A61K 9/0024 | • • • {Solid, semi-solid or solidifying implants, which are implanted or injected in body tissue (compositions for intravenous administration, normal injectable solutions or dispersions for e.g. subcutaneous administration <a href="#">A61K 9/0019</a> -, brain implants <a href="#">A61K 9/0085</a> -, (coated) prostheses, catheters or stents <a href="#">A61L</a> )}  |
| U | A61K 9/0053 | • • {Mouth and digestive tract, i.e. intraoral and peroral administration (rectal administration <a href="#">A61K 9/0031</a> )}   |
| U | A61K 9/0056 | • • • {Mouth soluble or dispersible forms; Suckable, eatable, chewable coherent forms; Forms rapidly disintegrating in the mouth; Lozenges; Lollipops; Bite capsules; Baked products; Baits or other oral forms for animals}  |
|   | A61K 9/0058 | • • • • {Chewing gums (non-medicinal aspects, preparing chewing gum <a href="#">A23G 4/00</a> -, chewing gum for care of the teeth or oral cavity, e.g. with breath freshener <a href="#">A61Q 11/00</a> )}   |
| U | A61K 9/007  | • • {Pulmonary tract; Aromatherapy}   |
|   | A61K 9/0073 | • • • {Sprays or powders for inhalation; Aerolised or nebulised preparations generated by other means than thermal energy; (nasal sprays <a href="#">A61K 9/0043</a> -, inhalation of vapours of volatile or heated drugs, e.g. essential oils or nicotine, <a href="#">A61K 9/007</a> -, devices <a href="#">A61M</a> )}   |
| U | A61K 9/0087 | • {Galenic forms not covered by <a href="#">A61K 9/02</a> to <a href="#">A61K 9/7023</a> }  |
|   | A61K 9/009  | • • {Sachets, pouches characterised by the material or function of the envelope (with gastric retention <a href="#">A61K 9/0065</a> -, sachets which are not administered but function merely as a container are classified according to the content, e.g. sachets comprising powder for reconstitution of a drink <a href="#">A61K 9/0095</a> )}   |
|   | A61K 9/0095 | • • {Drinks; Beverages; Syrups; Compositions for reconstitution thereof, e.g. powders or tablets to be dispersed in a glass of water; Veterinary drenches ( <a href="#">A61K 9/0007</a> takes precedence; eatable gels or foams <a href="#">A61K 9/0056</a> -, oral mucosa adhesive forms <a href="#">A61K 9/006</a> )}   |
|   | A61K 9/0097 | • • {Micromachined devices; Microelectromechanical systems [MEMS]; Devices obtained by lithographic treatment of silicon; Devices comprising chips (intra-dermal microneedle arrays <a href="#">A61K 9/0021</a> -, MEMS in general <a href="#">B81B 7/02</a> )}   |

- A61K 9/02
- Suppositories; Bougies; Bases therefor; {Ovules} (apparatus for making [A61J 3/08](#); devices for introducing into the body [A61M 31/00](#))
- A61K 9/08
- Solutions; {(composition of solutions [A61K 47/00](#))}
- WARNING  
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#), [A61K 9/0095](#)
- A61K 9/10
- Dispersions; Emulsions; {([A61K 9/06](#) takes precedence; composition of dispersions, emulsions [A61K 47/00](#))}
- WARNING  
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#), [A61K 9/0095](#)
- A61K 9/107
- • Emulsions; {Emulsion preconcentrates; Micelles (composition of emulsions [A61K 47/00](#))}
- WARNING  
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#), [A61K 9/0095](#)
- A61K 9/12
- • Aerosols; Foams {([A61K 9/0043](#), [A61K 9/0056](#), [A61K 9/006](#), [A61K 9/0073](#) take precedence; spray-films [A61K 9/7015](#))}
- U A61K 9/127
- • Liposomes
- U A61K 9/1271
- • • {Non-conventional liposomes, e.g. PEGylated liposomes, liposomes coated with polymers (see also [A61K 47/48815](#))}
- A61K 9/1272
- • • • {with substantial amounts of non-phosphatidyl, i.e. non-acylglycerophosphate, surfactants as bilayer-forming substances, e.g. cationic lipids (with cholesterol as the only non-phosphatidyl surfactant [A61K 9/127](#); cationic lipid/DNA complexes see also [A61K 47/48046](#))}
- A61K 9/1273
- • • • {Polymersomes; Liposomes with polymerisable or polymerised bilayer-forming substances (polymers grafted or coated on phosphatidyl liposomes [A61K 9/1271](#), on non-phosphatidyl liposomes [A61K 9/1272](#))}
- A61K 9/14
- Particulate form, e.g. powders, {Processes for size reducing of pure drugs or the resulting products, Pure drug nanoparticles (microspheres [A61K 9/16](#); microcapsules [A61K 9/50](#); nanocapsules, nanoparticles of the matrix type [A61K 9/51](#))}
- A61K 9/141
- • {Intimate drug-carrier mixtures characterised by the carrier, e.g. ordered mixtures, adsorbates, solid solutions, eutectica, co-dried, co-solubilised, co-kneaded, co-milled, co-ground products, co-precipitates, co-evaporates, co-extrudates, co-melts; Drug nanoparticles with adsorbed surface modifiers ((co) spray-dried products [A61K 9/16](#), (co) lyophilised products [A61K 9/19](#); the carrier being chemically bound to the active ingredient [A61K 47/48](#))}
- A61K 9/16
- • Agglomerates; Granulates; Microbeadlets; {Microspheres; Pellets; Solid products obtained by spray drying, spray freeze drying, spray congealing, (multiple) emulsion solvent evaporation or extraction ([A61K 9/20](#) takes precedence if the final form is a tablet; microspheres with drug-free outer coating, microcapsules [A61K 9/50](#); mixture of different granules, microcapsules, (coated) microparticles [A61K 9/5084](#); nanoparticles [A61K 9/51](#))}
- U A61K 9/167
- • • {with an outer layer or coating comprising drug; with chemically bound drugs or non-active substances on their surface (with further drug-free outer coating [A61K 9/5073](#))}
- A61K 9/1676
- • • • {having a drug-free core with discrete complete coating layer containing drug (adsorbates of liquid drug formulations on inert powders without simultaneous granulation step [A61K 9/141](#); with further drug-free outer coating [A61K 9/5078](#); drug conjugated to non-active particles [A61K 47/48853](#))}

- A61K 9/19
  - lyophilised, {i.e. freeze-dried, solutions or dispersions (lyophilised products with subsequent particle size reduction [A61K 9/14](#); granules or pellets made by lyophilisation [A61K 9/1682](#); solid oral dosage forms made by lyophilisation [A61K 9/2095](#); lyophilisation additives [A61K 47/00](#))}
- A61K 9/20
  - Pills, tablets, {discs, rods ([A61K 9/0004](#), [A61K 9/0007](#), [A61K 9/0056](#), [A61K 9/0065](#) take precedence; for reconstitution of a drink [A61K 9/0095](#))}
- A61K 9/2072
  - {characterised by shape, structure or size; Tablets with holes, special break lines or identification marks; Partially coated tablets; Disintegrating flat shaped forms ([A61K 9/0004](#), [A61K 9/0056](#), [A61K 9/0065](#) take precedence)}
- A61K 9/28
  - Dragees; Coated pills or tablets {e.g. with film or compression coating ([A61K 9/2072](#) takes precedence, e.g. partially coated tablets [A61K 9/2072](#), coated multilayer tablets [A61K 9/2086](#), tablets with drug-coated core [A61K 9/209](#))}
- U A61K 9/48
  - Preparations in capsules, e.g. of gelatin, of chocolate; {([A61K 9/0004](#) takes precedence; bite capsules [A61K 9/0056](#))}
- A61K 9/4808
  - {characterised by the form of the capsule or the structure of the filling; Capsules containing small tablets; Capsules with outer layer for immediate drug release (capsules filled with granules or microparticles [A61K 9/16](#); filled with microcapsules or coated microparticles [A61K 9/50](#); with mixture of different granules, microcapsules, (coated) microparticles [A61K 9/5084](#))}
- U A61K 9/50
  - Microcapsules {having a gas, liquid or semi-solid filling; Solid microparticles or pellets surrounded by a distinct coating layer, e.g. coated microspheres, coated drug crystals ([A61K 9/2081](#) takes precedence; particles with a single coating comprising drug [A61K 9/167](#))}
- U A61K 9/5005
  - {Wall or coating material}
- U A61K 9/5063
  - {Compounds of unknown constitution, e.g. material from plants or animals (oils, fats, waxes, shellac [A61K 9/5015](#))}
- A61K 9/5068
  - {Cell membranes or bacterial membranes enclosing drugs (with additional exogenous lipids [A61K 9/127](#); virus envelopes [A61K 9/5184](#))}
- A61K 9/5084
  - {Mixtures of one or more drugs in different galenical forms, at least one of which being granules, microcapsules or (coated) microparticles according to [A61K 9/16](#) or [A61K 9/50](#), e.g. for obtaining a specific release pattern or for combining different drugs (tablets containing such a mixture [A61K 9/2077](#))}
- A61K 9/51
  - Nanocapsules; {Nanoparticles; (nanotubes [A61K 9/0092](#); polymeric micelles [A61K 9/1075](#); polymersomes [A61K 9/1273](#); pure drug nanoparticles [A61K 9/14](#); drug nanoparticles with adsorbed surface modifiers [A61K 9/141](#); conjugates, e.g. between drug and non-active nanoparticles, [A61K 47/48](#); preparations for in vivo diagnosis [A61K 49/00](#); with radioactive substances [A61K 51/00](#))}
- U A61K 9/5107
  - {Excipients; Inactive ingredients}
- U A61K 9/5176
  - {Compounds of unknown constitution, e.g. material from plants or animals (oils, fats, waxes, shellac [A61K 9/5123](#))}
- A61K 9/5184
  - {Virus capsids or envelopes enclosing drugs (with additional exogenous lipids [A61K 9/127](#); bacterial membranes [A61K 9/5068](#))}
- A61K 9/70
  - Web, sheet or filament bases; {Films; Fibres of the matrix type containing drug; (hollow drug-filled fibres [A61K 9/0092](#); bandages, dressings or absorbent pads [A61F 13/00](#), chemical aspects thereof [A61L 15/00](#))}
- A61K 9/7007
  - {Drug-containing films, membranes or sheets ([A61K 9/0041](#), [A61K 9/0043](#), [A61K 9/006](#), [A61K 9/0063](#) take precedence)}

- A61K 9/7023
- {Transdermal patches and similar drug-containing composite devices, e.g. cataplasms (galenical aspects of iontophoretic devices [A61K 9/0009](#); microneedle arrays [A61K 9/0021](#); buccal patches [A61K 9/006](#))}

**A61K 31/00****Medicinal preparations containing organic active ingredients**NOTES

1. When classifying in groups [A61K 31/00](#) to [A61K 41/00](#) the symbol [A61K 2300/00](#) may be added, using Combination Sets, to indicate a mixture of active ingredients.
2. In the preparation of new organic compounds and their use in medicinal preparations, classification is only made in the relevant subclasses [C07C](#) to [C07J](#) according to the type of compound. However, the inventions dealing with medicinal preparations containing at least two active organic ingredients are always classified in this group in addition to the classification for the type of compounds in [C07C](#) to [C07J](#).
3. Attention is drawn to the notes in class [C07](#), particularly to the definition of steroids given in Note (1) following the title of [C07J](#) and to the definition of carbohydrates and sugars given in the notes following the title of [C07H](#).
4. Salts and complexes of organic active compounds are always classified according to the free active compounds. If a complex is formed between two or more active compounds, then they are classified according to all compounds forming the salts or complexes followed by the symbol [A61K 2300/00](#) (i.e. as a mixture of active organic compounds). According to the last place rule, organic active compounds forming salts with heavy metals should be classified in [A61K 33/24](#) to [A61K 33/38](#) and not in subgroups [A61K 31/28](#) to [A61K 31/32](#), [A61K 31/555](#) or [A61K 31/714](#).  
This does not apply to complexes, as apparent from the [A61K 31/00](#) scheme, wherein the complexes hemin and hematin are classified in [A61K 31/555](#) and cyanocobalamin in [A61K 31/714](#).
5. From January 2003 onwards, the EPO copies into CPC the IPC classification of the first document received (family representative). However, blends of active ingredients receive the additional symbol [A61K 2300/00](#) as Combination Set.

- U A61K 31/095
- Sulfur, selenium, or tellurium compounds, e.g. thiols
- A61K 31/105
- • Persulfides (thiuram disulfides [A61K 31/145](#); thiosulfonic acids [A61K 31/185](#))
- U A61K 31/13
- Amines {([A61K 31/04](#) takes precedence)}
- U A61K 31/135
- • having aromatic rings {e.g. ketamine, nortriptyline (methadone [A61K 31/137](#))}
- A61K 31/138
- • • Aryloxyalkylamines, e.g. propanolol, tamoxifen, phenoxybenzamine (atenolol [A61K 31/165](#); pindolol [A61K 31/404](#); timolol [A61K 31/5377](#))
- U A61K 31/16
- Amides, e.g. hydroxamic acids
- A61K 31/17
- • having the group >N-C(O)-N< or >N-C(S)-N<, e.g. urea, thiourea, carmustine (isoureas, isothiureas [A61K 31/155](#); sulfonylureas [A61K 31/64](#))
- A61K 31/185
- Acids; Anhydrides, halides or salts thereof, e.g. sulfur acids, imidic, hydrazonic, hydroxamic acids (hydroxamic acids [A61K 31/16](#); peroxy acids [A61K 31/327](#))
- NOTE
- Cyclic anhydrides are considered to be heterocyclic rings
- U A61K 31/19
- • Carboxylic acids, e.g. valproic acid (Salicylic acid [A61K 31/60](#))
- U A61K 31/195
- • • having an amino group
- U A61K 31/197
- • • • the amino and the carboxyl group being attached to the same acyclic carbon chain, e.g. gamma-aminobutyric acid [GABA], beta-alanine, epsilon-aminocaproic acid, pantothenic acid (carnitine [A61K 31/205](#))

- A61K 31/198 . . . . Alpha-aminoacids, e.g. alanine, edetic acids [EDTA], (betaine [A61K 31/205](#); proline [A61K 31/401](#); tryptophan [A61K 31/405](#); histidine [A61K 31/4172](#); peptides not degraded to individual aminoacids [A61K 38/00](#))
- U A61K 31/33 . Heterocyclic compounds
- U A61K 31/395 . . having nitrogen as a ring hetero atom, e.g. guanethidine, rifamycins ([rifampin A61K 31/496](#))
- U A61K 31/435 . . . having six-membered rings with one nitrogen as the only ring hetero atom
- U A61K 31/47 . . . . Quinolines; Isoquinolines
- U A61K 31/4738 . . . . . ortho- or peri-condensed with heterocyclic ring systems
- A61K 31/4745 . . . . . condensed with ring systems having nitrogen as a ring hetero atom, e.g. phenantrolines (yohimbine derivatives, vinblastine [A61K 31/475](#); ergoline derivatives [A61K 31/48](#))
- A61K 31/4748 . . . . . forming part of bridged ring systems (strychnine [A61K 31/475](#); morphinan derivatives [A61K 31/485](#))
- U A61K 31/70 . Carbohydrates; Sugars; Derivatives thereof (sorbitol [A61K 31/047](#))

**NOTE**

In this group, the expressions are used with the meanings indicated in Note (3) following the title of the subclass [C07H](#)

- A61K 31/7012 . . Compounds having a free or esterified carboxyl group attached, directly or through a carbon chain, to a carbon atom of the saccharide radical, e.g. glucuronic acid, neuraminic acid (gluconic acid [A61K 31/191](#); ascorbic acid [A61K 31/375](#))

**A61K 38/00**

**Medicinal preparations containing peptides (peptides containing beta-lactam rings [A61K 31/00](#); cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, [A61K 31/00](#); ergot alkaloids of the cyclic peptide type [A61K 31/48](#); containing macromolecular compounds having statistically distributed amino acid units [A61K 31/74](#); medicinal preparations containing antigens or antibodies [A61K 39/00](#); medicinal preparations characterised by the non-active ingredients, e.g. peptides as drug carriers, [A61K 47/00](#))**

**NOTES**

1. The terms or expressions used in this group follow exactly the definitions given in Note (1) following the title of subclass [C07K](#).
2. Preparations containing fragments of peptides or peptides modified by removal or addition of amino acids, by substitution of amino acids by others, or by combination of these modifications are classified as the preparations containing parent peptides. However, preparations containing fragments of peptides having only four or less amino acids are also classified in groups [A61K 38/05](#) to [A61K 38/07](#).
3. Preparations containing peptides prepared by recombinant DNA technology are not classified according to the host, but according to the original peptide expressed, e.g. preparations containing HIV peptide expressed in E. coli are classified with the preparations containing HIV peptides.
4. This group covers also medicinal preparation containing DNA or RNA encoding for peptides as active ingredient.
5. Documents relating to new peptides, e.g. enzymes, or new DNA or RNA encoding for peptides and their use in medicinal preparations are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their medical uses.

- A61K 38/04
- Peptides having up to 20 amino acids in a fully defined sequence; Derivatives thereof {(enzyme inhibitors [A61K 38/005](#)}; gastrins {[A61K 38/2207](#)}; somatostatins [A61K 38/31](#)-, melanotropins [A61K 38/34](#)-, {-protease inhibitors [A61K 38/55](#)}}
- U A61K 38/16
- Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof {(enzyme inhibitors [A61K 38/005](#))}
- U A61K 38/17
- • from animals; from humans {(enzyme inhibitors [A61K 38/005](#))}
- U A61K 38/18
- • • Growth factors; Growth regulators
- A61K 38/1891
- • • • **{(Angiogenesis factors; Angiogenin)}**
- A61K 38/22
- • • Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [A61K 38/33](#)-, e.g. corticotropin [A61K 38/35](#))
- A61K 38/43
- • Enzymes; Proenzymes; Derivatives thereof

**NOTE**

In this group,

1. proenzymes are classified with the corresponding enzymes;
2. enzymes are generally categorised according to the "Nomenclature and Classification of Enzymes" of the International Commission of Enzymes. Where appropriate, this designation appears in the subgroups below in parenthesis.
3. the specific enzyme(s) used are additionally classified in [C12Y](#)-.

- U A61K 38/55
- • Protease inhibitors
- A61K 38/57
- • • from animals; from humans {([A61K 38/553](#)-, [A61K 38/556](#) take precedence)}

**A61K 39/00 Medicinal preparations containing antigens or antibodies (materials for immunoassay [G01N 33/53](#))**

**NOTES**

1. Groups [A61K 39/002](#) to [A61K 39/295](#) cover preparations containing protozoa, bacteria, viruses, or subunits thereof, e.g. membrane parts.
2. Preparation of antigen or antibody compositions is also classified in subclass [C12N](#)-, if the step of cultivating the micro-organism is of interest.
3. Documents relating to new peptides, e.g. enzymes, or new DNA or RNA encoding for peptides and their use in medicinal preparations are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their medical uses.
4. Documents relating to antibodies or DNA or RNA encoding for antibodies and their use in medicinal preparations are classified in group [C07K 16/00](#) or in group [C12N 9/0002](#) according to the antibodies, with the appropriate indexing codes relating to their medical uses.
5. Documents relating to new therapeutical uses of antibodies or DNA or RNA encoding for antibodies are classified in group [C07K 16/00](#) or in group [C12N 9/0002](#) according to the antibodies, with the appropriate indexing codes relating to their medical uses.
6. Documents relating to medicinal preparations containing different antibodies as active ingredients are classified in group [C07K 16/00](#) according to the different active antibodies, with the appropriate indexing codes relating to their medical uses. However, documents relating to medicinal preparations containing antibodies and other compounds as active ingredients are classified in groups [A61K 39/395](#) to [A61K 39/42](#)-, in association with symbol [A61K 2300/00](#) in Combination Sets.

- A61K 39/395
- Antibodies (agglutinins [A61K 38/36](#)-, {-as drug carriers [A61K 47/48](#)}); Immunoglobulins; Immune serum, e.g. antilymphocytic serum

- U A61K 2039/60 · {characteristics by the carrier linked to the antigen}
- A61K 2039/6006 · · {Cells (recombinantly expressing antigens [A61K 2039/5156](#)-, [A61K 2039/523](#))}
- A61K 41/00** **Medicinal preparations obtained by treating materials with wave energy or particle radiation; {Therapies using these preparations} ([A61K 31/59](#) takes precedence; generation of ultrasonic waves [B06B](#)-, electric discharge tubes [H01J](#))**
- A61K 41/0052 · {Thermotherapy; Hyperthermia; Magnetic induction; Induction heating therapy}
- NOTE  
simple magnetic guidance of drugs in vivo is to be classified in [A61K 41/00](#)-, and in [A61K 47/4893](#)
- U A61K 47/00** **Medicinal preparations characterised by the non-active ingredients used, e.g. carriers, inert additives**
- U A61K 47/06 · Organic compounds, {e.g. mineral oil, petrolatum, synthetic polyolefins}
- U A61K 47/08 · · containing oxygen, {e.g. ethers, acetals, ketones, quinones, aldehydes, peroxides}
- A61K 47/10 · · · Alcohols; Phenols; Salts thereof, {e.g. glycerol; Polyethylene glycol [PEG]; Poloxamers; PEG/POE alkyl ethers (sugar alcohols [A61K 47/26](#)-, copolymers containing polyalkylene glycol or poloxamer [A61K 47/34](#))}
- A61K 47/20 · · containing sulfur, {e.g. DMSO, docusate, sodium lauryl sulfate ([A61K 47/183](#)-, [A61K 47/186](#) take precedence)}
- A61K 47/22 · · Heterocyclic compounds, {e.g. ascorbic acid, tocopherol, pyrrolidones ([A61K 47/183](#)-, [A61K 47/186](#) take precedence)}
- A61K 47/26 · · Carbohydrates, {e.g. mono-, di-, oligosaccharides, nucleic acids, sugar alcohols, amino sugars; Derivatives thereof, e.g. polysorbates, sorbitan fatty acid esters, glycyrrhizin ([A61K 47/183](#)-, [A61K 47/186](#) take precedence)}
- A61K 47/28 · · Steroids, {e.g. cholesterol, bile acids, glycyrrhetic acid ([A61K 47/183](#)-, [A61K 47/186](#) take precedence)}
- U A61K 47/30 · Macromolecular compounds
- A61K 47/42 · · Proteins; Polypeptides; Degradation products thereof; Derivatives thereof {e.g. albumin, gelatin, zein (oligopeptides having up to 5 amino acids [A61K 47/183](#)-, polyamino acids [A61K 47/34](#))}
- A61K 47/44 · Oils, fats or waxes according to more than one of groups [A61K 47/02](#) to [A61K 47/42](#)-, {Natural or modified natural oils, fats or waxes, e.g. (polyethoxylated) castor oil, montan wax, ozokerite, lignite, shellac, rosin, beeswax, lanolin (synthetic glycerides, e.g. medium-chain triglycerides [A61K 47/14](#))}
- U A61K 47/48 · the non-active ingredient being chemically bound to the active ingredient, e.g. polymer drug conjugates
- U A61K 47/48007 · · {the pharmacologically- or therapeutically-active agent being covalently bound or complexed to a modifying agent}
- NOTE  
The modifying agent being a macromolecular compound [A61K 47/48169](#), a peptide, protein or polyamino acid [A61K 47/48238](#), an antibody or immunoglobulin [A61K 47/48369](#)
- U A61K 47/48023 · · · {the modifying agent being an organic compound ([A61K 47/48161](#) takes precedence)}

- A61K 47/48046 . . . {the modifying agent being a lipid, e.g. a triglyceride; the modifying agent being a polyamine, e.g. spermine or spermidine}
- NOTE  
Fatty acid conjugates are classified in [A61K 47/48038](#); cholesterol conjugates are classified in [A61K 47/48123](#)
- U A61K 47/48061 . . . {the modifying agent being a heterocyclic compound ([A61K 47/48153](#) takes precedence)}
- A61K 47/48069 . . . {the modifying agent being a heterocyclic compound which being a porphyrine or a porphyrine with an expanded ring system, e.g. texaphyrine}
- NOTE  
Porphyrins used as photosensitizers in photodynamic therapy: see [A61K 41/0071](#) or [A61K 41/0076](#); Porphyrins used as photosensitizers in photodynamic therapy, the photosensitizer being considered as the therapeutically active part, and modified by another compound, e.g. polymer or an antibody, to be classified in [A61K 41/0071](#) or [A61K 41/0076](#) and according to the [A61K 47/48](#) subgroup of the modifying agent; Porphyrins used as fluorescent diagnostic optical agents administered in vivo to be classified in [A61K 49/0036](#)
- A61K 47/48076 . . . {the modifying agent being a chelate, i.e. single central atom/ion sequestered by a polydentate ligand, e.g. Gd-DOTA or Zinc-amino acid chelate, or a chelate-forming compound, i.e. chelating group, e.g. DOTA or ethylenediamine, that being covalently/complexed to the pharmacologically- or therapeutically-active agent}
- NOTE  
Paramagnetic chelates used in MRI and not linked to by further compound, e.g. polymer, peptide, protein, antibody, small molecules like sugars, are only classified in [A61K 49/101](#) and subgroups. Paramagnetic chelates used in MRI and conjugated to another compound, e.g. a polymer, a peptide, a protein, an antibody, a small molecule like a sugar, are classified in [A61K 49/06](#) and subgroups, and not [A61K 47/48169](#), if said other compound being not used as therapeutic agent, according to the nature of the modifying agent, and completed by [A61K 49/085](#). Radiolabelled chelates are classified in [A61K 51/0474](#) and its subgroups, and in [A61K 51/0497](#), [A61K 51/065](#), [A61K 51/088](#) or [A61K 51/1093](#) if the chelate being linked to a further molecule, e.g. an organic compound, polymer, peptide, protein or polyamino acid, antibody
- A61K 47/481 . . . {the modifying agent being also a pharmacologically or therapeutically active agent, i.e. the entire conjugate being a codrug, i.e. a dimer, oligomer or polymer of pharmacologically or therapeutically active compounds, e.g. a polymer of aspirin}
- NOTE  
a sugar, nucleoside, nucleotide, nucleic acid is classified in [A61K 47/48092](#); a polymer of an active agent is not classified in [A61K 47/48192](#)
- A61K 47/4813 . . . {pretargeting systems involving an organic compound, not being a peptide, protein or antibody, for targeting specific cells}
- NOTE  
The concept of "pre-targeting" covers the administration of the modifying agent (which being an agent able to target specific cells in the body), and of the pharmacologically or therapeutically active agent (drug D) in several steps, their "binding" occurring at the in vivo targeted site. It

involves administration in at least two steps, for example: (i) a conjugate T-A corresponding to a targeting agent able to target specific cells or receptors in the body (T) linked to a compound A, and (ii) a conjugate D-M corresponding to the drug linked to a modifying agent M able to target the compound A. The sequence involves e.g. the administration of T-A and then D-M. Between step (i) and step (ii), a further compound able to bind to A and M may also be administered, e.g. during a clearing step. Classification being made according to the nature of T in the subgroups of [A61K 47/4813](#), [A61K 47/48346](#) and [A61K 47/48723](#). In [A61K 47/4813](#) and its subgroups, T being an organic compound, not being a peptide, protein or antibody. Classification being also made according to the nature of organic compound T in the appropriate [A61K 47/48023](#) subgroup. If T being a peptide, protein or antibody, classification being made in the corresponding [A61K 47/48346](#) or [A61K 47/48723](#) pretargeting class]

A61K 47/48138 . . . . {ECTA, enzyme catalyzed therapeutic agent}

NOTE

In the definition of [A61K 47/4813](#), an enzyme being used as group A, and being first targeted to specific cells via administration of the conjugate T-A. Then, the conjugate M-D which being a substrate for A being administered. The enzyme A being able to cleave the conjugate M-D, which can be e.g. a prodrug. The drug D being thus released through enzymatic cleavage at particular targeted cells

A61K 47/48146 . . . . {the modifying agent being biotin}

NOTE

In the definition of [A61K 47/4813](#), M and A form a pair of biotin and (strept)avidin, or derivatives of biotin and (strept)avidin

U A61K 47/48169 . . {the modifying agent being an organic macromolecular compound, i.e. an oligomeric, polymeric, dendrimeric molecule}

NOTE

a peptide, protein, polyamino acid being classified in [A61K 47/48238](#) and subgroups; an antibody in [A61K 47/48369](#) and subgroups. In case of block copolymers, the different (large) blocks are classified in the appropriate [A61K 47/48169](#) or [A61K 47/48238](#) subgroups

A61K 47/4823 . . . {the organic macromolecular compound being a polysaccharide or a derivative, e.g. starch, chitosan, chitin, cellulose, pectin, cyclodextrin with the pharmacologically active agent being covalently linked to the external surface of the ring structure, a bacterial polysaccharide or oligosaccharide antigen, a glycosaminoglycan}

NOTE

if cyclodextrin being used to complex the drug, then the appropriate classification being [A61K 47/48969](#); proteoglycans as modifying agents attached to the pharmacologically or therapeutically active agent are classified in the appropriate [A61K 47/48238](#) subgroup

A61K 47/48238 . . {the modifying agent being a protein, peptide, polyamino acid}

NOTE

antibodies or immunoglobulins are classified in [A61K 47/48369](#) subgroups Special physical or galenic forms modified by covalent attachment or complexation of a protein, peptide or polyamino acid, are given the [A61K 47/48238](#) class in addition to their corresponding [A61K 47/48769](#) subgroup, e.g. a liposome modified on its surface by a peptide being classified in [A61K 47/48815](#) and [A61K 47/48238](#), a PLGA nanoparticle

modified on its surface by a peptide being classified in [A61K 47/48915](#) and in [A61K 47/48238](#) Peptidic linkers used to connect a drug and a modifying agent are classified in [A61K 47/48338](#), the modifying agent being also classified if it being defined

- A61K 47/48246
- • • {drug-peptide, protein or polyamino acid conjugates, i.e. the modifying agent being a protein, peptide, polyamino acid which being linked/complexed to a molecule that being the pharmacologically or therapeutically active agent} (peptidic linker are classified in [A61K 47/48338](#))

NOTE

The connection of the drug to the peptide, protein or polyamino acid can be by a direct covalent linkage or through a linker Fusion/chimeric proteins genetically produced, e.g. by recombinant DNA technology, are classified in [C07K 2319/00](#) and subgroups, not in [A61K 47/48246](#) and subgroups. [A61K 47/48246](#) and its subgroups only cover the conjugates wherein a peptide or protein being the pharmacologically or therapeutically active agent has been linked to another peptide or protein being the modifying agent via chemical methods. In that latter example of a chemically-produced peptide or protein-peptide or protein conjugate, what being classified in [A61K 47/48246](#) or in one of its subgroups being the peptide or protein used as modifying agent

- A61K 47/48346
- • • {pretargeting systems involving a peptide or protein (not an antibody [A61K 47/48723](#)) for targeting specific cells}

NOTE

The concept of "pre-targeting" covers the administration of the modifying agent (which being an agent able to target specific cells in the body), and of the pharmacologically or therapeutically active agent (drug D) in several steps, their "binding" occurring at the in vivo targeted site. It involves administration in at least two steps, for example: (i) a conjugate T-A corresponding to a targeting agent T able to target specific cells or receptors in the body (T) linked to a compound A, and (ii) a conjugate D-M corresponding to the drug D linked to a modifying agent M, able to target the compound A. The sequence involves e.g. the administration of T-A and then D-M. Between step (i) and step (ii), a further compound able to bind to both A and M may also be administered (e.g. during a clearing step). Classification being made according to the nature of T in the subgroups of [A61K 47/4813](#), [A61K 47/48346](#) and [A61K 47/48723](#). In [A61K 47/48346](#) and its subgroups, T being a peptide or protein, not being a antibody. If M being biotin and A being a (strept)avidin or a derivative thereof, then [A61K 47/48353](#) being used as classification symbol

- A61K 47/48361
- • • • {Enzyme prodrug therapy, e.g. gene directed enzyme drug therapy [GDEPT], VDEPT}

NOTE

An enzyme being used as group A in the definition of [A61K 47/4813](#), and being first targeted to specific cells via administration of the conjugate T-A. Then, the conjugate M-D which being a substrate for A being administered. The enzyme A being able to cleave the conjugate M-D, which can be e.g. a prodrug. The drug D being thus released through enzymatic cleavage at particular targeted cells

- U A61K 47/48369
- • {the modifying part being an antibody, an immunoglobulin, or a fragment thereof, e.g. a Fc-fragment}

- A61K 47/48723 . . . {pretargeting systems involving an antibody for targeting specific cells}

NOTE

The concept of "pre-targeting" covers the administration of the modifying agent (which being an agent able to target specific cells in the body), and of the pharmacologically or therapeutically active agent (drug D) in several steps, their "binding" occurring at the in vivo targeted site. It involves administration in at least two steps, for example: (i) a conjugate T-A corresponding to a targeting agent able to target specific cells or receptors in the body (T) linked to a compound A, and (ii) a conjugate D-M corresponding to the drug linked to a modifying agent M, able to target the compound A. The sequence involves e.g. the administration of T-A and then D-M. Between step (i) and step (ii), a further compound able to bind to A and M may also be administered (e.g. during a clearing step). Classification being made according to the nature of T in the subgroups of [A61K 47/4813](#)-, [A61K 47/48346](#) and [A61K 47/48723](#)-. In [A61K 47/48723](#) and its subgroups, T being an antibody. Classification being also made according to the nature of the antibody in the appropriate [A61K 47/48515](#) subgroup. If M and A form a pair of biotin and (strept)avidin (or derivatives of biotin and (strept)avidin), then [A61K 47/48753](#) being used as classification symbol

- A61K 47/48769 . . . {the conjugate being characterized by a special physical or galenical form}

NOTE

The conjugates in the [A61K 47/48769](#) subgroups correspond (i) either to a pharmacologically or therapeutically active agent complexed/covalently linked to the special physical or galenical form, e.g. on the surface of a polymeric nanoparticle or liposome, or to polymeric chains in the matrix of a polymeric gel, (ii) or to a special physical or galenical form encapsulating the pharmacologically or therapeutically active agent and modified on its surface or matrix by a modifying agent. In case (i), classification being made according to the nature of the special physical or galenical form in the appropriate [A61K 47/48769](#) subgroup and may be completed by the appropriate [A61K 47/48](#) subgroup defining the compound to which the pharmacologically or therapeutically active agent being linked, e.g. [A61K 47/48053](#) in case of a drug linked to a phospholipid and inserted in the bilayer surface of a liposome. In case (ii), classification being made according to the nature of the modifying agent. Physical or galenical forms not modified by a modifying agent and/or wherein the pharmacologically or therapeutically active agent being not complexed/covalently linked to said forms, are not classified in [A61K 47/48](#)-, but in [A61K 9/00](#) and its subgroups

- A61K 47/48776 . . . {forms of ingredients not provided for by groups [A61K 47/48784](#) to [A61K 47/48992](#)-, e.g. cells, cell fragments, viruses, ghosts, red blood cells, viral vectors having the pharmacologically or therapeutically active agent complexed or covalently linked to, or being themselves modified by complexation or covalent linkage by a modifying agent}

NOTE

Simple encapsulation in cells being isclassified in [A61K 9/5068](#)-.; simple encapsulation in a virus capsid is classified in [A61K 9/5184](#)

- U A61K 47/48792 . . . {the form being a colloid, emulsion, i.e. having at least a dispersed/continuous oil phase and a dispersed/continuous aqueous phase, dispersion or suspension}

- A61K 47/48815 . . . . {the form being a liposome, i.e. a bilayered vesicle, having its surface modified by covalent attachment or complexation of the pharmacologically or therapeutically active agent and/or modifying agent. (Simple encapsulation of a drug which being not functionalised on its surface by a modifying agent: see [A61K 9/127](#))}

**NOTE**

Liposomes modified by a polymer because they incorporate a polymer-lipid conjugate are only additionally classified in [A61K 47/48815](#) if the polymer modifying the lipid being unusual. Liposomes which are pegylated because they incorporate a pegylated lipid are not classified in [A61K 47/48815](#) but in [A61K 9/1271](#). When the surface of the liposome being functionalised by a modifying agent, classification being also made according to the nature of this modifying agent, e.g. a liposome modified on its surface by a peptide being classified in [A61K 47/48815](#) and [A61K 47/48238](#). In case of antibodies, see [A61K 47/48823](#). Liposomes wherein the pharmacologically or therapeutically active agent being linked to a phospholipid of the liposomal surface are classified in [A61K 47/48815](#) and [A61K 47/48053](#) ]

- A61K 47/4883 . . . . {the form being a polymersome, i.e. a liposome with polymerisable or polymerized bilayer-forming substances}

**NOTE**

Liposomes comprising polymers grafted on their surface are not classified in [A61K 47/4883](#), but in [A61K 47/48815](#) if the polymer being unusual, or in [A61K 9/1271](#)

**U A61K 49/00****Preparations for testing in vivo**

- U A61K 49/001 . {Preparation for luminescence or biological staining}
- U A61K 49/0013 . . {Luminescence}
- U A61K 49/0017 . . . {Fluorescence in vivo}
- U A61K 49/0019 . . . . {characterised by the fluorescent group}
- U A61K 49/0021 . . . . . {the fluorescent group being a small organic molecule (oligomeric, polymeric, dendritic molecules: [A61K 49/0019](#))}

**NOTE**

if this fluorescent group is complexed or covalently linked to a carrier, classification is also made according to the nature of the carrier in the appropriate [A61K 49/005](#) subgroup

- A61K 49/0036 . . . . . {Porphyrins (used in photodynamic therapy [A61K 41/0071](#) or [A61K 41/0076](#); used as targeting group or modifying agent for targeting a therapeutic compound [A61K 47/48069](#))}

- U A61K 49/0063 . . {characterised by a special physical or galenical form, e.g. emulsions, microspheres}

**NOTE**

Note Classification is also made according to the nature of the luminescent or fluorescent agent and/or the carrier carrying the fluorescent agent

- U A61K 49/0069 . . . {the agent being in a particular physical galenical form}

**NOTE**

If the physical or galenical form containing a fluorescent agent is modified by a particular agent, classification is also made according to the nature of this agent in the appropriate [A61K 49/005](#) subgroup

- U A61K 49/0076 . . . . {dispersion, suspension, e.g. particles in a liquid, colloid, emulsion}

- A61K 49/0084 . . . . {liposome, i.e. bilayered vesicular structure}
- NOTE  
When the surface of the liposome encapsulating a fluorescent agent and used in vivo is functionalised by a modifying agent, classification is also made according to the nature of this modifying agent: e.g. a liposome modified on its surface by a peptide is classified in [A61K 49/0084](#) and [A61K 49/0056](#). Liposomes encapsulating a fluorescent agent, used in vivo and modified on their surface by a polymer because they incorporate a polymer-lipid conjugate, are only additionally classified in [A61K 49/0054](#) if the polymer modifying the lipid is unusual. Liposomes encapsulating a fluorescent agent which are pegylated because they incorporate a pegylated lipid are only classified in [A61K 49/0084](#), not in [A61K 49/0054](#)
- U A61K 49/06 . Nuclear magnetic resonance [NMR] contrast preparations; Magnetic resonance imaging [MRI] contrast preparations
- NOTE  
characterised only by the (inorganic) MRI-active nucleus, e.g. 129Xe
- U A61K 49/18 . . characterised by a special physical form, e.g. emulsions, microcapsules, liposomes
- NOTE  
Classification being also made according to the molecule complexing or bearing the MRI-active nucleus
- U A61K 49/1818 . . . {particles, e.g. uncoated or non-functionalised microparticles or nanoparticles}
- NOTE  
For nanoparticles, i.e. having a size or diameter smaller than 1 micrometer, the subgroups [B82Y 5/00](#) and [B82Y 15/00](#) are also given
- U A61K 49/1821 . . . . {coated or functionalised microparticles or nanoparticles}
- A61K 49/1824 . . . . {coated or functionalised nanoparticles (liposomes [A61K 49/1812](#); nano-emulsions [A61K 49/1806](#); micelles [A61K 49/1809](#))}
- U A61K 49/1827 . . . . . {having a (super)(para)magnetic core, being a solid MRI-active material, e.g. magnetite, or composed of a plurality of MRI-active, organic agents e.g. Gd-chelates, or nuclei, e.g. Eu3+, encapsulated or entrapped in the core of the coated or functionalised nanoparticle}
- A61K 49/1851 . . . . . {having a (super)(para)magnetic core coated or functionalised with an organic macromolecular compound, i.e. oligomeric, polymeric, dendrimeric organic molecule (peptide or protein [A61K 49/1866](#); polyamino acid [A61K 49/1872](#); antibody [A61K 49/1875](#))}
- NOTE  
In case of block copolymers, the different (large) blocks are classified in the appropriate [A61K 47/48169](#) or [A61K 47/48238](#) subgroups
- U A61K 51/00 **Preparations containing radioactive substances for use in therapy or testing in vivo**
- U A61K 51/02 . characterised by the carrier, {i.e. characterised by the agent or material covalently linked or complexing the radioactive nucleus}

- U A61K 51/04
- • organic compounds
- NOTE  
Organic compounds used as carriers
- A61K 51/0404
- • • {Lipids, e.g. triglycerides; Polycationic carriers (fatty acids [A61K 51/0402](#); cholesterol [A61K 51/0493](#); polycationic carriers being oligomers, polymers, dendrimers [A61K 47/48169](#))}
- A61K 51/0489
- • • {Phosphates or phosphonates, e.g. bone-seeking phosphonates; (phospholipids: [A61K 51/0408](#); nucleotides or nucleic acids: [A61K 51/0491](#))}
- A61K 51/06
- • • Macromolecular compounds, {carriers being organic macromolecular compounds, i.e. organic oligomeric, polymeric, dendrimeric molecules (peptides, proteins, polyamino acids [A61K 51/08](#); antibodies [A61K 51/10](#))}
- U A61K 51/08
- • • Peptides, e.g. proteins, {carriers being peptides, polyamino acids, proteins}
- A61K 51/088
- • • • {conjugates with carriers being peptides, polyamino acids, proteins (antibodies [A61K 51/10](#))}
- NOTE  
The compound which bears, complexes or chelates the radioactive nucleus, is covalently linked/complexed to the carrier being a peptide, polyamino acid, protein (not being an antibody). Classification is also made according to the nature of the peptide or protein (e.g. if it is BSA, then [A61K 51/081](#) is also indicated). In case of a conjugate comprising a complex-forming compound (chelating group) complexing a radioactive metal linked to the carrier (peptide, protein, polyamino acid in [A61K 51/088](#)), the nature of this complex-forming compound is not classified except if it is the real contribution of the claimed invention and it is an uncommon complexing or chelating group, e.g. <sup>111</sup>In-DTPA-interleukin 2 is classified in [A61K 51/088](#); new DTPA-like derivatives conjugated to interleukin 2 and complexing <sup>111</sup>In for use in vivo is classified in [A61K 51/0478](#) and [A61K 51/088](#)
- U A61K 51/10
- • • • Antibodies or immunoglobulins; Fragments thereof, {the carrier being an antibody or an immunoglobulin, or a fragment thereof, e.g. a camelised human single domain antibody, or the Fc fragment of an antibody}
- A61K 51/1093
- • • • • {conjugates with carriers being antibodies}
- NOTE  
The compound which bears, complexes or chelates the radioactive nucleus, being covalently linked or complexed to the carrier being an antibody Classification being also made according to the appropriate [A61K 51/1003](#) subclass. In case of a conjugate comprising a complex-forming compound (chelating group) complexing a radioactive metal linked to the carrier (antibody in [A61K 51/1093](#)), the nature of this complex-forming compound being not classified except if it being the real contribution of the claimed invention and it being an uncommon complexing/chelating group, e.g. <sup>111</sup>In-DTPA-herceptin being classified in [A61K 51/1093](#) and [A61K 51/1051](#), new DTPA-like derivatives conjugated to herceptin and complexing <sup>111</sup>In for use in vivo being classified in [A61K 51/0478](#), [A61K 51/1093](#) and [A61K 51/1051](#)
- A61K 51/1096
- • • • • {radioimmunotoxins, i.e. conjugates being structurally as defined in [A61K 51/1093](#), and including a radioactive nucleus for use in radiotherapeutic applications}
- U A61K 51/12
- characterised by a special physical form, e.g. emulsion, microcapsules, liposomes, {characterized by a special physical form, e.g. emulsions, dispersions, microcapsules (liposomes [A61K 51/1234](#))}

A61K 51/1203      · · {in a form not provided for by groups [A61K 51/1206](#) to [A61K 51/1296](#)-, e.g. cells, cell fragments, viruses, virus capsides, ghosts, red blood cells, viral vectors}

**A61K 2300/00**      **Mixtures or combinations of active ingredients, wherein at least one active ingredient is fully defined in groups [A61K 31/00](#) to [A61K 41/00](#).**

NOTE

This code is meant to be allocated in combination with the CPC classification symbol of the active ingredients, and replaces the former +M Combi symbols used in this subclass

**Project: N/A (A61L)**

**A61L**      **METHODS OR APPARATUS FOR STERILISING MATERIALS OR OBJECTS IN GENERAL; DISINFECTION, STERILISATION, OR DEODORISATION OF AIR; CHEMICAL ASPECTS OF BANDAGES, DRESSINGS, ABSORBENT PADS, OR SURGICAL ARTICLES; MATERIALS FOR BANDAGES, DRESSINGS, ABSORBENT PADS, OR SURGICAL ARTICLES (preservation of bodies or disinfecting characterised by the agent employed [A01N](#);- preserving, e.g. sterilising, food or foodstuffs [A23](#);- preparations for medical, dental or toilet purposes [A61K](#);- preparation of ozone [C01B 13/10](#))**

WARNINGS

1. The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">A61L 33/10</a>	covered by	<a href="#">A61L 33/0011</a>
<a href="#">A61L 33/14</a>	covered by	<a href="#">A61L 33/0011</a>
<a href="#">A61L 33/16</a>	covered by	<a href="#">A61L 33/0047</a>

2. IPC7 groups [A61L 2/07](#) and subgroups, and [A61L 9/012](#) to [A61L 9/014](#) might be incomplete as relevant documents might still be classified in the hierarchical higher groups

**A61L 2/00**      **Methods or apparatus for disinfecting or sterilising materials or objects other than foodstuffs or contact lenses; Accessories therefor (for contact lenses [A61L 12/00](#);- atomisers for disinfecting agents [A61M](#);- sterilisation of packages or package contents in association with packaging [B65B 55/00](#);- treatment of water, waste water, sewage or sludge [C02F](#);- disinfecting paper [D21H 21/36](#);- disinfecting devices for water closets [E03D](#);- articles having provision for disinfection, see the relevant subclasses for these articles, e.g. [H04R 1/12](#))**

U    A61L 2/26      · Accessories {or devices or components used for biocidal treatment}

A61L 2/28      · · Devices for testing the effectiveness or completeness of sterilisation, e.g. indicators which change colour (apparatus involving enzymes or micro-organisms [C12M 1/34](#);- methods involving enzymes or micro-organisms [C12Q 1/00](#))

**A61L 9/00**      **Disinfection, sterilisation or deodorisation of air (body deodorants [A61Q 15/00](#);- purifying air by respirators [A62B](#)-, [A62D 9/00](#);- separating dispersed particles from gases or vapours [B01D 45/00](#) to [B01D 51/00](#)-, [B03C 3/00](#);- chemical or biological purification of waste gases [B01D 53/34](#);- production of ozone [C01B 13/10](#);- air-conditioning systems incorporating sterilisation [F24F 3/16](#))**

A61L 9/015      · using gaseous or vaporious substances, e.g. ozone ([A61L 9/20](#) takes precedence; {-evaporation in general [B01B 1/005](#)})

**A61L 11/00**      **Methods specially adapted for refuse {(desintegrating medical waste [B02C 19/0075](#);- disposal of medical waste [B09B 3/0075](#))}**

A61L 15/00 - A61L 33/00	<b>Chemical aspects of, or use of materials for, bandages, dressings or absorbent pads {comprising a solid support or backing} (for liquid bandages <a href="#">A61L 26/00</a>; radioactive dressings {<a href="#">A61N 5/1029</a>} {transdermal delivery devices <a href="#">A61K 9/7023</a>})</b>
A61L 15/00	<b>Chemical aspects of, or use of materials for, bandages, dressings or absorbent pads (for liquid bandages <a href="#">A61L 26/00</a>; radioactive dressings {<a href="#">A61N 5/1029</a>})</b>
	<u>NOTES</u>
	<p>1. In each set of groups <a href="#">A61L 15/08</a> to <a href="#">A61L 15/12</a> and <a href="#">A61L 15/18</a> to <a href="#">A61L 15/40</a>, in the absence of an indication to the contrary, classification is made in the last appropriate place.</p> <p>2. When classifying in groups <a href="#">A61L 15/08</a> to <a href="#">A61L 15/12</a>, classification is also made in group <a href="#">A61L 15/14</a> if the use of materials characterised by their function or physical properties is of interest.</p> <p>3. When classifying in groups <a href="#">A61L 15/18</a> to <a href="#">A61L 15/40</a>, classification is also made in groups <a href="#">A61L 15/42</a> to <a href="#">A61L 15/64</a> if the use of materials characterised by their function or physical properties is of interest.</p>
U A61L 15/07 A61L 15/12	<ul style="list-style-type: none"> <li>• Stiffening bandages</li> <li>• containing macromolecular materials</li> </ul>
	<p><u>NOTE</u></p> <p>In group <a href="#">A61L 15/12</a> and subgroups, the use of specific polymers is indicated using the relevant combination set symbol, adding, after the <a href="#">A61L 15/12</a> symbol, the correspondent symbol of the polymer composition in subclass <a href="#">C08L</a>, e.g. stiffening bandage based on polyurethane <a href="#">A61L 15/12</a>, <a href="#">C08L 75/04</a></p>
U A61L 15/16 A61L 15/22	<ul style="list-style-type: none"> <li>• Bandages, dressings or absorbent pads for physiological fluids such as urine or blood, e.g. sanitary towels, tampons</li> <li>• containing macromolecular materials</li> </ul>
	<p><u>NOTE</u></p> <p>In groups <a href="#">A61L 15/22</a> to <a href="#">A61L 15/30</a>, the use of specific polymers is indicated using the relevant combination set symbol, adding, after the symbol in <a href="#">A61L</a>, the correspondent symbol of the polymer in subclass <a href="#">C08L</a>, e.g. absorbent pad containing starch <a href="#">A61L 15/22</a>, <a href="#">C08L 3/02</a></p>
A61L 17/00	<b>Materials for surgical sutures or for ligaturing blood vessels (surgical adhesives <a href="#">A61L 24/00</a>; surgical instruments, devices or methods for suturing or ligaturing <a href="#">A61B 17/04</a>, <a href="#">A61B 17/12</a>; supports or packages for suture materials <a href="#">A61B 17/04</a>); {Materials for prostheses or catheters (bone cements or surgical adhesives for soft body tissues <a href="#">A61L 24/00</a>; shape or structure of prostheses <a href="#">A61F 2/00</a>; shape or structure of catheters <a href="#">A61M 5/00</a>)}</b>
	<u>NOTES</u>
	<p>1. In groups <a href="#">A61L 17/04</a> to <a href="#">A61L 17/145</a>, in the absence of an indication to the contrary, classification is made in the last appropriate place.</p> <p>2. When classifying in group <a href="#">A61L 17/00</a>, classification is also made in <a href="#">A61L 33/00</a> if the materials used are antithrombogenic.</p>
A61L 24/00	<b>Surgical adhesives or cements; Adhesives for colostomy devices</b>
	<u>NOTES</u>
	<p>1. In groups <a href="#">A61L 24/00</a> to <a href="#">A61L 24/12</a>, the use of specific polymers is indicated using the relevant combination set symbol, adding, after the symbol in <a href="#">A61L</a>, the</p>

correspondent symbol of the polymer in subclass [C08L](#), e.g. surgical adhesives based on polymethylmethacrylate: [A61L 24/06](#), [C08L 33/12](#)

2. In groups [A61L 24/02](#) to [A61L 24/12](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.

3. When classifying in group [A61L 24/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.

- U A61L 24/04
  - containing macromolecular materials
- A61L 24/06
  - • obtained by reactions only involving carbon-to-carbon unsaturated bonds  
{([A61L 24/043](#), [A61L 24/046](#) take precedence)}

**A61L 26/00** **Chemical aspects of, or use of materials for, {wound dressings or} bandages {in liquid, gel or powder form}**

**NOTES**

1. When classifying in group [A61L 26/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.

2. In groups [A61L 26/00](#) to [A61L 26/0095](#), the use of specific polymers is indicated using the relevant combination set symbol, adding, after the symbol in [A61L](#), the correspondent symbol of the polymer in subclass [C08L](#), e.g. liquid bandages on alginates: [A61L 26/0023](#), [C08L 5/04](#)

**A61L 27/00** **Materials for {grafts or} prostheses or for coating {grafts or} prostheses (dental prostheses [A61C 13/00](#); shape or structure of prostheses [A61F 2/00](#); use of preparations for artificial teeth [A61K 6/02](#); artificial kidneys [A61M 1/14](#))**

**NOTES**

1. In groups [A61L 27/02](#) to [A61L 27/48](#), in the absence of an indication to the contrary, classification is made in the last appropriate place

2. When classifying in groups [A61L 27/02](#) to [A61L 27/48](#), classification is also made in groups [A61L 27/50](#) to [A61L 27/60](#) if the use of materials characterised by their function or physical properties is of interest

3. When classifying in group [A61L 27/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic

4. In group [A61L 27/00](#), the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. prosthesis based on polyvinylchloride [A61L 27/16](#), [C08L 27/06](#)

- U A61L 27/14
  - Macromolecular materials
- U A61L 27/22
  - • Polypeptides or derivatives thereof, {e.g. degradation products}
- A61L 27/227
  - • • {Other specific proteins or polypeptides not covered by [A61L 27/222](#), [A61L 27/225](#) or [A61L 27/24](#)}
- U A61L 27/36
  - containing ingredients of undetermined constitution or reaction products thereof, {e.g. transplant tissue, natural bone, extracellular matrix (isolated natural compounds, e.g. collagen [A61L 27/24](#))}
- A61L 27/3641
  - • {characterised by the site of application in the body (materials for artificial blood vessels [A61L 27/507](#); materials for use in artificial skin [A61L 27/60](#))}
- U A61L 27/3683
  - • {subjected to a specific treatment prior to implantation, e.g. decellularising, demineralising, grinding, cellular disruption/non-collagenous protein removal, anti-calcification, crosslinking, supercritical fluid extraction, enzyme treatment}
- A61L 27/3695
  - • • {characterised by the function or physical properties of the final product, where no specific conditions are defined to achieve this ([A61L 27/3687](#), [A61L 27/3691](#) take precedence)}

- U A61L 27/38
- • {containing added animal cells (organs or tissue containing native cells [A61L 27/36](#))}
- A61L 27/3839
- • • {characterised by the site of application in the body (materials for artificial blood vessels [A61L 27/507](#); materials for use in artificial skin [A61L 27/60](#))}
- A61L 28/00**
- Materials for colostomy devices (adhesives for colostomy devices [A61L 24/00](#))**
- NOTE
- When classifying in group [A61L 28/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.
- A61L 29/00**
- Materials for catheters, {medical tubing, cannulae, or endoscopes} or for coating catheters (shape or structure of catheters [A61M 25/00](#))**
- NOTES
1. In groups [A61L 29/02](#) to {[A61L 29/126](#)}, in the absence of an indication to the contrary, classification is made in the last appropriate place
  2. When classifying in groups [A61L 29/02](#) to {[A61L 29/126](#)}, classification is also made in groups [A61L 29/14](#) to [A61L 29/18](#) if the use of materials characterised by their function or physical properties is of interest
  3. When classifying in group [A61L 29/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic
  4. In group [A61L 29/00](#), the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the combination set, e.g. a catheter based on polyvinylchloride [A61L 29/041](#), [C08L 27/06](#)
- A61L 31/00**
- Materials for other surgical articles, {e.g. stents, stent-grafts, shunts, surgical drapes, guide wires, materials for adhesion prevention, occluding devices, surgical gloves, tissue fixation devices (shape or structure of stent-grafts [A61F 2/07](#), of stents [A61F 2/82](#), of surgical gloves [A61B 19/04](#), of surgical drapes [A61B 19/08](#), of occluding devices [A61B 17/12022](#))}**
- NOTES
1. In groups [A61L 31/02](#) to {[A61L 31/129](#)}, in the absence of an indication to the contrary, classification is made in the last appropriate place
  2. When classifying in groups [A61L 31/02](#) to {[A61L 31/129](#)}, classification is also made in groups [A61L 31/14](#) to [A61L 31/18](#) if the use of materials characterised by their function or physical properties is of interest
  3. When classifying in group [A61L 31/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic
  4. In group [A61L 31/00](#), the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. surgical clamp based on polyvinylchloride [A61L 31/048](#), [C08L 27/06](#)

**A61L 33/00**

**Antithrombogenic treatment of surgical articles, e.g. sutures, catheters, prostheses, or of articles for the manipulation or conditioning of blood; Materials for such treatment**

NOTES

1. In groups [A61L 33/0076](#) to [A61L 33/0094](#) and [A61L 33/02](#) to [A61L 33/122](#), in the absence of an indication to the contrary, classification is made in the last appropriate place
2. When classifying in groups [A61L 33/02](#) to [A61L 33/122](#), classification is also made in group [A61L 33/0005](#) if of interest
3. In group [A61L 33/00](#), the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. antithrombogenic treatment with the help of polyvinylchloride [A61L 33/064](#), [C08L 27/06](#)

U A61L 33/0005

- {Use of materials characterised by their function or physical properties}

U A61L 33/0011

- • {Anticoagulant, e.g. heparin, platelet aggregation inhibitor, fibrinolytic agent, other than enzymes, attached to the substrate}

A61L 33/0041

- • • {characterised by the choice of an antithrombotic agent other than heparin (heparinoid [A61L 33/08](#); polypeptides [A61L 33/12](#))}

**Project: N/A (A61M)****A61M**

**DEVICES FOR INTRODUCING MEDIA INTO, OR ONTO, THE BODY (introducing media into or onto the bodies of animals [A61D 7/00](#); means for inserting tampons [A61F 13/26](#); devices for administering food or medicines orally [A61J](#); containers for collecting, storing or administering blood or medical fluids [A61J 1/05](#)); DEVICES FOR TRANSDUCING BODY MEDIA OR FOR TAKING MEDIA FROM THE BODY (surgery [A61B](#); chemical aspects of surgical articles [A61L](#)); DEVICES FOR PRODUCING OR ENDING SLEEP OR STUPOR**

NOTE

This subclass covers suction, pumping or atomising devices for medical use (e.g. cups, breast relievers, irrigators, sprays, powder insufflators, atomisers, inhalers), apparatus for general or local anaesthetics, devices or methods for causing a change in the state of consciousness, catheters, dilators, apparatus for introducing medicines into the body other than orally

Void

When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[A61M 1/18](#) covered by [B01D 63/02](#), [B01D 63/04](#)

[A61M 1/20](#) covered by [B01D 63/06](#)

[A61M 1/22](#) covered by [B01D 63/08](#)

[A61M 1/24](#) covered by [B01D 63/10](#)

[A61M 3/04](#) covered by [A61M 3/02](#)

[A61M 5/175](#) covered by [A61M 5/168](#)

[A61M 5/303](#) covered by [A61M 5/30](#)

[A61M 5/307](#) covered by [A61M 5/30](#)

[A61M 23/00](#) covered by [A61M 25/01](#), [A61M 29/00](#)

[A61M 25/08](#) covered by [A61M 25/0105](#)

[A61M 25/082](#) covered by [A61M 25/0116](#)  
[A61M 25/085](#) covered by [A61M 25/0122](#)  
[A61M 25/088](#) covered by [A61M 25/01](#)  
[A61M 25/092](#) covered by [A61M 25/0133](#)  
[A61M 25/095](#) covered by [A61M 25/01](#); [A61B 5/00](#); [A61N 1/056](#)  
[A61M 25/098](#) covered by [A61M 25/0108](#)

[A61M 25/12](#) covered by [A61M 25/10](#); [A61M 29/02](#)

[A61M 25/14](#) covered by [A61M 25/0021](#)

[A61M 25/16](#) covered by [A61M 25/0009](#)

[A61M 25/18](#) covered by [A61M 25/0014](#)

[A61M 29/04](#) covered by [A61M 29/02](#)

[A61M 36/00](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/02](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/04](#) covered by [A61M 37/0069](#), [A61N 5/10](#); [A61M 15/02](#)

[A61M 36/06](#) covered by [A61M 37/0069](#), [A61N 5/10](#); [A61M 15/02](#)

[A61M 36/08](#) covered by [A61M 5/1785](#)

[A61M 36/10](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/12](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

[A61M 36/14](#) covered by [A61M 37/0069](#), [A61N 5/10](#)

## A61M 1/00

**Suction or pumping devices for medical purposes; Devices for carrying-off, for treatment of, or for carrying-over, body-liquids; Drainage systems ({[A61M 3/00](#) to [A61M 5/00](#); [A61M 11/00](#) to [A61M 16/00](#); [A61M 27/00](#) to [A61M 35/00](#) take precedence } ; catheters [A61M 25/00](#); tube connectors, tube couplings, valves or branch units specially adapted for medical use [A61M 39/00](#); devices for taking samples of blood [A61B 5/14](#); implements for holding wounds open [A61B 17/02](#); {-saliva removers for dentists [A61C 17/04](#)} ; filters implantable into blood vessels [A61F 2/01](#); pumps in general [F04](#))**

### WARNING

Groups [A61M 1/0007](#), [A61M 1/0015](#), [A61M 1/0017](#), [A61M 1/0025](#) - [A61M 1/0029](#), [A61M 1/0033](#), [A61M 1/0035](#), [A61M 1/0045](#), [A61M 1/005](#) - [A61M 1/0054](#), [A61M 1/006](#), [A61M 1/0068](#) - [A61M 1/0072](#), [A61M 1/0082](#), [A61M 1/0086](#), [A61M 1/009](#) - [A61M 1/0098](#), [A61M 1/0204](#), [A61M 1/0213](#) - [A61M 1/0236](#), [A61M 1/0254](#), [A61M 1/0277](#), [A61M 1/0286](#), [A61M 1/0295](#), [A61M 1/062](#) - [A61M 1/068](#), [A61M 1/1001](#) - [A61M 1/1008](#), [A61M 1/1012](#) - [A61M 1/1036](#), [A61M 1/1039](#) - [A61M 1/1044](#), [A61M 1/1048](#) - [A61M 1/1051](#), [A61M 1/1055](#) - [A61M 1/1058](#), [A61M 1/1062](#) - [A61M 1/1065](#), [A61M 1/1074](#) - [A61M 1/1075](#), [A61M 1/1082](#), [A61M 1/1084](#), [A61M 1/1087](#) - [A61M 1/1089](#), [A61M 1/1096](#) - [A61M 1/1098](#), [A61M 1/122](#) - [A61M 1/125](#), [A61M 1/1601](#) - [A61M 1/1652](#), [A61M 1/166](#) - [A61M 1/1676](#), [A61M 1/1682](#) - [A61M 1/1684](#), [A61M 1/1688](#), [A61M 1/262](#) - [A61M 1/267](#), [A61M 1/281](#) - [A61M 1/284](#), [A61M 1/288](#), [A61M 1/301](#) - [A61M 1/309](#), [A61M 1/322](#) - [A61M 1/327](#), [A61M 1/3403](#) - [A61M 1/341](#), [A61M 1/3417](#), [A61M 1/3424](#) - [A61M 1/3437](#), [A61M 1/3444](#) - [A61M 1/3451](#), [A61M 1/3458](#), [A61M 1/3465](#), [A61M 1/3468](#), [A61M 1/3475](#) - [A61M 1/3493](#), [A61M 1/3601](#) - [A61M 1/362](#), [A61M 1/3629](#) - [A61M 1/3632](#), [A61M 1/3635](#) -

[A61M 1/3638](#), [A61M 1/3641](#), [A61M 1/3644](#) - [A61M 1/3652](#), [A61M 1/3656](#) - [A61M 1/3661](#), [A61M 1/3667](#), [A61M 1/3673](#), [A61M 1/3676](#), [A61M 1/3678](#), [A61M 1/3683](#), [A61M 1/3686](#), [A61M 1/3689](#), [A61M 1/3692](#), [A61M 1/3695](#) - [A61M 1/3698](#) are incomplete pending reclassification of documents from group [A61M 1/00](#) or respective subgroup.

Until reclassification is complete, groups [A61M 1/00](#) or respective subgroup and [A61M 1/0007](#), [A61M 1/0015](#), [A61M 1/0017](#), [A61M 1/0025](#) - [A61M 1/0029](#), [A61M 1/0033](#), [A61M 1/0035](#), [A61M 1/0045](#), [A61M 1/005](#) - [A61M 1/0054](#), [A61M 1/006](#), [A61M 1/0068](#) - [A61M 1/0072](#), [A61M 1/0082](#), [A61M 1/0086](#), [A61M 1/009](#) - [A61M 1/0098](#), [A61M 1/0204](#), [A61M 1/0213](#) - [A61M 1/0236](#), [A61M 1/0254](#), [A61M 1/0277](#), [A61M 1/0286](#), [A61M 1/0295](#), [A61M 1/062](#) - [A61M 1/068](#), [A61M 1/1001](#) - [A61M 1/1008](#), [A61M 1/1012](#) - [A61M 1/1036](#), [A61M 1/1039](#) - [A61M 1/1044](#), [A61M 1/1048](#) - [A61M 1/1051](#), [A61M 1/1055](#) - [A61M 1/1058](#), [A61M 1/1062](#) - [A61M 1/1065](#), [A61M 1/1074](#) - [A61M 1/1075](#), [A61M 1/1082](#), [A61M 1/1084](#), [A61M 1/1087](#) - [A61M 1/1089](#), [A61M 1/1096](#) - [A61M 1/1098](#), [A61M 1/122](#) - [A61M 1/125](#), [A61M 1/1601](#) - [A61M 1/1652](#), [A61M 1/166](#) - [A61M 1/1676](#), [A61M 1/1682](#) - [A61M 1/1684](#), [A61M 1/1688](#), [A61M 1/262](#) - [A61M 1/267](#), [A61M 1/281](#) - [A61M 1/284](#), [A61M 1/288](#), [A61M 1/301](#) - [A61M 1/309](#), [A61M 1/322](#) - [A61M 1/327](#), [A61M 1/3403](#) - [A61M 1/341](#), [A61M 1/3417](#), [A61M 1/3424](#) - [A61M 1/3437](#), [A61M 1/3444](#) - [A61M 1/3451](#), [A61M 1/3458](#), [A61M 1/3465](#), [A61M 1/3468](#), [A61M 1/3475](#) - [A61M 1/3493](#), [A61M 1/3601](#) - [A61M 1/362](#), [A61M 1/3629](#) - [A61M 1/3632](#), [A61M 1/3635](#) - [A61M 1/3638](#), [A61M 1/3641](#), [A61M 1/3644](#) - [A61M 1/3652](#), [A61M 1/3656](#) - [A61M 1/3661](#), [A61M 1/3667](#), [A61M 1/3673](#), [A61M 1/3676](#), [A61M 1/3678](#), [A61M 1/3683](#), [A61M 1/3686](#), [A61M 1/3689](#), [A61M 1/3692](#), [A61M 1/3695](#) - [A61M 1/3698](#) should be considered in order to perform a complete search.

- U A61M 1/0001
  - {Containers for suction drainage, e.g. rigid containers}
- A61M 1/0009
  - {incorporating a movable wall to create suction, e.g. syringes (with a flexible member creating suction [A61M 1/0011](#);-; cupping glasses [A61M 1/08](#))}
- A61M 1/0019
  - {Drainage containers not being adapted for subjection to vacuum, e.g. bags (devices worn by the patient for reception of urine [A61F 5/44](#);-; emptying devices for drainage bags [B65B 69/0016](#))}
- A61M 1/0023
  - {Suction drainage systems (containers therefor [A61M 1/0001](#);-; suction-irrigation systems [A61M 1/0058](#))}
- A61M 1/0031
  - {Suction control ([A61M 1/0013](#);-; [A61M 1/0041](#) take precedence)}
- A61M 1/0037
  - {Intermittent or pulsating suction ([A61M 1/0005](#);-; [A61M 1/0062](#) take precedence)}
- A61M 1/0058
  - {Suction-irrigation systems (aspiration tips supplying fluids [A61M 1/0084](#);-; combined with tracheal tubes [A61M 16/0463](#))}
- A61M 1/0066
  - {Suction pumps ([A61M 1/0003](#);-; [A61M 1/0011](#);-; [A61M 1/0023](#);-; [A61M 1/10](#) take precedence)}
- U A61M 1/008
  - {Drainage tubes; Aspiration tips}
- A61M 1/0084
  - {With gas or fluid supply means, e.g. for supplying rinsing fluids, anticoagulants (for irrigation without suction [A61M 3/0279](#);-; combined with tracheal tubes [A61M 16/0463](#);-; dental instruments with combined rinsing and aspirating [A61C 17/0208](#))}
- U A61M 1/02
  - Blood transfusion apparatus (blood infusion by syringes [A61M 5/14](#))
- A61M 1/0259
  - {Apparatus for treatment of blood or blood constituents not otherwise provided for (for agitating [A61M 1/025](#);-; for separating blood components present in distinct layers in a container [A61M 1/029](#))}

- A61M 1/029
  - • {Separating blood components present in distinct layers in a container, not otherwise provided for (containers for storing blood or blood components [A61J 1/05](#); sampling or analysing blood by separating blood components [G01N 33/491](#))}
- A61M 1/10
  - Blood pumps; Artificial hearts; Devices for mechanical circulatory assistance, e.g. intra-aortic balloon pumps (artificial heart valves [A61F 2/24](#); heart stimulation [A61H 31/00](#))
- U A61M 1/1001
  - • {General aspects of blood pumps irrespective of pump type}
- A61M 1/1005
  - • • {with means for making a blood flow pulsatile (moving filter membranes used for pumping [A61M 1/267](#); piston pumps [A61M 1/1081](#))}
- A61M 1/14
  - Dialysis systems; Artificial kidneys; Blood oxygenators; {Reciprocating systems for treatment of body fluids, e.g. single needle systems for haemofiltration, pheris (haemofiltration using non reciprocating systems [A61M 1/34](#); extracorporeal blood circuit aspects [A61M 1/36](#))}; (processes of separation using semi-permeable membranes [B01D 61/00](#); semi-permeable membranes characterised by the material, manufacturing processes therefor [B01D 71/00](#))
- A61M 1/16
  - • with membranes {([A61M 1/30](#) takes precedence; membranes per se [B01D 69/00](#), [B01D 71/00](#))}
- A61M 1/168
  - • • {Sterilisation or cleaning before or after use (sterilisation of materials in general [A61L](#); cleaning or sterilisation of membrane modules apart from the machine [B01D 65/02](#))}
- A61M 1/1692
  - • • {Detection of blood traces in dialysate (testing of the membrane modules [B01D 65/10](#); investigating fluid-tightness of structures in general [G01M 3/00](#))}
- A61M 1/1698
  - • • {Blood oxygenators with or without heat-exchangers ([A61M 1/1678](#) takes precedence; membranes therefor [B01D 67/00](#), [B01D 69/00](#), [B01D 71/00](#))}
- U A61M 1/36
  - Other treatment of blood in a by-pass of the natural circulatory system, e.g. temperature adaptation, irradiation; {Extra-corporeal blood circuits}
- U A61M 1/3621
  - • {Extra-corporeal blood circuits (single-needle circuits [A61M 1/30](#))}
- A61M 1/3626
  - • • {Gas bubble detectors (blood leak detection by change of transparency of dialysate [A61M 1/1692](#); in infusion devices [A61M 5/365](#); observing bubbles in a liquid pool for leak detection, in general [G01M 3/06](#))}
- A61M 1/3627
  - • • {Degassing devices; Buffer reservoirs; Drip chambers; Blood filters (priming [A61M 1/3643](#); blood filters for infusion [A61M 5/165](#))}
- A61M 5/00**

**Devices for bringing media into the body in a subcutaneous, intra-vascular or intramuscular way; Accessories therefor, e.g. filling or cleaning devices, arm-rests ({vaccination appliances for veterinary use [A61D 1/025](#)}; tube connectors, tube couplings, valves or branch units specially adapted for medical use [A61M 39/00](#); containers specially adapted for medical or pharmaceutical purposes [A61J 1/00](#); {-combinations of vial and syringe for mixing or transferring their contents [A61J 1/20](#); holders for containers for collecting, storing or administering blood or medical fluids [A61J 1/16](#))}**
- A61M 5/002
  - {Packages specially adapted therefor, e.g. for syringes or needles, kits for diabetics (needle protection, e.g. caps, [A61M 5/3202](#); for sharps [A61B 19/0262](#))}
- A61M 5/14
  - Infusion devices, e.g. infusing by gravity; Blood infusion; Accessories therefor (suction in pumping blood transfusion [A61M 1/02](#); {-infusion containers [A61J 1/05](#))}
- U A61M 5/1407
  - • {Infusion of two or more substances}
- A61M 5/1408
  - • • {in parallel, e.g. manifolds, sequencing valves (access sites [A61M 39/02](#); tube connectors [A61M 39/10](#))}
- A61M 5/1411
  - • {Drip chambers ([A61M 5/162](#), [A61M 5/1689](#), [A61M 5/40](#) take precedence)}

- U A61M 5/142
- Pressure infusion, e.g. using pumps
- NOTE  
In this group, the following expression is used with the meaning indicated:
- "pressure infusion" includes powered injection working at a controlled rate
- A61M 2005/14288
- • {Infusion or injection simulation (simulation of surgery in general [A61B 19/50](#); training for or simulation of use of injection or infusion devices [G09B 23/285](#); computer simulations for diagnosis or treatment in general [G06F 19/3437](#))}
- A61M 5/162
- • Needle sets, i.e. connections by puncture between reservoir and tube; {Connections between reservoir and tube (in jet-action syringes [A61M 5/30](#); connectors for tubes having sealed ends and a needle for piercing them [A61M 39/14](#))}
- A61M 5/1626
- • {Needle protectors therefor (in combination with syringes [A61M 5/3202](#); protectors for sharps [A61B 19/0262](#))}
- A61M 5/165
- • Filtering accessories, e.g. blood filters, filters for infusion liquids ({[A61M 1/14](#)}, [A61M 1/34](#), {[A61M 1/3627](#), [A61M 1/3679](#), [A61M 1/3687](#)} take precedence; {needle sets with incorporated air inlet filters [A61M 5/162](#))}
- U A61M 5/168
- • Means for controlling media flow to the body or for metering media to the body, e.g. drip meters, counters; {Monitoring media flow to the body (flow control in general [G05D 7/00](#))}
- A61M 5/16831
- • {Monitoring, detecting, signalling or eliminating infusion flow anomalies (low-level float-valves causing cut-off [A61M 5/40](#); indicating or recording presence, absence or direction of flow in general [G01P 13/0066](#))}
- U A61M 5/178
- Syringes
- A61M 5/20
- • Automatic syringes, e.g. with automatically actuated piston rod, with automatic needle injection, filling automatically ([A61M 5/142](#); {[A61M 5/46](#)} take precedence; {hypodermic projectiles [F42B 12/54](#))}
- A61M 5/2033
- • {Spring-loaded one-shot injectors with or without automatic needle insertion (multishot dosing syringes [A61M 5/31525](#), needle insertion only [A61M 5/3287](#))}
- A61M 5/2053
- • {Media being expelled from injector by pressurised fluid or vacuum (for infusion [A61M 5/145](#), [A61M 5/155](#))}
- U A61M 5/31
- Details
- A61M 5/32
- • Needles; Details of needles pertaining to their connection with syringe or hub (infusion needles [A61M 5/158](#)); Accessories for bringing the needle into, or holding the needle on, the body ({[A61M 5/42](#), [A61M 5/46](#) take precedence; guide needles for catheters [A61M 25/065](#)); Devices for protection of needles {(apparatus specially adapted for cleaning or sterilising needles [A61M 5/001](#))}
- A61M 5/3202
- • • {Devices for protection of the needle before use, e.g. caps ([A61M 5/50](#) takes precedence; for infusion spikes [A61M 5/1626](#); protectors for sharps [A61B 19/0262](#))}
- A61M 5/3205
- • • {Apparatus for removing or disposing of used needles or syringes, e.g. containers; Means for protection against accidental injuries from used needles (for sharps [A61B 19/0288](#); disintegrating apparatus in general [B02C](#), e.g. [B02C 19/0075](#), [B23H 9/001](#); disposal of medical waste in general [B09B 3/0075](#); receptacles for refuse disposal in general [B65F 1/00](#))}
- A61M 5/3287
- • • {Accessories for bringing the needle into the body; Automatic needle insertion ([A61M 5/20](#), [A61M 5/31525](#) take precedence)}

- A61M 5/36
- with means for eliminating or preventing injection or infusion of air into body (dialysis systems, blood oxygenators [A61M 1/14](#); haemofiltration equipment [A61M 1/34](#); {-automatic tube cut-off [A61M 39/281](#)})
- A61M 5/48
- having means for varying, regulating, indicating or limiting injection pressure ([A61M 5/142](#) takes precedence; {-monitoring pressure in infusion systems [A61M 5/16854](#)})
- A61M 11/00**
- Sprayers or atomisers specially adapted for therapeutic purposes (in general [B05B](#); {-aerosol containers [B65D 83/14](#)})**
- WARNING
- Groups [A61M 11/001](#) - [A61M 11/008](#), [A61M 11/042](#) - [A61M 11/048](#), [A61M 11/065](#) are incomplete pending reclassification of documents from group [A61M 11/00](#) or respective subgroup.
- Until reclassification is complete, groups [A61M 11/00](#) or respective subgroup and [A61M 11/001](#) - [A61M 11/008](#), [A61M 11/042](#) - [A61M 11/048](#), [A61M 11/065](#) should be considered in order to perform a complete search.
- A61M 11/02
- operated by air {or other gas} pressure applied to the liquid {or other product} to be sprayed or atomised {(sprayers for horticulture [A01G](#)-, [A01H](#)-, killing insects [A01M](#)-, air humidifying by nozzles [F24F 6/14](#)-, [F24F 6/18](#)-, cooling by spraying [F28B](#)-, [F28C](#)})
- A61M 16/00**
- Devices for influencing the respiratory system of patients by gas treatment, e.g. mouth-to-mouth respiration; Tracheal tubes (stimulating the respiratory movement by mechanical, pneumatic or electrical means, iron lungs combined with gas breathing means [A61H 31/00](#); {-supine patient supports therefor [A61H 31/008](#)}; respiratory apparatus in general [A62B](#); respirators for working under water [B63C 11/00](#))**
- WARNING
- Groups [A61M 16/0003](#) - [A61M 16/0012](#), [A61M 16/006](#) - [A61M 16/0063](#), [A61M 16/0069](#), [A61M 16/0081](#) - [A61M 16/0084](#), [A61M 16/0093](#), [A61M 16/0402](#) - [A61M 16/0431](#), [A61M 16/0436](#) - [A61M 16/0438](#), [A61M 16/0443](#) - [A61M 16/0459](#), [A61M 16/0475](#) - [A61M 16/0486](#), [A61M 16/049](#) - [A61M 16/0495](#), [A61M 16/0605](#) - [A61M 16/0655](#), [A61M 16/0672](#) - [A61M 16/0677](#), [A61M 16/0688](#) - [A61M 16/0694](#), [A61M 16/0825](#) - [A61M 16/0866](#), [A61M 16/0883](#) - [A61M 16/0891](#), [A61M 16/1005](#) - [A61M 16/1015](#), [A61M 16/106](#) - [A61M 16/107](#), [A61M 16/108](#) - [A61M 16/1095](#), [A61M 16/122](#) - [A61M 16/127](#), [A61M 16/142](#) - [A61M 16/147](#), [A61M 16/161](#), [A61M 16/164](#) - [A61M 16/168](#), [A61M 16/201](#) - [A61M 16/207](#), [A61M 16/209](#) are incomplete pending reclassification of documents from group [A61M 16/00](#) or respective subgroup.
- Until reclassification is complete, groups [A61M 16/00](#) or respective subgroup and [A61M 16/0003](#) - [A61M 16/0012](#), [A61M 16/006](#) - [A61M 16/0063](#), [A61M 16/0069](#), [A61M 16/0081](#) - [A61M 16/0084](#), [A61M 16/0093](#), [A61M 16/0402](#) - [A61M 16/0431](#), [A61M 16/0436](#) - [A61M 16/0438](#), [A61M 16/0443](#) - [A61M 16/0459](#), [A61M 16/0475](#) - [A61M 16/0486](#), [A61M 16/049](#) - [A61M 16/0495](#), [A61M 16/0605](#) - [A61M 16/0655](#), [A61M 16/0672](#) - [A61M 16/0677](#), [A61M 16/0688](#) - [A61M 16/0694](#), [A61M 16/0825](#) - [A61M 16/0866](#), [A61M 16/0883](#) - [A61M 16/0891](#), [A61M 16/1005](#) - [A61M 16/1015](#), [A61M 16/106](#) - [A61M 16/107](#), [A61M 16/108](#) - [A61M 16/1095](#), [A61M 16/122](#) - [A61M 16/127](#), [A61M 16/142](#) - [A61M 16/147](#), [A61M 16/161](#), [A61M 16/164](#) - [A61M 16/168](#), [A61M 16/201](#) - [A61M 16/207](#), [A61M 16/209](#) should be considered in order to perform a complete search.
- A61M 16/01
- specially adapted for anaesthetising {([A61M 16/104](#)-, [A61M 16/18](#) take precedence)}
- U A61M 16/04
- Tracheal tubes (catheters in general [A61M 25/00](#))

- A61M 16/0488
- {Mouthpieces; Means for guiding, securing or introducing the tubes (guiding or introducing with laryngoscopes [A61B 1/267](#); holding devices on the body [A61M 25/02](#))}
- U A61M 16/06
- Respiratory or anaesthetic masks
- A61M 16/0666
- {Nasal cannulas or tubing (devices for improving normal breathing through the nose [A61F 5/08](#); nose filters [A62B 23/06](#); outside holding devices [A61M 25/02](#))}
- U A61M 16/10
- Preparation of respiratory gases or vapours
- A61M 16/105
- {Filters ([A61M 16/047](#); [A61M 16/22](#) take precedence; water traps [A61M 16/08](#))}
- U A61M 21/00**
- Other devices or methods to cause a change in the state of consciousness; Devices for producing or ending sleep by mechanical, optical, or acoustical means, e.g. for hypnosis**
- A61M 21/02
- for inducing sleep or relaxation, e.g. by direct nerve stimulation, hypnosis, analgesia (for massage [A61H](#); electrotherapy [A61N](#); e.g. applying alternating or intermittent electric currents for producing anaesthesia [A61N 1/36021](#))
- A61M 25/00**
- Catheters; Hollow probes (dilators [A61M 29/00](#); {-peritoneal catheters [A61M 1/285](#); tracheal tubes [A61M 16/04](#); for drainage [A61M 27/00](#); for uterus, vagina or rectum [A61M 31/00](#)}; for measuring or testing [A61B](#); {-materials for catheters [A61L 29/00](#))}**
- U A61M 25/0021
- {characterised by the form of the tubing ([A61M 25/0054](#) takes precedence)}
- U A61M 25/0023
- {by the form of the lumen, e.g. cross-section, variable diameter}
- A61M 25/0026
- • {Multi-lumen catheters with stationary elements (catheter assemblies comprising a catheter in combination with a guide tube, sheath or sleeve [A61M 2025/0681](#); catheters comprising telescoping coaxial elements [A61M 2025/0175](#))}
- A61M 25/0067
- {characterised by the distal end, e.g. tips ([A61M 25/0054](#); [A61M 25/04](#) take precedence; balloon catheters [A61M 25/10](#))}
- U A61M 25/01
- Introducing, guiding, advancing, emplacing or holding catheters ([A61M 25/10](#) takes precedence)
- U A61M 25/02
- • Holding devices, e.g. on the body
- A61M 25/04
- • • in the body, e.g. expansible {([A61M 25/10](#); [A61M 16/0488](#) take precedence)}
- A61M 25/10
- Balloon catheters ({[A61M 25/0125](#) takes precedence; embolectomy [A61B 17/22032](#); retractors [A61B 17/02](#)}; inflatable balloons for placing stents or stent-grafts [A61F 2/958](#); {-stomach balloons for treatment of obesity [A61F 5/0003](#); oesophageal tubes [A61J 15/00](#))}
- A61M 25/1002
- • {characterised by balloon shape ([A61M 25/1006](#); [A61M 25/1009](#) take precedence)}
- A61M 27/00**
- Drainage appliances for wounds or the like, {i.e. wound drains, implanted drains} (implements for holding wounds open [A61B 17/02](#); {-middle ear drainage [A61F 11/002](#); other drainage devices [A61M 1/00](#))}**
- A61M 27/002
- {Implant devices for drainage of body fluids from one part of the body to another (intraocular [A61F 9/00781](#); middle ear [A61F 11/002](#))}
- A61M 31/00**
- Devices for introducing or retaining media, e.g. remedies, in cavities of the body ([A61M 25/00](#) takes precedence; {-introducing or retaining ophthalmic products into the ocular cavities [A61F 9/0008](#))}**

- A61M 31/002
- {Devices for releasing a drug at a continuous and controlled rate for a prolonged period of time (artificial gland structures or devices [A61F 2/022](#); intra-uterine contraceptive devices [A61F 6/14](#); tampons for introducing into the vagina [A61F 13/20](#), [A61L 15/00](#); suppositories or bougies for intra-vaginal or intra-uterine application [A61K 9/02](#); physical forms of medicinal preparations for sustained or differential drug release [A61K 9/20](#), [A61K 9/50](#))}
- A61M 35/00**      **Devices for applying, {e.g. spreading}, media, e.g. remedies, on the human body (devices for handling toilet or cosmetic substances [A45D](#); absorbent pads, e.g. swabs, [A61F 13/15](#)); {Introducing media, e.g. remedies, into the body by diffusion through the skin (using salt baths [A61H 33/04](#))}**
- A61M 35/003
- {Hand-held applicator instruments having media dispensing or spreading means (apparatus for iontophoresis [A61N 1/30](#); hand tools for applying fluent material to surfaces, in general [B05C 17/00](#); container closures with pads or like contents-applying means, in general [B65D 47/42](#))}
- A61M 35/006
- • {Absorbent pads, e.g. swabs, containing a liquid, e.g. in a rupturable reservoir (absorbent pads, e.g. swabs, for medical use, in general [A61F 13/00](#), e.g. [A61F 13/38](#))}
- A61M 37/00**      **Other apparatus for introducing media into the body (for reproduction or fertilisation [A61B 17/425](#); apparatus for iontophoresis or cataphoresis [A61N 1/30](#)); Percutany, i.e. introducing medicines into the body by diffusion through the skin (salt baths [A61H 33/04](#))**
- A61M 37/0076
- {Tattooing apparatus (apparatus for marking animals [A01K 11/00](#); vaccine applicators having needles or other puncturing means [A61B 17/205](#))}
- A61M 39/00**      **Tubes, tube connectors, tube couplings, valves, access sites or the like, specially adapted for medical use (for respiratory devices, e.g. tracheal tubes [A61M 16/00](#); artificial heart valves [A61F 2/24](#))**
- WARNING  
Not complete, see [A61J 1/14](#)
- U    A61M 39/02
- Access sites
- A61M 39/0208
- • {Subcutaneous access sites for injecting or removing fluids (transcutaneous access sites [A61M 39/0247](#); implantable infusion devices [A61M 5/14276](#))}
- A61M 39/0247
- • {Semi-permanent or permanent transcutaneous or percutaneous access sites to the inside of the body (peritoneal dialysis catheters [A61M 1/285](#); tracheostomy devices [A61M 16/0465](#); measuring pressure within the body [A61B 5/03](#); colostomy devices [A61F 5/445](#); gastrostomy feeding tubes [A61J 15/0015](#); means for fixing a feeding tube outside of the body [A61J 15/0053](#))}
- A61M 39/10
- Tube connectors; Tube couplings {([A61M 39/02](#) takes precedence; connecting needles to syringes or hubs [A61M 5/34](#); connecting catheter tubes to hubs [A61M 25/0014](#))}
- A61M 39/14
- • for connecting tubes having sealed ends {(needle sets [A61M 5/162](#); having valves closing automatically on disconnection of line [A61M 39/26](#))}
- A61M 39/22
- Valves or arrangement of valves {([A61M 39/02](#), [A61M 39/0247](#), [A61M 39/16](#) take precedence; regulating valves in infusion systems [A61M 5/16881](#); in devices worn by the patient for the reception of urine, faeces, catamenial or other discharge, or in colostomy devices [A61F 5/4405](#))}
- A61M 2202/00**      **Special media to be introduced, removed or treated (applying radioactive material [A61N 5/1028](#))**

NOTE

The classification symbols [A61M 2202/0007](#) to [A61M 2202/0092](#) are not listed first when assigned to patent documents. They are used only when associated to other subgroups of [A61M 2202/00](#) in combination sets  
Example: [A61M 2202/0417](#), [A61M 2202/0057](#)

U A61M 2202/04

• Liquids

**NOTE**

The codes can be followed by additional symbols. The symbols have the meaning as listed below:

- +A fluid entering a filter;
- +B fluid leaving the cross-flow filter without having passed through the filtering element ;
- +C filtrate, i.e. the fluid passing through the filter;
- +D residue retained by the filter due to size;
- +E retained by adsorption;
- +F changed by biological action;
- +H product to be retained or harvested, e.g. by pheresis;
- +K changed by chemical action;
- +W product washed out;
- +Z starting product created by centrifuging.

U A61M 2202/0413  
A61M 2202/0445

• • Blood  
• • • Proteins (immunoglobulin [A61M 2202/0417](#); beta-2-microglobulin [A61M 2202/0421](#); thrombin [A61M 2202/0425](#); haemoglobin [A61M 2202/0433](#))

**A61M 2230/00**

**Measuring parameters of the user**

**NOTE**

+A following the symbol means that the parameter is used for controlling an apparatus

The classification symbol [A61M 2230/005](#) is not listed first when assigned to patent documents. It is used only when associated to other subgroups of [A61M 2230/00](#)  
Example: [A61M 2230/06](#) + [A61M 2230/005](#)

**Project: N/A (A61N)**

U A61N 1/00

**Electrotherapy; Circuits therefor ([A61N 2/00](#) takes precedence; irradiation apparatus [A61N 5/00](#))**

A61N 1/16

• Screening or neutralising undesirable influences from {or using,} atmospheric or terrestrial radiation or fields {(using atmospheric electricity or earth currents [H05F 3/00](#))}

U A61N 1/18

• Applying electric currents by contact electrodes

U A61N 1/32

• • alternating or intermittent currents {(applying electric fields by inductive or capacitive coupling [A61N 1/40](#); microwave apparatus [A61N 5/02](#))}

U A61N 1/36

• • • for stimulation, e.g. heart pace-makers

U A61N 1/3605

• • • • {Implantable neurostimulators for stimulating central or peripheral nerve system}

U A61N 1/36128

• • • • • {Control systems}

- U A61N 1/36146 . . . . . {specified by the stimulation parameters}
  - U A61N 1/3615 . . . . . {Intensity}
  - A61N 1/36164 . . . . . {Subthreshold, non-excitatory signals} (non-excitatory signals to the heart [A61N 1/3628](#))
- A61N 7/00**      **Ultrasound therapy (lithotripsy [A61B 17/22](#), [A61B 17/225](#); massage using supersonic vibration [A61H 23/00](#); {-using ultrasound for introducing media into the body [A61M 37/0092](#)})**

**Project: N/A (A62C)**

- A62C**      **FIRE-FIGHTING (fire-extinguishing compositions, use of chemical substances in extinguishing fires [A62D 1/00](#); spraying, applying liquids or other fluent materials to surfaces in general [B05](#); alarm arrangements [G08B](#), e.g. fire alarms actuated by smoke or gases [G08B 17/10](#))**
- U A62C 2/00      **Fire prevention or containment ([A62C 3/00](#) takes precedence; flame traps [A62C 4/00](#))**
  - U A62C 2/06      . Physical fire-barriers
  - A62C 2/24      . . Operating or controlling mechanisms {(emergency operation of doors and windows [E05F 1/002](#), [E05F 15/72](#))}
- A62C 3/00**      **Fire prevention, containment or extinguishing specially adapted for particular objects or places ({in oil wells [E21B 29/08](#), [A62C 35/00](#); in mines or tunnels [E21F 5/00](#)}; for nuclear reactors [G21C 9/04](#))**
- A62C 3/008      . {for decorations, e.g. Christmas trees (Christmas tree decorations incorporating fire extinguishing or fire prevention means [A47G 33/0872](#); blowing or snuffing out candle-flames [F23Q 25/00](#))}
  - U A62C 3/02      . for area conflagrations, e.g. forest fires, subterranean fires
  - U A62C 3/0228      . . {with delivery of fire extinguishing material by air or aircraft (fire-fighting aircraft [B64D 1/16](#))}
  - A62C 3/025      . . . {Fire extinguishing bombs; Projectiles and launchers therefor (launching apparatus for projectiles, missiles or torpedoes in general [F41F 1/00](#), [F41F 3/00](#), [F41F 7/00](#))}
- A62C 27/00 - A62C 33/00**      **Fire-fighting vehicles ([A62C 31/00](#), [A62C 33/00](#), [A62C 37/00](#) take precedence; vehicle aspects, see the appropriate subclasses of [B60](#) to [B64](#), e.g. fire-fighting aircraft [B64D 1/16](#))**
- A62C 31/00      **Delivery of fire-extinguishing material (pumps [F04](#); {suction or pressure} hoses, {joints or couplings therefor} [F16L](#))**
  - A62C 35/00      **Permanently-installed equipment ([A62C 31/00](#), [A62C 33/00](#), [A62C 37/00](#) take precedence; for forming water curtains [A62C 2/08](#))**

**Project: N/A (A63B)**

- A63B 1/00 - A63B 26/00**      **Gymnastic exercising apparatus (training apparatus for special sports [A63B 69/00](#); apparatus for passive exercising, massage [A61H](#))**
- A63B 5/00**      **Apparatus for jumping (mats for jumping [A63B 6/00](#); for racing or riding sports, e.g. hurdles [A63K](#))**
- A63B 5/08      . Spring-boards (of trampoline type [A63B 5/11](#); {-in the form of spring mats [A63B 6/00](#)})
- A63B 5/16      . Training devices for jumping; Devices for balloon-jumping; Jumping aids {([A63B 25/02](#), [A63B 25/10](#) take precedence)}

A63B 6/00	<b>Mats or the like for absorbing shocks for jumping, gymnastics or the like</b> {(for jogging on the spot <a href="#">A63B 69/0035</a> ; resiliently-mounted floors <a href="#">E04F 15/22</a> )}
A63B 9/00	<b>Climbing poles, frames, or stages</b> {(climbing walls for mountaineering training <a href="#">A63B 69/0048</a> ; endless loop ladders <a href="#">A63B 22/04</a> )}
	<u>WARNING</u> Documents are being reclassified to <a href="#">A63B 21/072</a> ; <a href="#">A63B 21/0728</a> is complete
A63B 19/00	<b>Hoop exercising apparatus</b> {( <a href="#">A63B 21/0608</a> takes precedence; not driven by the user, e.g. motor driven, <a href="#">A63G 29/00</a> , <a href="#">A63G 31/00</a> )}
A63B 19/02	<ul style="list-style-type: none"> <li>• Freely-movable rolling hoops, e.g. gyrowheels {or spheres or cylinders, carrying the user inside (resisting devices overcoming gyroscopic forces of rotating bodies <a href="#">A63B 21/22</a>; standing on it for equilibrium exercises <a href="#">A63B 26/003</a>; spherical hulls or hulls in the shape of a vertical ring for use in water <a href="#">B63B 1/047</a>)}</li> </ul>
A63B 21/00	<b>Exercising apparatus for developing or strengthening the muscles or joints of the body by working against a counterforce, with or without measuring devices (electric or electronic controls therefor <a href="#">A63B 24/00</a>; measuring muscular strength <a href="#">A61B 5/22</a>)</b>
A63B 21/00047	<ul style="list-style-type: none"> <li>• Exercise device not moving during use, benches (<a href="#">A63B 21/00087</a> takes precedence, isometric exercising <a href="#">A63B 21/0023</a>, step exerciser <a href="#">A63B 23/0458</a> takes precedence, walk exerciser <a href="#">A63B 23/0464</a> takes precedence)</li> </ul>
U A63B 21/00079	<ul style="list-style-type: none"> <li>• {details of the interface with the user related to strength training}</li> </ul> <p><u>WARNING</u> not complete, pending the completion of a reclassification</p>
U A63B 21/00112	<ul style="list-style-type: none"> <li>• • {movement of the interface}</li> </ul> <p><u>WARNING</u> not complete, pending the completion of a reclassification</p>
A63B 21/0012	<ul style="list-style-type: none"> <li>• • • {reciprocating movement of the interface along (in/on) a guide, weights moving along or in guiding means <a href="#">A63B 21/06</a>, for cardio-training <a href="#">A63B 22/201</a>}</li> </ul> <p><u>WARNING</u> not complete, pending the completion of a reclassification</p>
U A63B 21/008	<ul style="list-style-type: none"> <li>• using hydraulic or pneumatic force-resisters {not used, see subgroups}</li> </ul>
U A63B 21/0081	<ul style="list-style-type: none"> <li>• • {using hydraulic force-resisters}</li> </ul>
A63B 21/0084	<ul style="list-style-type: none"> <li>• • • {by moving the ambient water (<a href="#">A63B 31/00</a>, <a href="#">A63B 35/00</a> take precedence)}</li> </ul>
U A63B 21/14	<ul style="list-style-type: none"> <li>• {Details of the interface with the user related to strength training}</li> </ul> <p><u>WARNING</u> This group and its subgroups are not complete pending the completion of a reclassification; see also the other subgroups of <a href="#">A63B 21/00</a></p>
A63B 21/1446	<ul style="list-style-type: none"> <li>• • {Direct manipulation of the resistance} (<a href="#">A63B 21/072</a> takes precedence)}</li> </ul>
U A63B 21/1453	<ul style="list-style-type: none"> <li>• • {Kind of exercise interface (chairs and stools with exercising means <a href="#">A47C 9/002</a>)}</li> </ul>
A63B 21/1476	<ul style="list-style-type: none"> <li>• • • {Contoured to fit to specific body parts; e.g. back, knee or neck support (<a href="#">A63B 21/1403</a>, <a href="#">A63B 21/1465</a> take precedence)}</li> </ul>
U A63B 21/148	<ul style="list-style-type: none"> <li>• • {Movement of the interface}</li> </ul>

- A63B 21/1484
- • • {Free movement, unrestricted apart from by the resistance ([A63B 21/00043](#)-, [A63B 21/072](#) take precedence)}
- A63B 21/1488
- • • {Reciprocating movement of the interface along, in or on a guide (weights moving along or in guiding means [A63B 21/06](#)-, for cardio-training [A63B 22/201](#))}
- A63B 22/00**
- Exercising apparatus specially adapted for conditioning the cardio-vascular system, for training agility or co-ordination of movements (force-resisting aspects [A63B 21/00](#)-, {-for particular parts of the body, e.g. to strengthen particular limbs or muscles [A63B 23/00](#)-, } electric or electronic controls therefor [A63B 24/00](#))**
- NOTE
- In this subclass, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its groups, which is considered to represent information of interest for search, may also be classified in each of those groups.
- A63B 22/0046
- {Details of the support elements or their connection to the exercising apparatus, e.g. adjustment of size or orientation (attachments of resisters or weights to the body of the user [A63B 21/1403](#)-, using rollers, wheels, castors or gliding means to be moved over the floor or guide tracks [A63B 22/20](#))}
- A63B 22/0076
- {Rowing machines (seats moving during exercise [A63B 22/0087](#)-, training appliances for rowing or sculling on boats [A63B 69/06](#))}
- A63B 22/06
- with {support elements performing a} rotating cycling movement, {i.e. a closed path movement} (support stands for bicycles [A63B 69/16](#)-, unicycles [B62K 1/00](#))
- A63B 22/16
- Platforms for rocking motion about a horizontal axis {e.g. axis through the middle of the platform}; Balancing drums; Balancing boards or the like {(exercising apparatus with cantilevered support elements pivoting about an axis [A63B 22/0056](#)-, other exercising apparatus for improving balance [A63B 26/003](#))}
- A63B 22/18
- with elements, {i.e. platforms,} having a circulating, {nutating} or rotating movement, generated by oscillating movement of the user, {e.g. platforms wobbling on a centrally arranged spherical support} (hoop exercising apparatus [A63B 19/00](#)-, {-eccentric weights put into orbital motion by nutating movement of the user [A63B 21/0608](#)-, pots rotating or rocking by moving the whole body [A63G 23/00](#))}
- U A63B 22/20
- using rollers, wheels, castors or the like, {e.g. gliding means,} to be moved over the floor or other surface, {e.g. guide tracks,} during exercising
- U A63B 22/201
- • {for moving a support element in reciprocating translation, e.g. for sliding back and forth on a guide track}
- A63B 22/205
- • • {in a substantially vertical plane, e.g. for exercising against gravity (exercising for developing or strengthening the muscles or joints of the body by working against a user's body weight [A63B 21/068](#)-, with adjustable inclination [A63B 22/0023](#))}
- A63B 23/00**
- Exercising apparatus specially adapted for particular parts of the body ([A63B 22/00](#) takes precedence; force-resisting aspects [A63B 21/00](#)-, electric or electronic controls therefor [A63B 24/00](#)-, devices for exercising or strengthening of fingers, or arms in teaching operation of keyboards [G09B 15/06](#))**
- U A63B 23/035
- for limbs, i.e. upper or lower limbs, e.g. simultaneously
- A63B 23/04
- • for lower limbs {(Training appliances for special sports [A63B 69/00](#)-, For the purpose of producing mechanical power [F03G 5/00](#))}

- A63B 23/0482      · · {primarily by articulating the hip joints ([A63B 23/0211](#)-, [A63B 23/0405](#)-, [A63B 23/0476](#) take precedence)}
- A63B 23/0494      · · {primarily by articulating the knee joints ([A63B 23/0405](#)-, [A63B 23/0476](#) take precedence)}
- A63B 23/12        · · for upper limbs {or related muscles, e.g. chest, upper back or shoulder muscles (bench press exercises [A63B 21/078](#)-, for teaching music [G09B 15/06](#))}
- U    A63B 24/00        Electric or electronic controls for exercising apparatus of preceding groups; {Controlling or monitoring of exercises, sportive games, training or athletic performances}**
- A63B 24/0087      · {Electric or electronic controls for exercising apparatus of groups [A63B 21/00](#) - [A63B 23/00](#)-, e.g. controlling load}
- U    A63B 26/00        Exercising apparatus not covered by groups [A63B 1/00](#) to [A63B 25/00](#)**
- A63B 26/003        · {for improving balance or equilibrium (balance beams [A63B 4/00](#)-, apparatus for rope dancing [A63B 7/08](#)-, balancing drums, balancing boards or the like [A63B 22/16](#))}
- A63B 27/00        Apparatus for climbing poles, trees, or the like ({ropes [A63B 29/02](#)} ; safety belts for climbers [A62B 35/00](#) ; {-climbing irons permanently attached to fixed structures [E06C 9/04](#))}**
- A63B 29/00        Apparatus for mountaineering (helmets [A42B 3/00](#)-, non-skid devices or attachments for footwear, e.g. mountain climbing irons [A43C 15/00](#) ; breathing masks or helmets for use at high altitudes [A62B 18/00](#) ; {-safety belts or body harnesses [A62B 35/00](#)} ; picks [B25D 7/00](#))**
- A63B 29/02        · Mountain guy-ropes or accessories, e.g. avalanche ropes {(hooks, e.g. snaphooks, therefor [F16B 45/00](#))}; Means for indicating the location of accidentally buried, e.g. snow-buried, persons (detecting hidden masses in general [G01V](#))
- NOTE  
Contrary to the wording of group [A63B 29/02](#)-, devices for lowering persons are classified in [A62B 1/06](#)
- A63B 31/00        Swimming aids (teaching swimming [A63B 69/10](#) to [A63B 69/14](#)-, life-saving in water, {e.g. life-buoys, life-belts} , [B63C 9/00](#))**
- A63B 33/00        Swimming equipment attachable to the head, e.g. swim caps or goggles (diving masks [B63C 11/12](#)-, breathing aids, e.g. snorkels, [B63C 11/18](#))**
- A63B 35/00        Swimming framework, {i.e. apparatus fixed to or held by the swimmer or diver}, with driving mechanisms operated by the swimmer or by a motor (other vessels or like floating structures for pleasure or sport [B63B 35/71](#)-, [B63B 35/73](#)-, divers` sleds or like craft [B63C 11/46](#))**
- NOTE  
References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:
- Effecting propulsion of vessels by muscle power  
[B63H 16/00](#)
- U    A63B 37/00        Solid balls; {Rigid hollow balls}; Marbles (heavy throwing balls [A63B 65/06](#))**

- A63B 37/0003
- {Golf balls (for practising drives [A63B 69/3655](#)-, for practising puts [A63B 69/3688](#))}
- WARNING  
Subgroups of [A63B 37/0003](#) are not complete pending reclassification; see also this group
- A63B 37/02
- Special cores {([A63B 37/0001](#)-, [A63B 37/0003](#) take precedence)}
- A63B 37/12
- Special coverings, {i.e. outer layer material ([A63B 37/0001](#)-, [A63B 37/0003](#) take precedence)}
- A63B 41/00**
- Hollow inflatable balls (connecting valves to inflatable elastic bodies [B60C 29/00](#)-; valves, e.g. self-closing valves [F16K](#))**
- U A63B 43/00**
- Balls with special arrangements**
- A63B 43/04
- with an eccentric centre of gravity; with mechanism for changing the centre of gravity (solid balls [A63B 37/10](#)-; {-motorised rolling toys [A63H 33/005](#))}
- A63B 47/00**
- Devices for handling or treating balls, {e.g. for holding or carrying balls (for maintaining ball pressure [A63B 39/02](#)-; ball holders combined with racket presses [A63B 49/16](#)-, with racket covers or cases [A63B 49/18](#)-, fitted on golf bags [A63B 55/02](#))}**
- A63B 47/002
- {Devices for dispensing balls, e.g. from a reservoir (automatic teeing devices [A63B 57/0006](#)-; devices for projecting balls [A63B 69/40](#))}
- U A63B 49/00**
- Tennis, badminton, or like rackets**
- WARNING  
Group [A63B 49/007](#), [A63B 49/06](#) are not complete pending a reclassification. See also this group, its subgroups and other groups of [A63B](#)
- U A63B 49/02
- Frames
- A63B 49/04
- with balancing devices {([A63B 59/0092](#)-, [A63B 59/0096](#) take precedence)}
- A63B 49/06
- with slits {(slits for guiding strings [A63B 49/002](#)-; slits for cooling or ventilation [A63B 59/0037](#))}
- A63B 51/00**
- Stringing tennis rackets {(string guides on frames [A63B 49/002](#)-; clamping strings on frames [A63B 49/005](#))}**
- A63B 51/005
- {Devices for measuring the tension of the string (for controlling the tension during stringing [A63B 51/14](#)-; measuring force, in general [G01L](#))}
- A63B 51/02
- Strings; String substitutes; {Products applied on strings, e.g. for protection against humidity or wear (ropes or cables in general [D07B](#); yarns or threads for use in sports applications [D02G 3/444](#)-; mechanical methods or apparatus in the manufacture of artificial filaments, threads, fibres, bristles or ribbons [D01D](#); strings for musical instruments [G10D 3/10](#))}
- A63B 53/00**
- Golf clubs {(cleaning or maintenance [A63B 57/0087](#)-; measuring, verifying or correcting golf-club characteristics [A63B 59/0074](#)-; clubs or attachments on clubs for golf training [A63B 69/3632](#))}**
- U A63B 55/00**
- Bags for golf clubs; Stands for golf clubs for use on the course**
- A63B 55/008
- {Releasably mounted accessories fitted outside the bag, e.g. straps or holders ([A63B 55/02](#) and [A63B 55/04](#) take precedence; covers for golfbags [A63B 55/004](#)-; covers for club heads [A63B 55/007](#))}
- A63B 55/08
- Wheeled carriers for golf bags (running gear or propulsion features [B60](#)-; {insofar as the features thereof are generic to hand carts [B62B](#))}
- U A63B 57/00**
- Golf game accessories, e.g. golf cups, golf tees**

- A63B 57/0087 · {Cleaning or maintenance of golf-clubs, putters, shoes or other golf accessories (cleaning balls [A63B 47/04](#); cleaning grips [A63B 59/0062](#); cleaning footwear in general [A47L 23/00](#))}
- A63B 59/00** **Bats, rackets, or the like, for other games (bats with a ball tethered thereto [A63B 67/20](#)); {Hand-held throwing or catching aids; Details or accessories of bats, rackets or the like, not limited to one of the groups [A63B 49/00](#) to [A63B 57/00](#), or not otherwise provided for}**
- A63B 61/00** **Tennis nets or accessories for tennis or like games, {e.g. volley-ball (devices for holding or carrying balls [A63B 47/00](#); for table tennis [A63B 67/04](#))}**
- U A63B 63/00** **Targets or goals for ball games (golf cups [A63B 57/00](#))**
- A63B 63/08 · with {substantially} horizontal opening for ball, e.g. for basketball {([A63B 57/0056](#); [A63B 63/06](#) take precedence)}
- A63B 65/00** **Implements for throwing (throwing toys [A63H 33/18](#); throwing weapons [F41B](#)); {Mechanical projectors, e.g. using spring force}**
- U A63B 67/00** **Miscellaneous sporting games**
- A63B 67/08 · Juggling or spinning ball games played as games of skill; {Juggling games (games using tethered bodies, e.g. balls [A63B 67/10](#); [A63B 67/20](#))}
- A63B 67/10 · Games with thread-suspended or swingably-mounted bodies, e.g. balls, pointed bodies shaped as birds, animals, or the like, for aiming at and hitting targets (games using a bat with a ball tethered thereto [A63B 67/20](#); pin games with tethered balls [A63D 7/00](#)); {Games using tethered bodies, e.g. balls, not otherwise provided for}
- U A63B 69/00** **Training appliances or apparatus for special sports (training of parachutists [B64D 23/00](#))**
- A63B 69/004 · {for the martial arts, e.g. karate, judo ([A63B 69/20](#); [A63B 69/34](#) take precedence)}
- U A63B 69/0051** · {not used, see subgroups and [A63B 69/00](#)}
- A63B 69/0053 · · {Apparatus generating random stimulus signals for reaction-time training involving a substantial physical effort (testing reaction time [A61B 5/162](#); reaction-time games [A63F 9/0096](#))}
- U A63B 69/0073** · {Means for releasably holding a ball in position; Balls constrained to move around a fixed point, e.g. by tethering (not used, see subgroups and [A63B 69/00](#))}
- A63B 69/0079 · · {Balls tethered to a line or cord ([A63B 43/007](#) takes precedence; other games using tethered balls [A63B 67/10](#); games using a bat or racket with a ball tethered thereto [A63B 67/20](#))}
- U A63B 69/18** · for skiing
- A63B 69/182 · · {for cross-country-skiing ([A63B 23/0417](#); [A63B 69/0022](#) take precedence)}
- U A63B 69/36** · for golf
- A63B 69/3608 · · {Attachments on the body, e.g. for measuring, aligning, restraining ([A63B 69/0059](#); [A63B 69/3673](#) take precedence)}
- A63B 69/3623 · · {for driving ([A63B 69/3608](#); [A63B 69/3658](#); [A63B 69/3661](#); [A63B 69/3667](#) and [A63B 69/3691](#) take precedence)}
- A63B 69/3676 · · {for putting ([A63B 69/3608](#); [A63B 69/3661](#); [A63B 69/3667](#) and [A63B 69/3697](#) take precedence)}
- A63B 69/3691 · · {Golf courses; Golf practising terrains having a plurality of driving areas, fairways, greens (special golf games, e.g. miniature golf, [A63B 67/02](#); mats for simulating golf greens [A63B 69/3661](#))}

- A63B 69/38 · for tennis ({[A63B 61/006](#)-, [A63B 69/0073](#) and [A63B 69/0097](#) take precedence)}
- A63B 69/40 · Stationarily-arranged devices for projecting balls (or other bodies (ball-dispensing devices [A63B 47/002](#)-, golf cups with ball ejector means [A63B 57/0062](#)-, targets with means for returning balls by gravity or mechanically [A63B 63/00](#)); (sling weapons [F41B 3/00](#)-, traps for clay-pigeon targets [F41J 9/18](#))
- A63B 71/00 Games or sports accessories not covered in groups [A63B 1/00](#) to [A63B 69/00](#) (starting appliances [A63K 3/02](#))**
- A63B 71/0036 · {Accessories for stowing, putting away or transporting exercise apparatus or sports equipment (handling or treating balls [A63B 47/00](#)-, for golf clubs [A63B 55/00](#))}
- U A63B 71/02 · for large-room or outdoor sporting games
- A63B 71/021 · · {Stays or guy-ropes (for masts [E04H 12/20](#)-, for tents [E04H 15/34](#))}
- U A63B 71/08 · Body-protectors for players or sportsmen, {i.e. body-protecting accessories affording protection of body parts against blows or collisions}(protective clothing or garments for sporting purposes [A41D 13/00](#))
- A63B 71/10 · · for the head ({[A63B 71/081](#) takes precedence } ; in the form of caps or hats [A42B 1/08](#)-, helmets [A42B 3/00](#))
- U A63B 71/12 · · for the body, {e.g. shoulders}, or the legs ({[A63B 71/081](#) takes precedence)}
- A63B 71/1225 · · · {for the legs, e.g. thighs, knees, ankles, feet (bandages, e.g. orthosis-like supports or braces [A61F 5/0102](#)-, for strengthening joints [A61F 13/06](#))}

**Project: N/A (A63C)**

- A63C 5/00 Skis or snowboards (sledges with runners, e.g. ski-bobs, [B62B 13/00](#)-, runners for sledges [B62B 17/02](#)-, runners for carrying wheeled vehicles to facilitate travel on snow or ice [B62B 19/00](#))**
- A63C 5/08 · motor-driven ([A63C 5/035](#) takes precedence; {-apparatus for towing skis [A63C 11/10](#)})
- A63C 5/11 · combined with sails or the like; {-Accessories specially adapted for sail-skiing}
- U **A63C 17/00 Roller skates; Skate-boards**
- A63C 17/01 · Skateboards ([A63C 17/02](#) to [A63C 17/28](#) take precedence; {-rolling devices on skis [A63C 5/035](#)})
- A63C 19/00 Design or layout of playing courts, rinks, bowling greens or areas for water-skiing; Covers therefor ({golf courses [A63B 69/3691](#)}; water roundabouts [A63G 3/00](#)-, construction of surfaces of foundations [E01C](#); roofs [E04B 7/00](#); buildings or groups of buildings for sports [E04H 3/10](#); swimming or splash baths or pools [E04H 4/00](#); coverings for baths [E04H 4/06](#))**

**Project: N/A (A63D)**

- A63D 15/00 Billiards, {-e.g. carom billiards}; Billiard tables; Pocket billiards, {-i.e. pool}**

**Project: N/A (A63F)**

- U **A63F 7/00 Indoor games using small moving playing bodies, e.g. balls, discs or blocks (board games, raffle games [A63F 3/00](#); roulette games [A63F 5/00](#); miniature bowling games [A63D 3/00](#); bagatelle or similar games [A63D 13/00](#); billiards, pocket billiards [A63D 15/00](#))**
- U A63F 7/22 · in which the playing bodies are projected through the air {(not used, see subgroups of [A63F 7/06](#))}

- U A63F 7/24
- • Devices controlled by the player to project or roll-off the playing bodies (arrangement of such devices in table alleys, miniature bowling-alleys or bowling games [A63D 3/02](#); in bagatelle or billiards [A63D 13/00](#), [A63D 15/00](#))
- A63F 7/28
- • • using gravity, {-i.e. apparatus for rolling off the ball, e.g. a slope, ramp or slant}
- A63F 7/30
- • {-Details of the playing surface, e.g.} obstacles; {-Goal posts;} Targets; Scoring or pocketing devices; Playing-body-actuated sensors, e.g. switches; Tilt indicators; {-Means for detecting misuse or errors}
- A63F 7/36
- • Constructional details not covered by groups [A63F 7/24](#) to [A63F 7/34](#), {-i.e. constructional details of rolling boards, rims or play tables}, e.g. frame, game boards, guide tracks,
- A63F 7/40
- • • Balls or other moving playing bodies, e.g. pinballs or discs {-used instead of balls}
- A63F 9/00**
- Games not otherwise provided for (aspects of games using an electronically generated display having two or more dimensions showing representations related to the game [A63F 13/00](#) {-miscellaneous sporting games [A63B 67/00](#)})**
- A63F 9/02
- Shooting or hurling games (throwing-implements for sports or recreational use [A63B 65/00](#); throwing or projecting toys per se [A63H 33/18](#); {-gun simulators [F41A 33/00](#), e.g. light- or radiation-emitting guns [F41A 33/02](#); practice apparatus for gun-aiming [F41G 3/26](#), e.g. using a light-emitting device [F41G 3/2616](#)}; targets, target ranges, bullet catchers [F41J](#), {-photo-electric hit-detector systems [F41J 5/02](#)})
- A63F 9/04
- Dice (dice tops [A63F 5/04](#) {-D}); Dice-boxes; Mechanical dice-throwing devices {(casino or betting games played on boards [A63F 3/00157](#)})
- A63F 11/00**
- Game accessories of general use {-e.g. score counters, boxes}**
- NOTE
- Game accessories specially adapted for a particular type of game are classified in one of the groups [A63F 1/00](#) to [A63F 9/00](#) covering the particular game

**Project: N/A (A63H)**

- U **A63H 33/00** **Other toys**
- U A63H 33/04
- Building blocks, strips, or similar building parts
- U A63H 33/06
- • to be assembled without the use of additional elements
- U A63H 33/08
- • • provided with complementary holes, grooves, or protuberances, e.g. dovetails
- A63H 33/088
- • • • {-with holes ([A63H 33/062](#)-,[A63H 33/065](#) take precedence)}

**Project: N/A (B01B)**

- B01B** **BOILING; BOILING APPARATUS; {-EVAPORATION; EVAPORATION APPARATUS}**

## Project: N/A (B01D)

## B01D

**SEPARATION** (separating solids from solids by wet methods [B03B](#), [B03D](#); by pneumatic jigs or tables [B03B](#); by other dry methods [B07](#); magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high-voltage electric fields [B03C](#); centrifuges, vortex apparatus [B04](#); presses per se for squeezing-out liquid from liquid-containing material [B30B 9/02](#); treatment of water [C02E](#), e.g. softening by ion-exchange [C02F 1/42](#); {arrangements of air intake cleaners in gas turbine plants [F02C 7/05](#)}; arrangements or mounting of filters in air-conditioning, air-humidification or ventilation [F24F 13/28](#))

NOTES

1. This subclass covers:
  - evaporation, distillation, crystallisation, filtration, dust precipitation, gas cleaning, absorption, adsorption;
  - similar processes which are not concerned with, or limited to, separation (except in the case of absorption or adsorption).
2. In this subclass the terms or expressions are used with the meaning indicated:
  - "filtration" and analogous terms include straining solids from fluids;
  - "filter medium" is a porous material or porous arrangement of material used to filter solids from fluids;
  - "filtering element" is a section of filter medium in addition to parts to which the medium is demountably or permanently fixed, including other sections of medium, end caps, peripheral frames or edge strips, but excluding housings;
  - "filter housing" is the fluid-constraining impervious vessel, whether open or closed, which contains, or is adapted to contain, one or more filtering elements or filter media;
  - "filter chamber" is the space within a housing, where filtering elements or filter media are located. Partitions may divide a single housing into a plurality of chambers;
  - "filtering apparatus" consists of filtering elements combined with housings, cleaning arrangements, motor or the like parts, which are characteristic of the particular type of apparatus. Ancillary devices such as pumps or valves are considered part of a filtering apparatus when inside the apparatus. Ancillary devices performing similar or different unit operation such as comminutors, mixers or non-filtering separators, whether or not inside the apparatus, are not considered part of a filtering apparatus. The term does not extend to apparatus, e.g. washing machines, of which the filter forms only a part.
3. For apparatus used in drying or evaporation, [F26](#) takes precedence over [B01D](#).
4. Group [B01D 59/00](#) takes precedence over the other groups of this subclass and over other subclasses in class [B01](#)

WARNINGS

1. The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

<a href="#">B01D 19/0454</a>	covered by	<a href="#">B01D 9/00</a>	
<a href="#">B01D 15/04</a>	covered by	<a href="#">B01J 39/00</a>	to
<a href="#">B01J 49/02</a>			
<a href="#">B01D 17/022</a>	covered by		
<a href="#">B01D 17/0202</a>			
<a href="#">B01D 17/025</a>	covered by		
<a href="#">B01D 17/0208</a>			
<a href="#">B01D 17/028</a>	covered by		
<a href="#">B01D 17/0211</a>			

<a href="#">B01D 17/032</a>	covered by	
<a href="#">B01D 17/0214</a>		
<a href="#">B01D 17/035</a>	covered by	
<a href="#">B01D 17/0205</a>		
<a href="#">B01D 17/038</a>	covered by	
<a href="#">B01D 17/0217</a>		
<a href="#">B01D 17/05</a>	covered by	
<a href="#">B01D 17/047</a>		
<a href="#">B01D 17/09</a>	covered by	<a href="#">B01D 17/005</a>
<a href="#">B01D 17/12</a>	covered by	<a href="#">B01D 17/00</a>
<a href="#">B01D 25/133</a>	covered by	<a href="#">B01D 25/285</a>
<a href="#">B01D 25/168</a>	covered by	<a href="#">B01D 25/285</a>
<a href="#">B01D 25/21</a>	covered by	<a href="#">B01D 25/164</a>
<a href="#">B01D 29/075</a>	covered by	<a href="#">B01D 29/62</a> _____,
<a href="#">B01D 29/76</a>		
<a href="#">B01D 29/37</a>	covered by	<a href="#">B01D 29/336</a> _____,
<a href="#">B01D 29/356</a>		
<a href="#">B01D 33/052</a>	covered by	<a href="#">B01D 33/64</a>
<a href="#">B01D 35/01</a>	covered by	
<a href="#">B01D 36/001</a>		
<a href="#">B01D 61/26</a>	covered by	<a href="#">A61M 1/1656</a>
<a href="#">B01D 61/34</a>	covered by	<a href="#">A61M 1/16</a>

2. 5. The group [B01D 24/00](#) was introduced in March 1989. This group includes subject matter of [B01D 23/00](#)-, [B01D 25/06](#)-, [B01D 25/10](#)-, [B01D 29/0027](#)-, [B01D 33/0032](#) and [B01D 33/0054](#)-.

3. 6. Documents from the backlog of the group [B01D 23/00](#)-, and the subgroups [B01D 25/06](#)-, [B01D 25/10](#)-, [B01D 29/0027](#)-, [B01D 33/0032](#) and [B01D 33/0054](#) are in the process of being revised and also systematically transferred to [B01D 24/00](#)-.

4. 7. The groups [B01D 29/01](#) to [B01D 29/43](#) and [B01D 29/50](#) to [B01D 29/965](#) were introduced in March 1989; these subgroups include the subject matter of the subgroups of groups [B01D 29/0002](#)-, which are from this date no longer use for the classification of new documents.

5. 8. The documents from the backlog of the subgroups of group [B01D 29/0002](#) are in the process of being systematically transferred to the other subgroups of group [B01D 29/00](#)-.

6. 11. The documents from the backlog of the subgroups of group [B01D 33/0003](#) are in the process of being systematically transferred to the other subgroups of group [B01D 33/00](#)-.

7. 9. Groups [B01D 25/16](#)-, [B01D 25/18](#) and [B01D 25/20](#) are no longer used for the classification of new. Patent documents are continuously being reclassified to groups [B01D 29/44](#)-, [B01D 29/46](#) and [B01D 29/48](#)-.

8. 10. The groups [B01D 25/04](#)-, [B01D 25/08](#)-, [B01D 25/121](#)-, [B01D 25/122](#)-, [B01D 25/124](#)-, [B01D 25/125](#)-, [B01D 25/14](#)-, are no longer used for classification of new documents from December 1, 2011 onwards. The backlog of those groups are being continuously reclassified to groups [B01D 25/00](#)-, [B01D 29/00](#) and subgroups.

## B01D 1/00

**Evaporating** ({evaporation in general, e.g. of liquids for gas phase reactions [B01B 1/005](#)} ; removal of incrustation [B08B](#); preparation of starch [C08B 30/00](#)-; sugar industry [C13](#); prevention of incrustation [C23F](#); drying solid materials or objects by evaporating liquids therefrom [F26](#))

U B01D 1/28

· with vapour compression

B01D 1/2884

· {Multiple effect compression ([B01D 1/2815](#)-, [B01D 1/2828](#)-, [B01D 1/2834](#) and [B01D 1/2837](#) take precedence)}

- B01D 3/00** **Distillation or related exchange processes in which liquids are contacted with gaseous media, e.g. stripping** (evaporation in general, e.g. of liquids for gas phase reactions [B01B 1/005](#)) ; gas chromatography [B01D 15/08](#); destructive distillation [C10B](#); preparation of alcoholic beverages by distillation [C12G 3/12](#))
- U B01D 3/14 · Fractional distillation {or use of a fractionation or rectification column}
- B01D 3/16 · · Fractionating columns in which vapour bubbles through liquid (packing elements [B01J 19/30](#)-, [B01J 19/32](#))
- B01D 3/32 · · Other features of fractionating columns; {Constructional details of fractionating columns not provided for in groups [B01D 3/16](#) to [B01D 3/30](#)}
- B01D 9/00** **Crystallisation (crystallisation directly from the vapour phase [B01D 7/02](#)-; making single crystals [C30B](#)-; {crystallisation as part of the Bayer process also classified in [C01F 7/14](#)})**
- B01D 9/0004 · {cooling by heat exchange (by evaporation of components of the mixture to be separated [B01D 9/0013](#)-; refrigeration machines [F25B](#))}
- U B01D 9/0018 · {Evaporation of components of the mixture to be separated}
- B01D 9/0031 · · {by heating ([B01D 9/0022](#)-, [B01D 9/0027](#) take precedence)}
- B01D 15/00** **Separating processes involving the treatment of liquids with solid sorbents (using liquid sorbents [B01D 11/00](#)-; ion exchange processes or materials, sorbent materials in general [B01J](#), e.g. sorbents for chromatography [B01J 20/281](#)-; for investigating or analysing materials [G01N 30/00](#)); Apparatus therefor**
- B01D 15/08 · Selective adsorption, e.g. chromatography
- NOTE
- In order that group [B01D 15/08](#) may provide a basis for a complete search with respect to chromatography in general, all subject matter of general interest is classified in this group even if it is classified primarily in the application-oriented groups, for example dairy products [A23C 9/148](#)-, treatment of blood, e.g. [A61M 1/36](#)-, optically active organic compounds [C07B 57/00](#) or peptides [C07K 1/16](#)
- B01D 17/00** **Separation of liquids, not provided for elsewhere, e.g. by thermal diffusion (devices for separating or removing fatty or oily substances or similar floating material from water, waste water, or sewage [C02F 1/40](#)-; cleaning or keeping clear the surface of open water from oil or like materials [E02B 15/04](#)-; arrangements for separating lubricants from refrigerants [F25B 43/02](#))**
- NOTE
- in this group, documents are classified and arranged according to a combination system limited to the symbols of the group and subgroups of [B01D 17/00](#)-. In this system each combination is indicated, also of subgroups depending from the same group, e.g. [B01D 17/041](#) + [B01D 17/042](#)
- U **B01D 19/00** **Degasification of liquids**
- U B01D 19/0005 · {with one or more auxiliary substances}
- B01D 19/001 · · {by bubbling steam through the liquid ([B01D 19/0042](#)-, [B01D 19/0047](#) and [B01D 19/0052](#) take precedence)}
- B01D 19/0068 · {General arrangements, e.g. flowsheets (~~B01D 19/0063 takes precedence~~[B01D 19/0063 takes precedence](#))}

B01D 19/02 • Foam dispersion or prevention (during boiling [B01B 1/02](#); during fermentation [C12](#))

B01D 19/04 • • by addition of chemical substances

#### NOTES

1. Antifoam compositions containing a specific compound as the main substance are only classified in the, for this specific compound, corresponding [B01D 19/0404](#) subgroup (e.g. polysiloxanes receive the classification [B01D 19/0409](#)); when the specific compound(s) is (are) not the main substance, then the attributed classification for this compound(s) is a combination of [B01D 19/0404](#) + the corresponding [B01D 19/0404](#) subgroup(s), (e.g. hydrocarbons containing silica are classified in [B01D 19/0404](#) + [B01D 19/0409](#)).

If the main substance is a mixture containing more than one specific compound, then the attributed classification is a combination of the corresponding [B01D 19/0404](#) subgroup of the specific compounds, (e.g. benzene sulfonate and an amide are classified in [B01D 19/0413](#) + [B01D 9/02](#)).

2. In groups [B01D 19/0404](#) to [B01D 19/0495](#), in the absence of an indication to the contrary, an invention is classified in the last appropriate place].

**B01D 21/00** **Separation of suspended solid particles from liquids by sedimentation** ({separation of ores or the like by sedimentation [B03B 5/48](#) to [B03B 5/60](#)}; differential sedimentation [B03D 3/00](#); {purification of water, waste water, sewage or sludge [C02F](#), e.g.} devices for separating or removing fatty or oily substances or similar floating material from water, waste water or sewage [C02F 1/40](#))

#### WARNING

The following groups are not complete: [B01D 21/0006](#), see also [B01D 21/00](#)[B01D 21/0018](#), see also [B01D 21/00](#)[B01D 21/0054](#), see also [B01D 21/00](#)[B01D 21/0057](#), see also [B01D 21/00](#)[B01D 21/003](#), see also [B01D 21/00](#)[B01D 21/0036](#), see also [B01D 21/00](#)[B01D 21/0087](#), see also [B01D 21/00](#)[B01D 21/2416](#), see also [B01D 21/2405](#)[B01D 21/2422](#), see also [B01D 21/2405](#)[B01D 21/2427](#), see also [B01D 21/24](#)[B01D 21/2433](#), see also [B01D 21/24](#)[B01D 21/262](#), see also [B01D 21/26](#)[B01D 21/265](#), see also [B01D 21/26](#)[B01D 21/267](#), see also [B01D 21/26](#)[B01D 21/28](#), see also [B01D 21/28](#)[B01D 21/302](#), see also [B01D 21/30](#)[B01D21/30B](#), see also [B01D 21/30](#) ]

B01D 21/0009 • {Settling tanks making use of electricity or magnetism (electric ultra filters [B01D 61/425](#); filters making use of electricity or magnetism [B01D 35/06](#); magnetic or electrostatic separation [B03C](#))}

B01D 21/01 • using flocculating agents (for purifying water [C02F 1/52](#); for liquid radioactive waste [G21F 9/10](#))

B01D 21/26 • Separation of sediment aided by centrifugal force {or centripetal force} (centrifuges [B04B](#); cyclones [B04C](#))

B01D 23/00 - B01D 43/00	<p><b>Filtration; Filtering material, regeneration thereof</b> ({aquarium filters <a href="#">A01K 63/04</a>; filters for cigars and cigarettes <a href="#">A24D 3/00</a>; filters for coffee or tea-making machines <a href="#">A47J 31/06</a>; filters for frying fat <a href="#">A47J 37/12</a>; filters for suction cleaners <a href="#">A47L 9/10</a>}; blood or infusion liquid filters <a href="#">A61M 5/165</a>; {liquid-liquid separation, e.g. for filtering elements made hydrophilic or hydrophobic, <a href="#">B01D 12/00</a>, <a href="#">B01D 17/00</a>, <a href="#">B01D 43/00</a>; filtering material and its regeneration, as well as filtering aids, <a href="#">B01D 39/00</a>; gas or air filters in general <a href="#">B01D 46/00</a>; filtration devices for laboratory use <a href="#">B01L</a>; "dewatering" ore or coal slurry <a href="#">B03B 5/48</a>; magnetic filters <a href="#">B03C 1/00</a>}; screens or sieves per se <a href="#">B07B 1/00</a>; {filters for lubricating and cooling systems in turning, boring or milling machines <a href="#">B23Q 11/10</a>; filters for cooling systems in grinding machines <a href="#">B24B 55/00</a>}; extrusion filters <a href="#">B29C 47/68</a>; {filter presses <a href="#">B30B 9/02</a>; purification of process water, drinking water and waste water <a href="#">C02F</a>; filters for alcoholic beverages <a href="#">C12H 1/00</a>}; filtering spinning solution or melt <a href="#">D01D 1/10</a>; {filters for washing machines <a href="#">D06F 39/10</a>; filters or strainers for papermaking <a href="#">D21D</a>; filters in water collecting systems <a href="#">E03B 3/18</a>, <a href="#">E03B 7/07</a>; subsoil filters for boreholes <a href="#">E21B 43/02</a>; air filters for internal-combustion engines <a href="#">F02M 35/02</a>; filters for pumps <a href="#">F04B 39/16</a>, <a href="#">F04D 29/70</a>; filters in pipe systems <a href="#">F16L 55/24</a>}; filtration of lubricants <a href="#">F16N 39/06</a>; {filters for volume measuring apparatus <a href="#">G01F 15/12</a>})</p>
B01D 23/005	<ul style="list-style-type: none"> <li>• {making filtering elements, not provided for elsewhere (see also <a href="#">B01D 25/001</a>, <a href="#">B01D 27/005</a>, <a href="#">B01D 29/0093</a>)}</li> </ul>
B01D 23/26	<ul style="list-style-type: none"> <li>• integrally combined with devices for controlling the filtration {(shutting-off elements, changing over from one element to another <a href="#">B01D 35/12</a>, <a href="#">B01D 35/14</a>; control of filtration processes <a href="#">B01D 37/04</a>)}</li> </ul>
B01D 23/28	<ul style="list-style-type: none"> <li>• Filter funnels; Holders therefor (funnels in general <a href="#">B67C</a>; {funnels for laboratory use <a href="#">B01L</a>; coffee or tea strainers or apparatus <a href="#">A47J 31/00</a> - <a href="#">A47J 31/06</a>)}</li> </ul>
<b>U B01D 24/00</b>	<p><b>Filters comprising loose filtering material, i.e. filtering material without any binder between the individual particles or fibres thereof (<a href="#">B01D 27/02</a> takes precedence)</b></p> <p><b>WARNING</b></p> <p>See WARNING after subclass title, particularly items (7), (8) and (14)</p>
B01D 24/001	<ul style="list-style-type: none"> <li>• {Making filter elements (not provided for elsewhere)(see also <a href="#">B01D 25/001</a>, <a href="#">B01D 27/005</a>, <a href="#">B01D 29/012</a>, <a href="#">B01D 29/111</a>, <a href="#">B01D 33/0093</a>)}</li> </ul>
U B01D 24/02	<ul style="list-style-type: none"> <li>• with the filter bed stationary during the filtration</li> </ul>
B01D 24/04	<ul style="list-style-type: none"> <li>• • the filtering material being clamped between pervious fixed walls (<a href="#">B01D 24/10</a>, <a href="#">B01D 24/20</a> take precedence)</li> </ul>
U B01D 24/38	<ul style="list-style-type: none"> <li>• Feed or discharge devices</li> </ul>
U B01D 24/40	<ul style="list-style-type: none"> <li>• • for feeding</li> </ul>
B01D 24/405	<ul style="list-style-type: none"> <li>• • • {Special treatment of the feed stream before contacting the filtering material, e.g. cutting (<a href="#">B01D 35/24</a>, <a href="#">B01D 37/02</a>, <a href="#">B01D 37/03</a> take precedence)}</li> </ul>
U B01D 24/48	<ul style="list-style-type: none"> <li>• integrally combined with devices for controlling the filtration</li> </ul>
B01D 24/4876	<ul style="list-style-type: none"> <li>• • {in which the filtering elements are moved between filtering operations; particular measures for removing or replacing the filtering elements (<a href="#">B01D 24/46</a>, <a href="#">B01D 24/4807</a> take precedence)}</li> </ul>

- U B01D 25/00** **Filters formed by clamping together several filtering elements or parts of such elements (disc filters [B01D 29/39](#))**
- WARNING  
See WARNING after subclass title, particularly items (7), (8), (12), (13) and (14)
- B01D 25/001
- {Making filtering elements (not provided for elsewhere; see also [B01D 24/001](#)-, [B01D 27/005](#)-, [B01D 29/012](#)-, [B01D 29/111](#)-, [B01D 33/0093](#))}
- U B01D 25/12**
- Filter presses, i.e. of the plate and frame type {(filter presses in which the liquid is removed by pressing-out solid matter [B30B](#))}
- B01D 25/127
- • with one or more movable filter bands arranged to be clamped between the press plates or between a plate and a frame during filtration, e.g. zigzag endless filter bands ([B01D 25/172](#)-, [B01D 25/176](#)-, [B01D 25/19](#) take precedence)
- U B01D 25/16**
- Edge filtering elements, i.e. using contiguous impervious surfaces
- B01D 25/164
- • Chamber-plate presses, i.e. the sides of the filtering elements being clamped between two successive filtering plates ([B01D 25/127](#)-, [B01D 25/172](#)-, [B01D 25/176](#)-, [B01D 25/19](#) take precedence)
- B01D 25/21
- • Plate and frame presses ([B01D 25/172](#)-, [B01D 25/176](#)-, [B01D 25/19](#) take precedence)
- U B01D 25/32**
- Removal of the filter cakes
- B01D 25/34
- • by moving, {e.g. rotating,} the filter elements {([B01D 25/172](#)-, [B01D 25/19](#) take precedence)}
- B01D 25/343
- • • {Particular measures for replacing or isolating one or more filtering elements; Transport systems for the filtering apparatus ([B01D 25/28](#)-, [B01D 25/32](#)-, [B01D 25/346](#)-, [B01D 25/36](#) take precedence)}
- U B01D 27/00** **Cartridge filters of the throw-away type**
- WARNING  
See WARNING after subclass title, particularly item (14)
- B01D 27/005
- {Making filter elements (not provided for elsewhere)(see also [B01D 24/001](#)-, [B01D 25/001](#)-, [B01D 29/012](#)-, [B01D 29/111](#)-, [B01D 33/0093](#))}
- B01D 29/00** **Other filters with filtering elements stationary during filtration, e.g. pressure or suction filters, or filtering elements therefor {([B01D 24/00](#)-, [B01D 25/00](#) and [B01D 27/00](#) take precedence)}**
- WARNING  
See WARNING after subclass title, particularly items (7), (8), (9), (10), (12) and (14)
- U B01D 29/0002**
- {Aspects of other filters with filtering elements stationary during filtration, or of filtering elements thereof}
- B01D 29/0068
- • {Filters with hollow discs side-by-side on or around one or more tubes (with elements moving during filtration [B01D 33/0048](#)-, [B01D 33/0051](#))}
- B01D 29/0072
- • Filters integrally combined with devices for controlling the filtration (for shutting-off elements or changing over from one element to another [B01D 35/12](#)-, [B01D 35/14](#)-, controlling filtration processes [B01D 37/04](#))
- B01D 29/0093
- {Making filtering elements (not provided for elsewhere)(see also [B01D 23/005](#)-, [B01D 25/001](#)-, [B01D 27/005](#))}
- B01D 29/0095
- {Flat filtering elements ([B01D 25/12](#)-, [B01D 25/26](#)-, [B01D 29/0015](#)-, [B01D 29/0068](#) take precedence)}

- B01D 29/01
- with flat filtering elements ([B01D 29/39](#) takes precedence)
- NOTE  
If the construction of the filtering element itself is of minor importance the document is classified in the subgroups [B01D 29/01](#)-, [B01D 29/014](#)-, [B01D 29/016](#) or [B01D 29/018](#)-; otherwise in the subgroups [B01D 29/03](#) to [B01D 29/07](#)
- B01D 29/014
- • {with curved filtering elements (construction [B01D 29/035](#)-, [B01D 29/071](#))}
- U B01D 29/05
- • supported
- U B01D 29/07
- • • with corrugated, folded or wound filtering sheets
- B01D 29/071
- • • • {with curved filtering elements ([B01D 29/072](#)-, [B01D 29/073](#) take precedence)}
- B01D 29/11
- with bag, cage, hose, tube, sleeve or like filtering elements
- NOTE  
If the construction of the filtering element itself is of minor importance the document is classified in the subgroups [B01D 29/11](#)-, [B01D 29/114](#) and [B01D 29/117](#)-, otherwise in the subgroups [B01D 29/13](#) to [B01D 29/356](#)
- B01D 29/114
- • {arranged for inward flow filtration ([B01D 29/15](#)-, [B01D 29/33](#) take precedence)}
- B01D 29/117
- • {arranged for outward flow filtration ([B01D 29/23](#)-, [B01D 29/35](#) take precedence)}
- U B01D 29/88
- having feed or discharge devices
- U B01D 29/90
- • for feeding
- B01D 29/904
- • • {directing the mixture to be filtered on the filtering element in a manner to clean the filter continuously ([B01D 29/115](#)-, [B01D 29/118](#)-, [B01D 29/17](#)-, [B01D 29/25](#)-, [B01D 29/336](#)-, [B01D 29/356](#)-, [B01D 29/902](#)-, [B01D 29/908](#) take precedence)}
- B01D 29/906
- • • {Special treatment of the feed stream before contacting the filtering element, e.g. cutting ([B01D 35/24](#)-, [B01D 37/02](#)-, [B01D 37/03](#) take precedence)}
- B01D 29/96
- in which the filtering elements are moved between filtering operations; Particular measures for removing or replacing the filtering elements; Transport systems for filters ([B01D 29/09](#)-, [B01D 29/70](#) take precedence)
- B01D 33/00**
- Filters with filtering elements which move during the filtering operation (filters comprising loose filtering material moving or fluidised during filtration [B01D 24/28](#) to [B01D 24/36](#)-; centrifuges [B04B](#))**
- WARNING  
See WARNING after subclass title, particularly items (7), (8), (11) and (14)
- U B01D 33/0003
- {Aspects of filters with filtering elements which move during the filtering operation}
- U B01D 33/0006
- • {with rotating filtering surfaces (rotating brush filters [B01D 35/10](#))}
- B01D 33/0058
- • • {with filtering surfaces travelling along conveyers (tipping bucket type [B01D 35/08](#)-; brush filters [B01D 35/10](#))}
- B01D 33/0093
- {Making filter elements (not provided for elsewhere)(see also [B01D 24/001](#)-, [B01D 25/001](#)-, [B01D 27/005](#)-, [B01D 29/012](#)-, [B01D 29/111](#))}
- B01D 33/06
- with rotary cylindrical filtering surfaces, e.g. hollow drums ([B01D 33/044](#) takes precedence; {-rotating drums for paper-making [D21B](#))}
- U B01D 33/70
- having feed or discharge devices ([B01D 33/82](#) takes precedence)
- U B01D 33/72
- • for feeding

- B01D 33/725
- · · {Special treatment of the feed stream before contacting the filtering element, e.g. cutting ([B01D 35/24](#)-, [B01D 37/02](#)-, [B01D 37/03](#) take precedence)}
- U B01D 35/00 Other filtering devices; Auxiliary devices for filtration; Filter housing constructions**
- WARNING  
See WARNING after subclass title, particularly item (14)
- B01D 35/005
- {Filters specially adapted for use in internal-combustion engine lubrication or fuel systems, not of special interest for [B01D 23/00](#) - [B01D 33/00](#) (internal-combustion engine lubricating systems [F02M](#)-; lubrication in general [F16N](#))}
- B01D 35/02
- Filters adapted for location in special places, e.g. pipe-lines, pumps, stop-cocks, ([B01D 35/05](#) takes precedence; {-water pipe system filters [E03B 3/18](#)-, [E03B 7/07](#)-; dirt catchers in sewers [E03F](#); filters or strainers for pipe-lines in general [B08B](#), [E03F](#); object or dirt catching devices in sinks or the like [E03C 1/26](#)-; suction strainers or filters for pumps [F04B 53/005](#)-, [F04D 29/70](#)})
- B01D 35/06
- Filters making use of electricity or magnetism (ultrafiltration, microfiltration [B01D 61/14](#)-; electro-dialysis, electro-osmosis [B01D 61/42](#)-; devices comprising filters and magnetic separators [B03C 1/30](#))
- B01D 35/20
- Vibrating the filters (regenerating filter material by vibrations in filters with stationary filtering elements [B01D 29/72](#)-; discharging the filter cake by vibrations in filters with moving filtering elements [B01D 33/54](#)-, [B01D 33/76](#))
- U B01D 36/00 Filter circuits or combinations of filters with other separating devices**
- WARNING  
See WARNING after subclass title, particularly item (14)
- B01D 36/02
- Combinations of filters of different kinds ([B01D 29/50](#)-, [B01D 33/35](#) take precedence)
- U B01D 37/00 Processes of filtration (processes specially adapted for filtering gases [B01D 46/00](#))**
- WARNING  
See WARNING after subclass title, particularly item (14)
- B01D 37/04
- Controlling the filtration
- NOTES
1. If the construction of the filtering element is of minor importance, the documents are classified in this group only
  2. Filters integrally combined with devices for controlling the filtration are also classified in the relevant groups for these aspects, e.g. [B01D 24/48](#)-, [B01D 29/60](#)-, [B01D 33/804](#)
- U B01D 39/00 Filtering material for liquid or gaseous fluids**
- U B01D 39/14**
- Other self-supporting filtering material; {Other filtering material (non-woven fabrics in general [D04H 3/00](#))}
- B01D 39/20
- · of inorganic material, e.g. asbestos paper, metallic filtering material of non-woven wires (porous ceramic material {[C04B 38/00](#)} ; sintering metals [C22C 1/04](#)-; {-making porous sintered metal bodies [B22F 3/10](#)-, honeycomb filters [B01D 46/2418](#)-, materials used for filtering exhaust gases of an internal combustion engine [F01N 3/022](#), ceramic honeycomb structures [C04B 38/0006](#))}

- B01D 43/00** Separating particles from liquids, or liquids from solids, otherwise than by sedimentation or filtration (flotation processes [B03D 1/00](#); drying solid materials or objects [F26B](#))
- B01D 45/00 - B01D 59/00** Separating dispersed particles from gases or vapours (suction cleaner filters [A47L 9/10](#); filters for breathing-protection purposes [A62B 23/00](#); filtering air for vehicles [B60H 3/06](#); separating pneumatically-conveyed materials from propelling gas [B65G 53/60](#); exhaust or silencing apparatus for machines or engines having means for removing solid constituents of exhaust [F01N 3/02](#); air cleaners for the intakes of gas-turbine or jet-propulsion plants [F02C 7/05](#), of combustion engines [F02M 35/024](#), of compressors [F04B 39/16](#); filtering in air-conditioning [F24F 3/16](#))
- B01D 45/12 · by centrifugal forces (centrifuges [B04B](#); cyclones [B04C](#))
- B01D 46/00** Filters {i.e. particle separators} or filtering processes specially modified for separating dispersed particles from gases or vapours (filtering elements [B01D 23/00](#) to [B01D 35/00](#); filtering material [B01D 39/00](#); their regeneration outside the filters [B01D 41/00](#))
- B01D 46/0052 · {with filtering elements moving during filtering operation ([B01D 46/22](#), [B01D 46/32](#) take precedence)}
- B01D 46/0057 · {Regenerating the filter material in the filter ([B01D 46/04](#), [B01D 46/48](#) take precedence)}
- U B01D 46/24 · Particle separators, e.g. dust precipitators, using rigid hollow filter bodies
- U B01D 46/2403 · · {characterised by the physical shape or structure of the filtering element}
- B01D 46/2418 · · · {Honeycomb filters (used for filtering exhaust gases of an internal combustion engine [F01N 3/022](#); ceramic honeycomb structures per se [C04B 38/0006](#))}
- U B01D 47/00** Separating dispersed particles from gases, air or vapours by liquid as separating agent ([B01D 45/10](#) takes precedence; fractionating columns or parts thereof [B01D 3/16](#))
- B01D 47/14 · Packed scrubbers (packing elements [B01J 19/30](#), [B01J 19/32](#))
- B01D 53/00** Separation of gases or vapours; Recovering vapours of volatile solvents from gases; Chemical or biological purification of waste gases, e.g. engine exhaust gases, smoke, fumes, flue gases, aerosols, (recovery of volatile solvents by condensation [B01D 5/00](#); sublimation [B01D 7/00](#); cold traps, cold baffles [B01D 8/00](#); working-up undefined gaseous mixtures obtained by cracking hydrocarbon oils [C10G 70/00](#); cleaning coal gas [C10K](#); working-up of natural gas, or synthetic natural gas, [C10L 3/10](#); separation of difficult-to-condense gases or air by liquefaction [F25J](#); for investigating materials [G01N 30/00](#))
- NOTE  
Group [B01D 53/34](#) takes precedence over groups [B01D 53/02](#) to [B01D 53/32](#)
- B01D 53/02 · by adsorption, e.g. preparative gas chromatography {(solid sorbent compositions [B01J 20/00](#); preparation of inorganic compounds or elements [C01](#))}
- NOTE  
In group [B01D 53/02](#) and subgroups it is desirable to add indexing codes relating to adsorbents, components to be removed, main components in the product gas stream or type of gas or vapour treatment chosen from groups [B01D 2253/00](#), [B01D 2256/00](#), [B01D 2257/00](#) or [B01D 2259/00](#)
- B01D 53/025 · · {with wetted adsorbents; Chromatography (analytical chromatography [G01N 30/00](#) - [G01N 30/96](#); for liquids [B01D 15/08](#))}

- U B01D 53/04  
B01D 53/0454
- • with stationary adsorbents {([B01D 53/025](#) takes precedence)}
  - • • {Controlling adsorption (controlling temperature swing adsorption [B01D 53/0462](#)-, controlling pressure swing adsorption [B01D 53/047](#))}
- NOTE  
In groups [B01D 53/0462](#) and [B01D 53/047](#) to [B01D 53/0476](#) it is desirable to add indexing codes chosen from [B01D 2259/40007](#) to [B01D 2259/40081](#) relating to controlling and processing aspects of pressure or temperature swing adsorption
- U B01D 53/14  
B01D 53/18  
B01D 53/22  
B01D 53/24
- by absorption
  - • Absorbing units; Liquid distributors therefor ([B01D 3/16](#)-, [B01D 3/26](#)-, [B01D 3/30](#) take precedence; packing elements [B01J 19/30](#)-, [B01J 19/32](#))
  - by diffusion (manufacturing semi-permeable membranes [B01D 67/00](#)-, form, structure or properties of semi-permeable membranes [B01D 69/00](#)-, material for semi-permeable membranes [B01D 71/00](#))
  - by centrifugal force (centrifuges [B04B](#)-, cyclones [B04C](#))
- U B01D 53/34
- Chemical or biological purification of waste gases
- U B01D 53/46  
B01D 53/72
- • Removing components of defined structure
  - • • Organic compounds not provided for in groups [B01D 53/48](#) to [B01D 53/70](#)-, e.g. hydrocarbons
- U B01D 53/92
- • of engine exhaust gases (exhaust {or silencing} apparatus {for internal combustion engines, machines or engines in general}, having means for purifying, {rendering innocuous} or otherwise treating exhaust gases [F01N 3/00](#))
- U B01D 53/94  
B01D 53/9459
- • • by catalytic processes
  - • • • {Removing one or more of nitrogen oxides, carbon monoxide, or hydrocarbons by multiple successive catalytic functions; systems with more than one different function, e.g. zone coated catalysts (layered catalysts with only one function [B01D 53/9413](#)-, [B01D 53/944](#) or [B01D 53/945](#))}
- WARNING  
Groups [B01D 53/9459](#) to [B01D 53/9477](#) are not complete pending a reorganisation. See also [B01D 53/9459](#)
- U **B01D 57/00**  
B01D 57/02
- Separation, other than separation of solids, not fully covered by a single other group or subclass, e.g. [B03C](#)**
- by electrophoresis (treatment of water, waste water, sewage or sludge by electrophoresis [C02F 1/469](#)-, electrophoretic production of compounds or non-metals [C25B 7/00](#)-, investigating or analysing materials by using electrophoresis [G01N 27/26](#))
- U **B01D 59/00**  
B01D 59/50
- Separation of different isotopes of the same chemical element (preventing occurrence of critical conditions when producing fissile material [G21](#); shielding from radioactivity [G21F](#))**
- Separation involving two or more processes covered by different groups selected from groups [B01D 59/02](#)-, [B01D 59/10](#)-, [B01D 59/20](#)-, [B01D 59/22](#)-, [B01D 59/28](#)-, [B01D 59/34](#)-, [B01D 59/36](#)-, [B01D 59/38](#)-, [B01D 59/44](#)

B01D 61/00 -  
B01D 71/00

**Processes of separation using semi-permeable membranes, e.g. dialysis, osmosis, ultrafiltration; Apparatus specially adapted therefor; Semi-permeable membranes or their production (separation of gases or vapours by diffusion [B01D 53/22](#); treatment of milk by dialysis, reverse osmosis or ultrafiltration [A23C 9/142](#), by electrodialysis [A23C 9/144](#); artificial kidneys [A61M 1/14](#); {~~manufacture of films of plastics [B29](#), [C08J 5/18](#), of ion-exchange membranes [C08J 5/22](#)~~}; treatment of water by dialysis, osmosis or reverse osmosis [C02F 1/44](#), by electrodialysis [C02F 1/469](#); apparatus for enzymology or microbiology with dialysis means [C12M 1/12](#); production or purification of sugar juices, e.g. by osmosis, [C13D3/16](#); extraction of sugar from molasses, e.g. by osmosis, [C13J1/08](#); diaphragms for electrolysis [C25B 13/00](#), [C25C 7/04](#); osmosis as energy source [F03G 7/00](#))**

NOTE

In groups [B01D 61/00](#) to [B01D 71/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place (in respect of [B01D 71/00](#), see also Note (1) following that group)

WARNING

Attention is drawn to the WARNING after the subclass title of [A61M](#)

B01D 61/00

**Processes of separation using semi-permeable membranes, e.g. dialysis, osmosis, ultrafiltration; Apparatus, accessories or auxiliary operations specially adapted therefor**

NOTE

In groups [B01D 61/00](#) to [B01D 61/58](#) it is desirable to add the indexing codes relating to process operations and control chosen from groups [B01D 2311/00](#) to [B01D 2311/2696](#),

to details relating to membrane modules and apparatus indexing codes chosen from [B01D 2313/00](#) to [B01D 2313/90](#),

to details relating to the membrane module operation indexing codes chosen from [B01D 2315/00](#) to [B01D 2315/16](#),

to details relating to the module arrangement within a plant or an apparatus indexing codes chosen from [B01D 2317/00](#) to [B01D 2317/08](#) and

to details relating to the membrane assembly within one housing indexing codes chosen from [B01D 2319/00](#) to [B01D 2319/06](#)

B01D 63/00

**Apparatus in general for separation processes using semi-permeable membranes**

NOTE

In groups [B01D 63/00](#) to [B01D 63/16](#) it is desirable to add the indexing codes relating to membrane modules and apparatus chosen from groups [B01D 2313/00](#) to [B01D 2313/90](#),

to details relating to the membrane module operation indexing codes chosen from [B01D 2315/00](#) to [B01D 2315/16](#),

to details relating to the module arrangement within a plant or an apparatus indexing codes chosen from [B01D 2317/00](#) to [B01D 2317/08](#) and

to details relating to the membrane assembly within one housing indexing codes are chosen from [B01D 2319/00](#) to [B01D 2319/06](#)

U B01D 69/00

**Semi-permeable membranes for separation processes or apparatus characterised by their form, structure or properties; Manufacturing processes specially adapted therefor**

NOTES

1. In this group, the following term is used with the meaning indicated:

- "properties" covers those of a mechanical, physical or chemical nature
2. Manufacturing processes, if considered of interest, are also classified in group [B01D 67/00](#)

#### WARNING

The following sub-groups of [B01D 69/00](#) are incomplete. Documents presently classified in the hierarchically higher groups are in the process of reclassification

[B01D 69/043](#)  
[B01D 69/046](#)  
[B01D 69/081](#)  
[B01D 69/082](#)  
[B01D 69/084](#)  
[B01D 69/085](#)  
[B01D 69/087](#)  
[B01D 69/088](#)  
[B01D 69/105](#)  
[B01D 69/141](#)  
[B01D 69/144](#)  
[B01D 69/145](#)  
[B01D 69/147](#)  
[B01D 69/148](#)

B01D 69/08      · Hollow fibre membranes (manufacture of hollow fibres [D01D 5/24](#), [D01F 1/08](#))

**U    B01D 71/00      Semi-permeable membranes for separation processes or apparatus characterised by the material; Manufacturing processes specially adapted therefor**

#### NOTES

1. In this group, if the material is a composition it is classified according to the constituent present in the highest proportion. This constituent is classified according to the last place rule (see Note before group [B01D 61/00](#) ). If there is more than one constituent present in equal highest proportions, then each of these constituents is classified according to the last place rule

2. Manufacturing processes, if considered of interest, are also classified in group [B01D 67/00](#)

U    B01D 71/06      · Organic material

B01D 71/74      · Natural macromolecular material or derivatives thereof ([B01D 71/08](#), [B01D 71/24](#) take precedence)

B01D 71/76      · Macromolecular material not specifically provided for in a single one of groups [B01D 71/08](#) to [B01D 71/74](#) (rubbers in general [B01D 71/24](#))

**U    B01D 2221/00      Applications of separation devices**

B01D 2221/04      · Separation devices for treating liquids from earth drilling, mining (separation of well effluents [E21B 43/34](#), flotation in general [B03D 1/00](#))

**B01D 2311/00      Details relating to membrane separation process operations and control**

#### NOTE

In groups [B01D 2311/02](#) to [B01D 2311/08](#), the nature of specific operations carried out can be indexed by a combination of symbols chosen from [B01D 2311/10](#) to [B01D 2311/2696](#)

**Project: N/A (B01F)**

**B01F** **MIXING, e.g. DISSOLVING, EMULSIFYING, DISPERSING** ({miscellaneous implements for preparing food, e.g. machines for domestic use for mixing, egg-whisks, cream beaters [A47J 43/00](#)}; mixing paints [B44D 3/06](#); {apparatus specially adapted for mixing radioactively contaminated material [G21F 9/008](#)})

NOTE

In this subclass, the following term or expression is used with the meaning indicated:

- "mixing" covers stirring of a single material.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

[B01F 17/02](#) to [B01F 17/56](#) covered by [B01F 17/00](#) to [B01F 17/0092](#)

- U B01F 3/00** **Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed** ({[C08J 3/02](#) takes precedence})
- B01F 3/04
- gases or vapours with liquids (mixing non-alcoholic beverages with gases [A23L 2/54](#); {for medical purposes [A61M 16/14](#)}) [M1110]
- U B01F 5/00** **Flow mixers (sprayers, atomisers [B05B](#)); Mixers for falling materials, e.g. solid particles ([B01F 13/04](#) takes precedence; centrifugal mixers [B04](#))**
- B01F 5/06
- Mixers in which the components are pressed together through slits, orifices, or screens; {-Static mixers; Mixers of the fractal type} ({[B01F 7/164](#), [B01F 7/225](#) take precedence;}; turbo-mixers [B01F 5/16](#); colloid-mills [B02C](#); mixing valves [F16K 11/00](#))
- U B01F 7/00** **Mixers with rotary stirring devices in fixed receptacles, {i.e. movement of the receptacle not being meant to effect the mixing ([B01F 13/08](#) takes precedence)}; Kneaders ([B01F 13/04](#) takes precedence; {devices especially adapted for mixing foundry sand [B22C 5/04](#)})**
- U B01F 7/02
- with stirrers rotating about a horizontal or inclined axis
- B01F 7/08
- with helices {-or sections of helices (with a housing closely surrounding the helices, i.e. extruders, [B29C 47/38](#))}
- U B01F 9/00** **Mixers with rotating receptacles, {i.e. the rotary motion is imparted to effect the mixing}({[B01F 11/0002](#),} [B01F 13/04](#) take precedence); {Mixing the contents of packages or like independent containers by rotating them}**
- U B01F 9/02
- rotating about a horizontal or inclined axis, e.g. drum mixers
- B01F 9/04
- without bars, {-i.e. without mixing elements; Characterised by the shape or cross-section of the receptacle, e.g. of Y, Z, S or X shape; Cylindrical receptacles rotating about an axis at an angle to their longitudinal axis}
- B01F 15/00** **Accessories for mixers; {-Auxiliary operations or auxiliary devices; Parts or details of general application}**

**Project: N/A (B01J)**

**B01J 2/00** **Processes or devices for granulating materials, {e.g. fertilisers} in general (granulating metals [B22F 9/00](#), {-granulating slag [C21B 3/06](#)}, ores or scrap [C22B 1/14](#); mechanical aspects of working of plastics or substances in a plastic state to make granules [B29B 9/00](#); processes for granulating fertilisers characterised by their chemical constitution, see the relevant groups in [C05B](#) to [C05G](#); chemical aspects of powdering or granulating of macromolecular substances [C08J 3/12](#)); Rendering particulate materials free flowing in general, e.g. making them hydrophobic**

- B01J 2/16
- by suspending the powder material in a gas, e.g. in fluidised beds or as a falling curtain
- NOTE  
For classification in [B01J 2/16](#), the fact that during the process the material is suspended in a gas prevails over the aggregation state of the material at the moment of its suspension in the gas
- B01J 3/00** **Processes of utilising sub-atmospheric or super-atmospheric pressure to effect chemical or physical change of matter; Apparatus therefor (apparatus for compacting or sintering of metal powders [B22F 3/00](#); pressure vessels in general [F16J 12/00](#); pressure vessels for containing or storing compressed, liquefied or solidified gases [F17C](#); pressure vessels for nuclear reactors [G21C](#))**
- B01J 3/002
- {Component parts of these vessels not mentioned in [B01J 3/004](#); [B01J 3/006](#); [B01J 3/02](#) to [B01J 3/08](#); Measures taken in conjunction with the process to be carried out, e.g. safety measures}
- U B01J 3/04
- Pressure vessels, e.g. autoclaves
- B01J 3/048
- {Multiwall, strip or filament wound vessels (for pressurised gas vessels [F17C 1/06](#); for making them [B29](#))}
- B01J 4/00** **Feed {or outlet} devices; Feed or outlet regulating devices (feed or outlet devices for pressure vessels [B01J 3/02](#); {-feeding of particles into and evacuation of particles out of the reactor [B01J 8/0015](#)})**
- B01J 7/00** **Apparatus for generating gases (production of inert gas mixtures [B01J 19/14](#); for generating specific gases, see the relevant subclasses, e.g. [C01B](#), [C10J](#); {-in "air bags" on vehicles [B60R 21/26](#); for starter gas [F02C 7/26](#); blasting cartridges for producing gas under pressure [F42B 3/04](#)})**
- B01J 8/00** **Chemical or physical processes in general, conducted in the presence of fluids and solid particles; Apparatus for such processes (processes or devices for granulating material [B01J 2/00](#); furnaces [F27B](#); {-heat exchange apparatus [F28C 3/10](#); [F28D 13/00](#), [F28D 17/00](#), [F28D 19/00](#)})**
- B01J 8/008
- {Details of the reactor or of the particulate material; Processes to increase or to retard the rate of reaction ([B01J 8/0285](#), [B01J 8/067](#), [B01J 8/087](#), [B01J 8/1836](#) take precedence)}
- B01J 8/18
- with fluidised particles {(combustion apparatus with fluidised bed in general [F23C 10/00](#); furnaces with fluidised bed [F27B 15/00](#))}
- B01J 10/00** **Chemical processes in general for reacting liquid with gaseous media other than in the presence of solid particles, or apparatus specially adapted therefor ([B01J 19/08](#) takes precedence; separation, e.g. distillation, also combined with chemical reactions [B01D](#), {-e.g. [B01D 3/009](#)})**
- B01J 12/00** **Chemical processes in general for reacting gaseous media with gaseous media; Apparatus specially adapted therefor ([B01J 3/08](#), [B01J 8/00](#), [B01J 19/08](#) take precedence)**
- U B01J 13/00
- Colloid chemistry, e.g. the production of colloidal materials or their solutions, not otherwise provided for; Making micro-capsules or micro-balloons (use of substances as emulsifying, wetting, dispersing or foam producing agents [B01F 17/00](#))**
- B01J 13/0004
- {Preparation of sols (by physical processes [B01J 13/0086](#); aerosols [B01J 13/0095](#))}
- B01J 13/0043
- {containing elemental metal (for medical or diagnostical purposes [A61K](#), [G01N](#))}

- U B01J 13/02 · Making micro-capsules or micro-balloons {(for medical preparations [A61K 9/50](#))}
- U B01J 13/06 · · by phase separation
- B01J 13/08 · · · Simple coacervation, i.e. addition of highly hydrophilic material {(combined with spraying [B01J 13/043](#); combined with mechanical division [B01J 13/04](#))}
- B01J 14/00** **Chemical processes in general for reacting liquids with liquids; Apparatus specially adapted therefor ([B01J 8/00](#), [B01J 19/08](#) take precedence)**
- B01J 19/00** **Chemical, physical, or physico-chemical processes in general (physical treatment of fibres, threads, yarns, fabrics, feathers or fibrous goods made from such materials, see the relevant places for such treatment, e.g. [D06M 10/00](#)); Their relevant apparatus (packings, fillings or grids specially adapted for biological treatment of water, waste water or sewage [C02F 3/10](#); splashing boards or grids specially adapted for trickle coolers [F28F 25/08](#))**
- U B01J 19/0006 · {Controlling or regulating processes (controlling or regulating in general [G05](#))}
- U B01J 19/002 · · {Avoiding undesirable reactions or side-effects, e.g. avoiding explosions, or improving the yield by suppressing side-reactions}
- B01J 19/0026 · · · {Avoiding carbon deposits (inhibiting incrustation in general, [C23F 14/00](#), [C23F 15/00](#))}
- B01J 19/08 · Processes employing the direct application of electric or wave energy, or particle radiation; Apparatus therefor (application of shock waves [B01J 3/08](#); generating or handling plasma [H05H 1/00](#))
- U B01J 19/087 · · {employing electric or magnetic energy}
- B01J 19/088 · · · {giving rise to electric discharges (for heating purposes [H05B 7/00](#); for the production of ozone [C01B 13/11](#), [H01T 19/00](#))}
- B01J 19/10 · · employing sonic or ultrasonic vibrations (for auxiliary pretreatment of gases or vapours to be cleaned [B01D 51/08](#); for cleaning [B08B 3/12](#); {-for degasification of liquids [B01D 19/0073](#); for mixing purposes [B01F 11/02](#))}
- B01J 19/14 · Production of inert gas mixtures; Use of inert gases in general (apparatus for generating gases [B01J 7/00](#); separation of gases or vapours [B01D 53/00](#){application in storage tanks [B65D 90/44](#))}
- B01J 19/18 · Stationary reactors having moving elements inside ([B01J 19/08](#), [B01J 19/26](#) take precedence)
- B01J 19/1893 · · {Membrane reactors (membranes [B01D 71/00](#); catalytic membranes [B01J 35/065](#))}
- B01J 19/24 · Stationary reactors without moving elements inside ([B01J 19/08](#), [B01J 19/26](#) take precedence; with stationary particles [B01J 8/02](#))
- B01J 19/2455 · · {provoking a loop type movement of the reactants (tubular loop-type reactors [B01J 19/2435](#); loop reactors having moving elements inside [B01J 19/1868](#))}
- B01J 19/28 · Moving reactors, e.g. rotary drums ([B01J 19/08](#) takes precedence; centrifuges [B04B](#); rotary drum furnaces {[B01J 6/002](#)}, [F27B 7/00](#))
- B01J 20/00 - B01J 38/00** **Solid sorbent compositions or filter aid compositions; Sorbents for chromatography; Catalysts**

**NOTES**

1. In groups [B01J 20/00](#) to [B01J 31/00](#), metal salts having an anion composed of metal and oxygen only, e.g. molybdates, are considered as chemically bound mixtures of the component metal oxides
2. In groups [B01J 21/00](#) to [B01J 38/00](#), the following term is used with the meaning indicated:

- "catalyst" covers also a carrier forming part of the catalyst
3. Attention is drawn to the definitions of groups of chemical elements following the title of section C
  4. In group [B01J 20/00](#) and in each set of groups [B01J 21/00](#) to [B01J 31/00](#) and [B01J 32/00](#) to [B01J 38/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place
  5. Classification of the:
    - carriers;
    - forms or physical properties;
    - preparation or activation;
    - regeneration or reactivation of catalysts according to more than one of main groups [B01J 21/00](#) to [B01J 31/00](#) is made in the following general groups:
      - [B01J 32/00](#) for such carriers;
      - [B01J 35/00](#) for such forms or physical properties;
      - [B01J 37/00](#) for such preparation or activation;
      - [B01J 38/00](#) for such regeneration or reactivation
  6. Pure compounds or elements, or their recovery from solid sorbent compositions, filter aid compositions, or catalysts, are classified in the appropriate subclass for chemical compounds or elements. However, when it is explicitly stated that the pure compound or element, in a particular form, is especially useful as a solid sorbent, filter aid, or catalyst, it is further classified in group [B01J 20/00](#) or [B01J 35/00](#)

**B01J 20/00**

**Solid sorbent compositions or filter aid compositions; Sorbents for chromatography; Processes for preparing, regenerating or reactivating thereof (use of sorbent compositions in liquid separation [B01D 15/00](#), use of filter aid compositions [B01D 37/02](#); use of sorbent compositions in gas separation [B01D 53/02](#), [B01D 53/14](#))**

- |   |                                |   |
|---|--------------------------------|---|
| U | B01J 20/02<br>B01J 20/0203     | <ul style="list-style-type: none"> <li>• comprising inorganic material</li> <li>• {comprising compounds of metals not provided for in <a href="#">B01J 20/04</a> (oxides or hydroxides thereof <a href="#">B01J 20/06</a>)}</li> </ul> <p><u>NOTE</u><br/>Compounds classified in group <a href="#">B01J 20/0203</a> and subgroups are also classified in <a href="#">B01J 20/0274</a> according to the type of anion</p> |
| U | B01J 20/22                     | <ul style="list-style-type: none"> <li>• comprising organic material</li> </ul> <p><u>WARNING</u><br/>Groups <a href="#">B01J 20/223</a> and <a href="#">B01J 20/226</a> are not complete, pending a reorganisation. See also <a href="#">B01J 20/22</a></p>  |
| U | B01J 20/223<br>B01J 20/226     | <ul style="list-style-type: none"> <li>• {containing metals, e.g. organo-metallic compounds, coordination complexes}</li> <li>• • {Coordination polymers, e.g. metal-organic frameworks [MOF], zeolitic imidazolate frameworks [ZIF] (preparation of metal complexes containing carboxylic acid moieties <a href="#">C07C 51/418</a>; MOF's per se <a href="#">C07F</a>)}</li> </ul>                                      |
| U | B01J 20/28                     | <ul style="list-style-type: none"> <li>• characterised by their form or physical properties</li> </ul> <p><u>WARNING</u><br/>Groups <a href="#">B01J 20/281</a> to <a href="#">B01J 20/29</a> might be incomplete. A number of documents presently classified in <a href="#">G01N 30/48</a> and <a href="#">G01N 30/482</a> still need reclassification to one or more of these groups</p>                                |
| U | B01J 20/28014<br>B01J 20/28023 | <ul style="list-style-type: none"> <li>• {characterised by their form}</li> <li>• • {Fibres or filaments (fibres or filaments in the form of membranes <a href="#">B01J 20/28038</a>; <a href="#">B01J 20/28007</a> takes precedence)}</li> </ul>   |

- U B01J 20/30
- Processes for preparing, regenerating, or reactivating
- WARNING  
Groups [B01J 20/3007](#) to [B01J 20/3092](#) are not complete, pending a reorganisation. See also [B01J 20/30](#)
- U B01J 20/34
- Regenerating or reactivating
- B01J 20/3483
- {by thermal treatment not covered by groups [B01J 20/3441](#) - [B01J 20/3475](#), e.g. by heating or cooling}
- B01J 23/00**
- Catalysts comprising metals or metal oxides or hydroxides, not provided for in group [B01J 21/00](#) ([B01J 21/16](#) takes precedence)**
- B01J 31/00**
- Catalysts comprising hydrides, coordination complexes or organic compounds (catalyst compositions used only in polymerisation reactions [C08](#); {catalytic antibodies [C12N 9/0002](#)})**
- NOTES
- Group [B01J 31/003](#) takes precedence over groups [B01J 31/02](#) to [B01J 31/24](#) (catalytic antibodies [C12N 9/0002](#) )
  - In this group, the following terms or expressions are used with the meanings indicated:
    - "Organic compound" a compound in which carbon is bonded to
      - a second carbon;
      - at least one atom of hydrogen or halogen; or
      - nitrogen by a single or double bond; except cyanic acid (HOCN), cyanogen (NCCN), cyanamide (H<sub>2</sub>NCN), cyanogen halide (HalCN), hydrocyanic acid (HCN) isocyanic acid (HNCO) fulminic acid (HCNO) and metal carbides (MCCM) (catalysts comprising any of these exceptions or their salts [B01J 27/20](#) to [B01J 27/26](#)).
    - "Organometallic compounds" includes all organic compounds wherein a metal or metalloid atom is bonded directly to a carbon fragment, the latter being formally anionic, no further neutral ligands being coordinated to the metal and the compound requiring no further cations for charge balance; e.g. M(1-CR<sub>3</sub>)<sub>n</sub> with M= main group metal, n= valency of metal and R= H or hydrocarbyl. (Compounds comprising anionic organonitrogen, organooxygen and organosulfur fragments, excluding carboxylates, with a metal bonded to these heteroatoms [B01J 31/02](#) to [B01J 31/0254](#); unsaturated carbon fragments in combination with transition metals [B01J 31/2282](#)).
    - "Coordination complexes" includes any donor-acceptor compounds or complex ions comprising organic or inorganic, anionic or neutral Lewis basic ligands, attached to a Lewis acid central metal or metal ion through one or several complexing donor atoms with at least one lone-pair of electrons, e.g. N, O, S, P, to provide at least a Sigma-bond. Typically the maximum number of same or different ligands according to the coordination number, spatial requirements of the ligand and electronic configuration of the metal is bound in a predictable geometry. Complexes of neutral, cationic or anionic hydrocarbon ligands with delocalised charge and/or bonding site, e.g. Pd-olefin complexes or metallocenes, are also included (the following groups take precedence: simple hydrocarbyl metal compounds, e.g. of main group metal(oids) [B01J 31/12](#); oxoacid salts [B01J 31/04](#) to [B01J 31/10](#); other compounds comprising anionic organonitrogen, organooxygen and organosulfur fragments with a metal bonded to these heteroatoms [B01J 31/02](#) to [B01J 31/0254](#)).
    - "Organometallic complexes" includes all coordination complexes comprising a M-C bond, e.g. metal carbonyls (complex cyanides such as M<sub>4</sub>[Fe(CN)<sub>6</sub>] [B01J 27/26](#) ). Included are furthermore complexes which are not strictly organometallic per se, e.g. comprising only N, O, S and/or P coordinated ligands, but are described as involving, or known to involve, organometallic

intermediates and/or transition states during use, e.g. Group 8-10 metal complexes for a variety of catalytic reactions or steps thereof, such as oxidative addition, e.g. of ArX, hydrogenation, carbonylation, epoxidation, etc.

- "Organic complexes" includes all coordination complexes comprising organic ligands (groups [B01J 31/1608](#) to [B01J 31/1895](#) take precedence).
- "Polymer" includes any macromolecular substance (typically  $M > 10000$  g/mol), which comprises repeating units made up of one or several kinds of atoms or groups of atoms, which are identically connected to one another. Oligomers, i.e. more than two identical repeating units connected to one another and typically  $500 < M < 10000$  g/mol, are grouped with the respective polymers (polymers per se [C08](#)).

3. In this group, if two or more aspects are of equal importance, these are each classified, e.g. two components in a catalyst system such as:

- support and pendant or otherwise immobilised coordination complex; or
- coordination complex and essential additive.

However, if two components, even if separately added, are described as forming, or known to form, a coordination complex, only the latter is classified, e.g. phosphine and Group 8-10 metal such as rhodium. The groups [B01J 31/26](#) to [B01J 31/38](#) are not to be used for the central metals in coordination complexes but rather for separately added further inorganic ingredients.

Each specifically disclosed alternative is separately classified, i.e. specifically disclosed by ways of worked examples, specific claims and/or explicit alternatives therein.

4. When classifying in [B01J 31/00](#), additional information for the catalysts is provided as follows:

(4-1) the specifically disclosed intended uses are indexed in [B01J 2231/00](#);

(4-2) general aspects of the complexes of group [B01J 31/16](#) and the specifically disclosed central metal(s) therein, as well as additional information regarding any special solvents used for any catalyst system of this group are indexed in [B01J 2531/00](#).

(4-3) conceptual articles, e.g. reviews, are separately indexed in [B01J 2231/005](#) and [B01J 2531/001](#);

(4-4) additional information regarding the complexes or ligands classified in [B01J 31/16](#) to [B01J 31/24](#) and indexed in [B01J 2531/00](#) is indexed in [B01J 2540/00](#), e.g. non-coordinating substituents on the ligand periphery]

- U B01J 31/02
  - containing organic compounds or metal hydrides
- U B01J 31/0231
  - {Halogen-containing compounds}
- B01J 31/0232
  - • {also containing elements or functional groups covered by [B01J 31/0201](#) to [B01J 31/0228](#) (perfluorinated sulfonyl compounds or moieties [B01J 31/0224](#); perfluorosulfonic acids [B01J 31/0227](#))}
- B01J 31/06
  - • containing polymers {(organometallic polymers [B01J 31/123](#); polymer-bound organometallic complexes [B01J 31/165](#); coordination polymers [B01J 31/1691](#))}
- B01J 31/069
  - • {Hybrid organic-inorganic polymers, e.g. silica derivatized with organic groups (nitrogen containing groups on mineral substrates [B01J 31/0254](#); organometallic polymers [B01J 31/123](#); coordination complexes immobilised on an inorganic support [B01J 31/1616](#); coordination polymers, e.g. metal-organic frameworks [B01J 31/1691](#))}
- U B01J 31/12
  - • containing organo-metallic compounds or metal hydrides

- B01J 31/123
- • • {Organometallic polymers, e.g. comprising C-Si bonds in the main chain or in subunits grafted to the main chain ([B01J 31/064](#)-, [B01J 31/066](#)-, [B01J 31/067](#)-, [B01J 31/08](#) and [B01J 31/10](#) take precedence; polymer-bound organometallic complexes [B01J 31/165](#)-, coordination polymers [B01J 31/1691](#)-, catalysts for the preparation of polysiloxanes, e.g. Karstedt catalysts [C08G 77/08](#))}
- U B01J 31/16
- containing coordination complexes
- U B01J 31/165
- • {Polymer immobilised coordination complexes, e.g. organometallic complexes}
- U B01J 31/1658
- • • {immobilised by covalent linkages, i.e. pendant complexes with optional linking groups, e.g. on Wang or Merrifield resins}
- B01J 31/1675
- • • • {the linkage being to an organometallic polymer covered by groups [B01J 31/123](#) to [B01J 31/127](#)-, e.g. polyhydrosiloxanes}
- B01J 31/1691
- • {Coordination polymers, e.g. metal-organic frameworks [MOF] (preparation of metal complexes containing carboxylic acid moieties [C07C 51/418](#)-, MOF's per se [C07F](#))}
- B01J 31/18
- • containing nitrogen, phosphorus, arsenic or antimony {as complexing atoms, e.g. in pyridine ligands, or in resonance therewith, e.g. in isocyanide ligands C=N-R or as complexed central atoms (double metal cyanides [B01J 27/26](#)-, N-heterocyclic carbenes [B01J 31/2265](#))}
- U B01J 31/24
- • Phosphines {i.e. phosphorus bonded to only carbon atoms, or to both carbon and hydrogen atoms, including sp<sup>2</sup>-hybridised phosphorus compounds such as phosphabenzene, phosphole or anionic phospholide ligands (complexes with parent phosphine PH<sub>3</sub> [B01J 31/1845](#))}
- B01J 31/2495
- • • {Ligands comprising a phosphine-P atom and one or more further complexing phosphorus atoms covered by groups [B01J 31/1845](#) to [B01J 31/1885](#)-, e.g. phosphine/phosphinate or phospholyl/phosphonate ligands}
- U B01J 37/00
- Processes, in general, for preparing catalysts; Processes, in general, for activation of catalysts**
- B01J 37/04
- Mixing {([B01J 37/0009](#)-, [B01J 37/0018](#) take precedence)}
- B01J 37/06
- Washing {([B01J 37/0009](#)-, [B01J 37/0018](#) take precedence)}
- B01J 37/08
- Heat treatment {([B01J 37/0009](#)-, [B01J 37/0018](#) take precedence)}
- B01J 39/00 - B01J 49/00**
- Ion-exchange (treatment of milk [A23C 9/14](#)-, separation by liquid ion-exchangers [B01D](#)-, e.g. [B01D 11/00](#)-, separation of isotopes [B01D 59/00](#)-, compounds *er se*, see the relevant classes, e.g. [C01](#)-, [C07](#)-, [C08](#)-, treatment of water [C02F 1/42](#)-, refining of hydrocarbon oils, in the absence of hydrogen, with solid sorbents [C10G 25/00](#)-, purification of sugar juices [C13B 20/14](#)-, extraction of sugar from molasses [C13B 35/06](#)-, extraction of metal compounds from ores or concentrates by wet processes [C22B 3/00](#)-, using ion-exchange for investigating or analysing materials [G01N 30/96](#)-, treating radioactively contaminated material [G21F 9/12](#))**

#### NOTES

1. In groups [B01J 39/00](#) to [B01J 49/00](#) :
  - Ion-exchange covers all processes whereby ions are exchanged between the solid exchanger and the liquid to be treated and wherein the exchanger is not soluble in the liquid to be treated

- Ion-exchange processes cover also ion-exchange in combination with complex or chelate forming reactions
2. In groups [B01J 39/00](#) to [B01J 49/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place
  3. After the notation of [B01J 39/00](#) to [B01J 49/00](#), and separated there from by a + sign, notations concerning other constituents may be added. These notations are selected from groups [B01J 39/00](#) and [B01J 41/00](#)

**U B01J 2231/00 Catalytic reactions performed with catalysts classified in [B01J 31/00](#)**

**NOTE**

In this group indexing is done according to the specific catalytic reaction. In case of multiple catalytic activities only those are indexed which are specifically exemplified, i.e. by ways of worked examples, specific claims or explicit alternatives therein.

- U B01J 2231/70
- Oxidation reactions, e.g. epoxidation, (di)hydroxylation, dehydrogenation and analogues
- B01J 2231/76
- Dehydrogenation (transfer-dehydrogenation of CH-XH [B01J 2231/641](#); transfer-dehydrogenation of -CHRCHR- via C-H activation [B01J 2231/46](#))

**Project: N/A (B01L)**

**B01L**

**CHEMICAL OR PHYSICAL LABORATORY APPARATUS FOR GENERAL USE** (apparatus for medical or pharmaceutical purposes [A61](#); apparatus for industrial purposes or laboratory apparatus whose construction and performance are comparable to that of similar industrial apparatus, see the relevant classes for industrial apparatus, particularly subclasses of [B01](#) and [C12](#); separating or distilling apparatus [B01D](#); mixing or stirring devices [B01F](#); atomisers [B05B](#); {-vibrating devices, e.g. shaking tables,} sieves [B07B](#); corks, bungs [B65D](#); handling liquids in general [B67](#); vacuum pumps [F04](#); siphons [F04F 10/00](#); taps, stop-cocks [F16K](#); tubes, tube joints [F16L](#); apparatus specially adapted for investigating or analysing materials [G01](#), particularly [G01N](#); electrical or optical apparatus, see the relevant classes in Sections G and H)

**NOTE**

This subclass covers only laboratory apparatus which is either applicable solely to laboratory purposes or which, by reason of its simple construction and adaptability, is such as would not be suitable for industrial use.

**WARNINGS**

1. The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:
  - [B01L 3/14](#) covered by [B01L 3/50](#)
2. Groups [B01L 1/50](#), [B01L 3/50-B01L 3/569](#), [B01L 7/50-B01L 7/54](#), [B01L 9/50-B01L 9/547](#) do not correspond to former or future IPC groups. Concordance CPC : IPC for these groups is as follows:
  - [B01L 1/50](#) : [B01L 1/00](#) - [B01L 3/50](#) - [B01L 3/502](#) : [B01L 3/00](#) - [B01L 3/5021](#)
  - [B01L 3/50215](#) : [B01L 3/14](#) - [B01L 3/5023](#) - [B01L 3/508](#) : [B01L 3/00](#) - [B01L 3/5082](#) - [B01L 3/50825](#) : [B01L 3/14](#) - [B01L 3/5085](#) - [B01L 3/569](#) : [B01L 3/00](#) - [B01L 7/50](#) - [B01L 7/54](#) : [B01L 7/00](#) - [B01L 9/50](#) - [B01L 9/547](#) : [B01L 9/00](#)

**B01L 3/00**

**Containers or dishes for laboratory use, e.g. laboratory glassware (bottles [B65D](#); apparatus for enzymology or microbiology {-specially adapted for culturing} [C12M 1/00](#)); Droppers (receptacles for volumetric purposes [G01F](#))**

**Project: N/A (B02C)**

**B02C** **CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN** ({household tools and machines for pulverising foodstuffs, e.g. coffee and spice mills [A47J 42/00](#); pharmaceutical mortars [A61J 3/02](#); mechanical processing of refuse and garbage [B03B 9/06](#); dressing mould materials by grinding [B22C 5/04](#)}; obtaining metallic powder by crushing, grinding or milling [B22F 9/04](#)}; {recovery of plastics by desintegration [B29B 17/00](#); crushing raw materials in starch making [C08B 30/02](#); beaters for papermaking [D21D 1/02](#); crushing devices specially for transport in mines [E21F 13/002](#); slag crushing devices [F23J 1/00](#); fuel milling devices in combustion apparatus [F23K 1/00](#); household devices for crushing coal [F24B 15/02](#); ice desintegrating devices [F25C 5/02](#)})

**Project: N/A (B03B)**

**B03B 1/00** **Conditioning for facilitating separation by altering physical properties of the matter to be treated (pre-treatment of ores in general [C22B](#) {Pretreatment prior to magnetic separation [B03C 1/00](#)})**

**U B03B 5/00** **Washing granular, powdered or lumpy materials; Wet separating (separating by pneumatic tables or by pneumatic jigs [B03B 4/00](#))**

B03B 5/02 · using shaken, pulsated or stirred beds as the principal means of separation ([B03B 5/28](#)-, [B03B 5/48](#) take precedence)

U B03B 5/28 · by sink-float separation

U B03B 5/30 · · using heavy liquids or suspensions

B03B 5/32 · · · using centrifugal force (centrifuges [B04B](#)-, cyclones [B04C](#))

B03B 5/60 · by non-mechanical classifiers, e.g. slime tanks (using shaken, pulsated or stirred beds as the principal means of separation [B03B 5/02](#)-, hydraulic classifiers [B03B 5/62](#)-, water impulse classifiers [B03B 5/68](#))

B03B 5/68 · by water impulse (shaking tables [B03B 5/04](#)-, jigs [B03B 5/10](#)-, hydraulic classifiers [B03B 5/62](#))

**B03B 13/00** **Control arrangements specially adapted for wet-separating apparatus or for dressing plant, using physical effects (detecting, measuring, or analysing devices [G01](#)-, control devices in general [G05](#))**

**Project: N/A (B03D)**

**B03D** **FLOTATION; DIFFERENTIAL SEDIMENTATION (sedimentation in general [B01D 21/00](#)-, in combination with other separation of solids [B03B](#); sink-float separation [B03B 5/28](#)-, detergents, soaps [C11D](#))**

WARNING

The following groups are not complete: [B03D 1/023](#), see also [B03D 1/02B03D 1/025](#), see also [B03D 1/02B03D 1/026](#), see also [B03D 1/02B03D 1/028](#), see also [B03D 1/02B03D 1/082](#), see also [B03D 1/08B03D 1/085](#), see also [B03D 1/08B03D 1/087](#), see also [B03D 1/08B03D 1/1406](#), see also [B03D 1/14B03D 1/1443](#), see also [B03D 1/14B03D 1/145](#)-, see also [B03D 1/14B03D 1/1456](#)-, see also [B03D 1/14B03D 1/1462](#)-, see also [B03D 1/14B03D 1/1468](#)-, see also [B03D 1/14B03D 1/1475](#)-, see also [B03D 1/14B03D 1/1487](#), see also [B03D 1/14B03D 1/1493](#), see also [B03D 1/14B03D 1/242](#), see also [B03D 1/24B03D 1/247](#), see also [B03D 1/24](#) ]

**B03D 1/00 Flotation (conditioning for flotation, general arrangement of plan [B03B](#))**NOTE

In groups [B03D 1/001](#) to [B03D 1/018](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.

B03D 1/14 · Flotation machines (devices for feeding measured quantities of reagents [B01J 4/02](#); flotation apparatus for enzymology or microbiology [C12M 1/09](#))

**B03D 2203/00 Specified materials treated by the flotation agents; specified applications (paper pulp processing [D21F 1/70](#), de-inking of paper pulp [D21B 1/325](#))**

**Project: N/A (B05B)****B05B**

**SPRAYING APPARATUS; ATOMISING APPARATUS; NOZZLES (sprayers or atomisers specially adapted for therapeutic purposes [A61M 11/00](#)); spray-mixers with nozzles [B01F 5/20](#); processes for applying liquids or other fluent materials to surfaces by spraying [B05D](#); {nozzles specially adapted for injection moulding of plastics or substances in a plastic state [B29C 45/1603](#), [B29C 45/20](#); nozzles specially adapted for windscreen washers [B60S 1/52](#)}; means for pumping fluids [F04](#); valves, e.g. water-taps, [F16K](#))**

NOTES

1. This subclass covers particularly apparatus for the release or projection of drops or droplets into the atmosphere or into a chamber to form a mist or the like. For this purpose, the materials to be projected may be suspended in a stream of gas or vapour.
2. Attention is drawn to the Note following the title of class [B05](#).
3. In this subclass, "means for controlling volume of flow" is used in the most general meaning and includes also means allowing only starting and stopping the flow
4. In this subclass, the meaning of the expression "apparatus carried on or by a person" includes all apparatus comprising at least one container for the material to be sprayed carried on or by a person during use
5. In this subclass, the word "container" is to be understood as the innermost enclosure containing the material to be sprayed

WARNING

Groups [B05B 11/30](#) to [B05B 11/3098](#) do not correspond to former or current IPC groups. The concordance CPC : IPC for these groups is as follows: - [B05B 11/30](#) - [B05B 11/3098](#) : [B05B 11/00](#)

**B05B 1/00 Nozzles, spray heads or other outlets, with or without auxiliary devices such as valves, heating means ([B05B 3/00](#), [B05B 5/00](#), [B05B 7/00](#) take precedence; {nozzles for baths with water or gas jets [A61H 33/00](#), e.g. [A61H 33/6063](#), [A61H 33/6021](#), [A61H 33/026](#) or [A61H 33/027](#); Nozzles specially adapted for fire-extinguishing [A62C 31/02](#); Nozzles for generating high velocity abrasive fluid jets [B24C 5/04](#)}; nozzles for jet-ink printing mechanisms [B41J 2/135](#); {Nozzles for filling containers [B65B 39/00](#); } nozzles for liquid-dispensing, e.g. in vehicle service stations [B67D 7/42](#))**

B05B 1/02 · designed to produce a jet, spray, or other discharge of particular shape or nature, e.g. in single drops, {or having an outlet of particular shape} ([B05B 1/26](#), [B05B 1/28](#), [B05B 1/34](#) take precedence)

U B05B 1/04 · · in flat form, e.g. fan-like, sheet-like

- B05B 1/042
  - • • {Outlets having two planes of symmetry perpendicular to each other, one of them defining the plane of the jet ([B05B 1/044](#), [B05B 1/046](#) take precedence)}
- B05B 1/14
  - with multiple outlet openings ([B05B 1/02](#), [B05B 1/26](#) take precedence); with strainers in or outside the outlet opening
- U B05B 1/16
  - • having selectively- effective outlets
- B05B 1/1627
  - • • {with a selecting mechanism comprising a gate valve, a sliding valve or a cock ([B05B 1/1681](#) takes precedence; gate valves or sliding valves in general [F16K 3/00](#); cocks in general [F16K 5/00](#))}
- B05B 1/18
  - • Roses; Shower heads {(with means for adding soap or the like [E03C 1/046](#); jet regulators [E03C 1/08](#))}
- B05B 1/20
  - • {Arrangements of several outlets along elongated bodies, e.g.} perforated pipes or troughs, e.g. spray booms {(spray booms for agricultural uses [A01M 7/0071](#); spray bars for treating roads [E01C 19/176](#))}; Outlet elements therefor
- U B05B 1/30
  - designed to control volume of flow, e.g. with adjustable passages
- B05B 1/3013
  - • {the controlling element being a lift valve ([B05B 1/3006](#), [B05B 1/3033](#) take precedence; lift valves in general [F16K 1/00](#))}
- B05B 1/3026
  - • {the controlling element being a gate valve, a sliding valve or a cock ([B05B 1/3006](#), [B05B 1/326](#) take precedence; gate valves or sliding valves in general [F16K 3/00](#); cocks in general [F16K 5/00](#))}
- U B05B 3/00**
  - Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements; {Spraying or sprinkling heads with rotating elements located upstream the outlet}**
- U B05B 3/02
  - with rotating elements
- U B05B 3/04
  - • driven by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet {([B05B 3/023](#) takes precedence)}
- B05B 3/0409
  - • • {with moving, e.g. rotating, outlet elements ([B05B 3/0486](#), [B05B 3/06](#) take precedence)}
- B05B 3/0418
  - • • • {comprising a liquid driven rotor, e.g. a turbine ([B05B 3/0463](#), [B05B 3/0468](#) take precedence)}
- U B05B 3/14
  - with oscillating elements; with intermittent operation
- B05B 3/16
  - • driven or controlled by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet {([B05B 3/0431](#), [B05B 3/0468](#), [B05B 3/0472](#) take precedence)}
- U B05B 5/00**
  - Electrostatic spraying apparatus; Spraying apparatus with means for charging the spray electrically; Apparatus for spraying liquids or other fluent materials by other electric means**
- U B05B 5/025
  - Discharge apparatus, e.g. electrostatic spray guns
- B05B 5/03
  - • characterised by the use of gas, {e.g. electrostatically assisted pneumatic spraying ([B05B 5/04](#), [B05B 5/043](#), [B05B 5/047](#) take precedence)}
- B05B 5/035
  - • characterised by gasless spraying, {e.g. electrostatically assisted airless spraying ([B05B 5/04](#), [B05B 5/043](#), [B05B 5/047](#) take precedence)}
- U B05B 5/08
  - Plant for applying liquids or other fluent materials to objects
- B05B 5/087
  - • {Arrangements of electrodes, e.g. of charging, shielding, collecting electrodes ([B05B 5/12](#), [B05B 5/14](#) take precedence; Arrangements of electrodes on the discharge apparatus [B05B 5/0533](#))}

- B05B 7/00**      **Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas (B05B 3/00-, B05B 5/00 {B05B 11/06} take precedence; outlets not specially modified for two media B05B 1/00)**
- B05B 7/02      · Spray pistols; Apparatus for discharge (B05B 7/14-, B05B 7/16-, B05B 7/24 take precedence)
- B05B 7/04      · · with arrangements for mixing liquids or other fluent materials before discharge (mixing in general B01F-, e.g. B01F 5/00-; mixing valves F16K 11/00)
- U B05B 7/0416      · · · {with arrangements for mixing one gas and one liquid}
- U B05B 7/0441      · · · · {with one inner conduit of liquid surrounded by an external conduit of gas upstream the mixing chamber}
- B05B 7/045      · · · · · {the gas and liquid flows being parallel just upstream the mixing chamber (B05B 7/0458-, B05B 7/0466 take precedence)}
- U B05B 7/08      · · with separate outlet orifices, e.g. to form parallel jets, {i.e. the axis of the jets being parallel}, to form intersecting jets, {i.e. the axis of the jets converging but not necessarily intersecting at a point}
- B05B 7/0876      · · · {to form parallel jets constituted by a liquid or a mixture containing a liquid (B05B 7/0884-, B05B 7/0892 take precedence)}
- U B05B 7/14      · designed for spraying particulate materials (B05B 7/16 takes precedence)
- U B05B 7/1404      · · {Arrangements for supplying particulate material}
- B05B 7/144      · · · {the means for supplying particulate material comprising moving mechanical means (B05B 7/1422-, B05B 7/1459 take precedence)}
- B05B 7/1459      · · · {comprising a chamber, inlet and outlet valves upstream and downstream the chamber and means for alternately sucking particulate material into and removing particulate material from the chamber through the valves (conveying material in bulk by using a combination of gas pressure and suction B65G 53/28-; pumps in general F04B; apparatus for repeatedly measuring and separating a predetermined volume of fluent solid material from a supply or container G01F 11/00)}
- U B05B 7/16      · incorporating means for heating {or cooling} the material to be sprayed {(spraying by means of explosions B05B 7/0006)}
- B05B 7/1606      · · {the spraying of the material involving the use of an atomising fluid, e.g. air (B05B 7/168-, B05B 7/1686-, B05B 7/20-, B05B 7/22 take precedence)}
- B05B 7/1673      · · {heat being transferred to the material to be sprayed by a heat transfer conductive fluid (B05B 7/162-, B05B 7/1653 take precedence)}
- B05B 7/168      · · {with means for heating or cooling after mixing (B05B 7/201-, B05B 7/22 take precedence)}
- B05B 7/18      · · the material having originally the shape of a wire, rod or the like {(B05B 7/203-, B05B 7/224 take precedence)}
- B05B 7/24      · with means, e.g. a container, for supplying liquid or other fluent material to a discharge device (B05B 7/14-, B05B 7/16-, B05B 11/00 take precedence)
- B05B 7/2483      · · {the supplying means involving no pressure or aspiration, e.g. means involving gravity or capillarity (B05B 7/2459-, B05B 7/247 take precedence)}
- B05B 7/2489      · · {an atomising fluid, e.g. a gas, being supplied to the discharge device (B05B 7/2402-, B05B 7/2483-, B05B 7/262 take precedence)}
- U B05B 9/00**      **Spraying apparatus for discharge of liquids or other fluent material, without essentially mixing with gas or vapour (B05B 11/00 takes precedence)**
- U B05B 9/03      · characterised by means for supplying liquid or other fluent material {(B05B 9/002 takes precedence)}

- U B05B 9/04
  - • with pressurised or compressible container (aerosol containers [B65D 83/14](#)); with pump
- B05B 9/08
  - • • Apparatus to be carried on or by a person, e.g. of knapsack type (~~[B05B 9/0426](#)~~, [B05B 11/00](#) take precedence } ; details or components, e.g. casings, bodies of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))
- U B05B 9/085
  - • • • {with a liquid pump}
- B05B 9/0855
  - • • • • {the pump being motor-driven ([B05B 9/0866](#), [B05B 9/0872](#) take precedence)}
- B05B 11/00**

**Single-unit, i.e. unitary, hand-held apparatus {comprising a container and a discharge nozzle attached thereto}, in which flow of liquid or other fluent material is produced by {the muscular energy of} the operator at the moment of use {or by an equivalent manipulator independent from the apparatus (apparatus with an external source or the possibility of permanent accumulation of pressure for discharging the liquid or fluid material [B05B 7/00](#), [B05B 9/00](#))}**
- U B05B 11/0005
  - {Components or details (of single units wherein the flow is effected by a pump [B05B 11/3042](#))}
- U B05B 11/0027
  - • {Means for neutralising the actuation of the sprayer (pump locking means [B05B 11/3059](#)); Means for preventing access to the sprayer actuation means}
- B05B 11/0029
  - • • {Valves not actuated by pressure (automatically opened during actuation of a spray pump [B05B 11/3053](#); ~~[B05B 11/0032](#)~~, [B05B 11/0094](#) take precedence)}
- B05B 11/0037
  - • {Containers (for several components [B05B 11/0078](#); Containers in general [B65D](#))}
- B05B 11/0062
  - • • {Outlet valves actuated by the pressure of the fluid to be sprayed (fluid-actuated pump outlet valve arrangements ~~[B05B 11/3016](#)~~, ~~[B05B 11/3022](#)~~, ~~[B05B 11/3097](#)~~, ~~[B05B 11/3033](#)~~, ~~[B05B 11/3036](#)~~, ~~[B05B 11/304](#)~~, [B05B 11/3064](#))}
- U B05B 11/04
  - the flow being effected by deformation of container for liquid or other fluent material
- B05B 11/048
  - • {characterised by the container, e.g. this latter being surrounded by an enclosure, or the means for deforming it (~~[B05B 11/041](#)~~, [B05B 11/046](#) take precedence)}
- U B05B 11/30
  - the flow being effected by a pump
- B05B 11/3001
  - • {Piston pumps (~~[B05B 11/3087](#)~~, ~~[B05B 11/3088](#)~~, [B05B 11/309](#) take precedence)}
- B05B 11/3002
  - • • {the direction of the pressure stroke being substantially perpendicular to the major axis of the container ([B05B 11/3009](#), [B05B 11/3015](#) take precedence)}
- B05B 11/3016
  - • • • {the outlet valve having a valve seat located downstream a movable valve element controlled by a pressure actuated controlling element (~~[B05B 11/3022](#)~~, [B05B 11/3023](#) take precedence)}
- B05B 11/3021
  - • • • {having an outlet valve which is a gate valve (~~[B05B 11/3023](#)~~, [B05B 11/3038](#) take precedence)}
- WARNING**  
Not complete, see [B05B 11/3001](#) and sub-groups
- U B05B 11/3042
  - • {Components or details}
- U B05B 11/3043
  - • • {Sealing or attachment arrangements between pump and container (Sealing arrangements around pump actuating stem [B05B 11/305](#))}

- B05B 11/3045 . . . {the pump being preassembled as an independent unit before being mounted on the container ([B05B 11/3047](#)-, [B05B 11/3049](#) take precedence)}
- U B05B 11/3046 . . . {the pump chamber being arranged substantially coaxially to the neck of the container ([B05B 11/3049](#) takes precedence)}
- B05B 11/3047 . . . {the pump being preassembled as an independent unit before being mounted on the container}
- WARNING  
Not complete, see [B05B 11/3042](#)-, [B05B 11/3043](#) and subgroups
- B05B 11/3052 . . . {Actuation means (locking means therefor [B05B 11/3059](#)-, [B05B 11/309](#) takes precedence)}
- B05B 11/3056 . . . {comprising rotatable or articulated levers (lever actuated piston pumps [B05B 11/3009](#)-, lever actuated pumps with deformable chamber [B05B 11/3029](#)-, [B05B 11/3053](#) take precedence)}
- WARNING  
Not complete, see [B05B 11/3052](#)
- B05B 11/3066 . . . {Pump inlet valves ([B05B 11/3018](#)-, [B05B 11/3019](#)-, [B05B 11/3064](#) take precedence)}
- B05B 12/00 Arrangements or special adaptations of delivery controlling means in spraying systems (controlling in general [G05F](#) {; valves in spray head or nozzles [B05B 1/30](#) and sub-groups )}**
- U B05B 12/08 . responsive to condition of liquid or other fluent material discharged, of ambient medium or of target {; responsive to condition of spray device or of supply means, e.g. pipes, pumps, their drive}
- B05B 12/082 . . {responsive to a condition of the discharged jet or spray, e.g. to jet shape, spray pattern or droplet size}
- WARNING  
not complete, see [B05B 12/08](#)-, [B05B 12/12](#)
- B05B 12/084 . . {responsive to condition of liquid or other fluent material already sprayed on the target, e.g. coating thickness, weight or pattern}
- WARNING  
not complete, see [B05B 12/08](#)-, [B05B 12/12](#)
- B05B 12/085 . . {responsive to flow or pressure of liquid or other fluent material discharged (Control of flow in general [G05D 7/00](#)-, Control of fluid pressure in general [G05D 16/00](#)-, [B05B 1/3006](#)-, [B05B 1/323](#)-, [B05B 7/1254](#) take precedence)}
- B05B 12/12 . . responsive to conditions of ambient medium or target, e.g. humidity, temperature {position or movement of the target relative to the spray apparatus ([B05B 12/082](#)-, [B05B 12/084](#) take precedence)}
- U B05B 12/14 . for supplying a selected one of a plurality of liquids or other fluent materials {or several in selected proportions} to a {spray apparatus, e.g. to a} single spray outlet
- U B05B 12/1418 . . {for supplying several liquids or other fluent materials in selected proportions to a single spray outlet (Controlling ratio of two or more flows of fluid [G05D 11/02](#))}
- WARNING  
not complete, see also [B05B 12/14](#)

- B05B 12/1427
- • • {a condition of a first liquid or other fluent material in a first supply line controlling a condition of a second one in a second supply line}{-WARNING not complete, see [B05B 7/32-](#), [B05B 12/14](#)}
- WARNING  
not complete, see also [B05B 12/14](#)
- B05B 12/1436
- • • {the controlling condition of the first liquid or other fluent material in the first supply line being its flow rate or its pressure}{-WARNING not complete, see [B05B 7/32-](#), [B05B 12/14](#)}
- WARNING  
not complete, see also [B05B 12/14](#)
- B05B 12/1445
- • • {pumping means for the liquids or other fluent materials being mechanically linked, e.g. master and slave pumps}
- WARNING  
not complete, see [B05B 7/32-](#), [B05B 12/14](#)
- B05B 12/1481
- • {comprising pigs, i.e. movable elements sealingly received in supply pipes, for separating different fluids, e.g. liquid coating materials from solvent or air (cleaning pipes with pigs [B08B 9/0557-](#), pigs per se [F16L 55/26](#))}
- B05B 13/00**
- Machines or plants for applying liquids or other fluent materials to surfaces of objects or other work by spraying, not covered by groups [B05B 1/00](#) to [B05B 11/00](#) ([B05B 5/08](#) takes precedence) ; means for supplying or discharging liquid or other fluent material for this purpose, see the relevant preceding groups; processes for applying liquids or other fluent materials to surfaces in general [B05D](#))**
- U B05B 13/02
- Means for supporting work; Arrangement or mounting of spray heads; Adaptation or arrangement of means for feeding work ([B05B 13/06](#) takes precedence)
- B05B 13/0207
- • {the work being an elongated body, e.g. wire or pipe ([B05B 13/0436-](#), [B05B 13/0463](#) take precedence)}
- U B05B 13/04
- • the spray heads being moved during {spraying} operation
- B05B 13/0405
- • • {with reciprocating or oscillating spray heads ([B05B 13/0436-](#), [B05B 13/0442-](#), [B05B 13/0447-](#), [B05B 13/0468](#) take precedence)}
- B05B 13/0431
- • • {with spray heads moved by robots or articulated arms, e.g. for applying liquid or other fluent material to 3D-surfaces ([B05B 13/0436-](#), [B05B 13/0442-](#), [B05B 13/0447-](#), [B05B 13/0463](#) take precedence)}
- B05B 13/0436
- • • {Installations or apparatus for applying liquid or other fluent material to elongated bodies, e.g. light poles, pipes ([B05B 13/0442-](#), [B05B 13/0463](#) take precedence)}
- B05B 13/06
- specially designed for treating the inside of hollow bodies (spray heads [B05B 1/00](#) to [B05B 7/00-](#); {-devices for covering leaks in pipes or hoses, e.g. hose-menders, from inside the pipe [F16L 55/162-](#); sprayed layers of rubber or plastics for internal protection of pipes or pipe fittings against corrosion or incrustation [F16L 58/1027](#))}
- U B05B 15/00**
- Details of spraying plant or apparatus not otherwise provided for; Accessories (accessories applicable to other methods of applying liquids or other fluent materials to surfaces [B05C](#))**
- U B05B 15/02
- Arrangements or devices for cleaning discharge openings, {nozzles, spraying heads or spraying apparatus; Arrangements or devices for preventing discharge openings, nozzles, spraying heads or spraying apparatus from becoming dirty or clogged; Devices for detecting presence of foreign matter in discharge openings}

- B05B 15/0208 · · {Means for cleaning or allowing removal of clogging particles ([B05B 15/025](#)-, [B05B 15/0291](#) take precedence)}
- U B05B 15/04 · Control of spray area, e.g. masking, side shields; Means for collection or re-use of excess material ([B05B 1/28](#) takes precedence)
- B05B 15/0443 · · {Side shields, i.e. extending in a direction substantially parallel to the spray jet ([B05B 15/0431](#)-, [B05B 15/0437](#) take precedence)}
- WARNING  
Not complete, see [B05B 15/04](#)
- B05B 15/06 · Mountings, supporting or holding means, or rests for spray heads or other outlets {or for the whole spraying apparatus} when in use or out of use {([B05B 13/005](#)-, [B05B 15/1225](#) take precedence)}
- U B05B 17/00 **Apparatus for spraying or atomising liquids or other fluent materials, not covered by the preceding groups (dropping or releasing powdered, liquid or gaseous matter in flight [B64D 1/16](#))**
- B05B 17/08 · Fountains (drinking fountains [E03B 9/20](#)-, wash fountains [E03C 1/16](#))

**Project: N/A (B05C)****B05C**

**APPARATUS FOR APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL (spraying apparatus, atomising apparatus, nozzles [B05B](#); plant for applying liquids or other fluent materials to objects by electrostatic spraying [B05B 5/08](#); processes for applying liquids or other fluent materials to surfaces [B05D](#); {coating of foodstuffs [A23P 1/084](#), [A23P 1/085](#), of shaped or preshaped ceramic articles [B28B 11/04](#)})**

NOTES

1. This subclass covers apparatus or hand tools, in general, for applying liquids or other fluent materials to a surface or a part thereof, by any mechanical or physical method, in particular apparatus for obtaining a uniform distribution of liquids or other fluent materials on a surface.
2. Attention is drawn to the Note following the title of class [B05](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B05C 5/04](#) covered by [B05C 5/001](#), [B05C 11/1042](#)

- U B05C 5/00 **Apparatus in which liquid or other fluent material is projected, poured or allowed to flow on to the surface of the work ([B05C 7/00](#) takes precedence; essentially involving spraying or electrostatic projection [B05B](#))**
- U B05C 5/02 · {the liquid or other fluent material being discharged through an outlet orifice by pressure, e.g.} from an outlet device in contact or almost in contact, with the work
- B05C 5/0254 · · {Coating heads with slot-shaped outlet (~~[B05C 5/0283](#) takes precedence~~[B05C 5/0283](#) takes precedence)}
- B05C 11/00 **Component parts, details or accessories not specifically provided for in groups [B05C 1/00](#) to [B05C 9/00](#) (means for manipulating or holding work [B05C 13/00](#); enclosures for apparatus, booths [B05C 15/00](#); spray booths [B05B 15/12](#))**

- B05C 11/02
- Apparatus for spreading or distributing liquids or other fluent materials already applied to a surface {-; Controlling means therefor} ([B05C 7/00](#) takes precedence; Hand tools for such purposes [B05C 17/10](#)); Control of the thickness of a coating {-by spreading or distributing liquids or other fluent materials already applied to the coated surface}(controlling supply of liquid or other fluent material [B05C 11/10](#))
- B05C 17/00**
- Hand tools or apparatus using hand held tools, for applying liquids or other fluent materials to, for spreading applied liquids or other fluent materials on, or for partially removing applied liquids or other fluent materials from, surfaces ({casings or accessories for storing or handling solid or pasty toilet or cosmetic substances [A45D 40/00](#)-;} brushes [A46B](#); {-shoe polish applicators [A47L 23/05](#); surgical glue applicators [A61B 17/00491](#);} absorbent pads, e.g. swabs, for applying media to the human body [A61F 13/15](#); {-hand-held applicators for applying or spreading media, e.g. remedies, on the human body [A61M 35/003](#); implements for writing or drawing [B43K](#); hand-held desk devices for applying liquid, e.g. adhesive, by contact to surfaces [B43M 11/06](#);} implements or apparatus for removing dry paint from surfaces [B44D 3/16](#){ ; container closures with pads or like contents-applying means [B65D 47/42](#)})**
- U B05C 17/005
- {for discharging material from a reservoir or container located in or on the hand tool through an outlet orifice by pressure without using surface contacting members like pads or brushes}
- B05C 17/01
- • with {-manually} mechanically or electrically actuated piston or the like {([B05C 17/00533](#) takes precedence)}
- U B05C 17/02
- Rollers; {(for applying toilet or cosmetic substances [A45D 34/04](#)); Hand tools comprising coating rollers or coating endless belts}
- B05C 17/025
- • with self-contained reservoir {-or container for liquid or other fluent material, located inside the coating roller}
- B05C 17/03
- • with feed system for supplying material from an external source {-or with a reservoir or container for liquid or other fluent material located in or on the hand tool outside the coating roller}
- B05C 17/035
- • • direct {-or indirectly} to the outer surface of the {-coating} roller
- U B05C 19/00**
- Apparatus specially adapted for applying particulate materials to surfaces**
- B05C 19/04
- the particulate material being projected, poured or allowed to flow onto the surface of the work ([B05C 19/02](#) takes precedence; involving spraying or electrostatic projection [B05B](#) )({[B05C 19/005](#) takes precedence)}
- B05C 21/00**
- Accessories or implements for use in connection with applying liquids or other fluent materials to surfaces, not provided for in groups [B05C 1/00](#) to [B05C 19/00](#) (accessories or implements for use in connection with painting or artistic drawing and fully provided for in [B44D 3/02](#) to [B44D 3/38](#), see subgroups of [B44D 3/00](#))**

**Project: N/A (B05D)****B05D**

**PROCESSES FOR APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL (apparatus for applying liquids or other fluent materials to surfaces [B05B](#), [B05C](#);-{ ;coating of foodstuffs [A23P 1/084](#)-, [A23P 1/085](#)})**

**NOTES**

1. This subclass covers:

- processes for applying liquids or other fluent materials to a surface or part of a surface, in general, by any mechanical or physical method and particularly processes producing a uniform distribution of liquids or other fluent materials on a surface;

- pretreatment of surfaces to which liquids or other fluent materials are to be applied;
  - after-treatment of applied coatings.
2. Attention is drawn to the Note following the title of class [B05](#).

**B05D 1/00** **Processes for applying liquids or other fluent materials ([B05D 5/00](#), [B05D 7/00](#) take precedence)**

WARNING

Groups [B05D 1/60](#) to [B05D 1/62](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows - [B05D 1/60](#) to [B05D 1/62](#) : [B05D 1/00](#), [B05D 7/00](#)

- U B05D 1/02
- B05D 1/12
- B05D 1/60
- B05D 1/62
- performed by spraying
  - - Applying particulate materials ([B05D 1/06](#), [B05D 1/10](#) take precedence)
  - {Deposition of organic layers from vapour phase (vapour phase deposition in general [C23C 14/00](#), [C23C 16/00](#))}
  - {Plasma-deposition of organic layers (plasma deposition in general [C23C 14/00](#), [C23C 16/00](#))}

**B05D 3/00** **Pretreatment of surfaces to which liquids or other fluent materials are to be applied; After-treatment of applied coatings, e.g. intermediate treating of an applied coating preparatory to subsequent applications of liquids or other fluent materials (successively applying liquids or other fluent materials [B05D 1/36](#); drying ovens [F26B](#))**

WARNING

Groups [B05D 3/20](#) to [B05D 3/207](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows - [B05D 3/20](#) - [B05D 3/207](#) : [B05D 3/00](#)

- B05D 3/06
- by exposure to radiation ([B05D 3/02](#) takes precedence; {-plasma treatment [B05D 3/141](#)})

U **B05D 5/00** **Processes for applying liquids or other fluent materials to surfaces to obtain special surface effects, finishes or structures**

- B05D 5/04
- to obtain a surface receptive to ink or other liquid ([B05D 5/02](#), {[B41M 5/52](#)} take precedence)

**B05D 7/00** **Processes, other than flocking, specially adapted for applying liquids or other fluent materials to particular surfaces or for applying particular liquids or other fluent materials {(coating of foodstuffs [A23P 1/084](#), [A23P 1/085](#))}**

WARNING

Groups [B05D 7/50](#) to [B05D 7/5885](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows - [B05D 7/50](#) to [B05D 7/5885](#) : [B05D 7/00](#)

- B05D 7/12
- U B05D 7/24
- B05D 7/26
- to leather (chemical treatment of leather [C14C](#); dyeing leather [D06P](#))
  - for applying particular liquids or other fluent materials
  - - synthetic lacquers or varnishes ([B05D 7/08](#), [B05D 7/16](#) take precedence)

## Project: N/A (B06B)

B06B

METHODS OR APPARATUS FOR GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS OF INFRASONIC, SONIC, OR ULTRASONIC FREQUENCY, {e.g.} FOR PERFORMING MECHANICAL WORK IN GENERAL (for particular applications, see the relevant subclasses, e.g. [B07B 1/40](#), [B23Q 17/12](#), [B24B 31/06](#); measurement of mechanical vibrations [G01H](#); in direction finding, locating, distance or velocity measuring [G01S](#); {generating seismic energy [G01V 1/02](#)}; control of mechanical vibrations in general [G05D](#); sound-producing devices, e.g. bells, sirens, whistles [G10K](#), {e.g. methods or devices for transmitting, conducting, or directing sound in general [G10K 11/00](#)}; generation of electrical oscillations [H03B](#); electromechanical resonators in general [H03H](#); electromechanical transducers {for communication techniques, e.g. microphones, speakers} [H04R](#))

## Project: N/A (B07C)

B07C 9/00

Sorting, with or without orientating, not otherwise provided for {e.g. sorting of table equipment (washing and rinsing machines for tableware [A47L 15/00](#), [A47L 15/02](#); machines for polishing table equipment [A47L 21/02](#))}

## Project: N/A (B08B)

B08B

CLEANING IN GENERAL; PREVENTION OF FOULING IN GENERAL (brushes [A46](#); devices for domestic or like cleaning [A47L](#); {cleaning golf-clubs or golf accessories [A63B 57/0087](#); cleaning grips of bats on rackets [A63B 59/0062](#)} ; separation of particles from liquids or gases [B01D](#); separation of solids [B03](#), [B07](#); spraying or applying liquids or other fluent materials to surfaces in general [B05](#); cleaning devices for conveyers [B65G 45/10](#); concurrent cleaning, filling and closing of bottles [B67C 7/00](#); inhibiting corrosion or incrustation in general [C23](#); cleaning streets, permanent ways, beaches or land [E01H](#); parts, details or accessories of swimming or splash baths or pools, specially adapted for cleaning [E04H 4/16](#); preventing or removing electrostatic charges [H05F](#))

## NOTE

This subclass covers only inventions relating to cleaning which are usually classified according to one (or more) of the aspects mentioned below if they are not fully classifiable in a subclass a subclass providing for any of the following aspects:

- the articles cleaned, e.g. bed-pans, urinal or other sanitary devices for bed-ridden persons [A61G 9/02](#), filters, semi-permeable membranes [B01D](#), castings and moulds [B22D 29/00](#), vehicles [B60S](#), coke ovens [C10B 43/00](#), building forms [E04G](#), boilers [F22](#), combustion apparatus [F23](#), furnaces [F27](#); the general nature of the cleaning, e.g. preparing for sugar manufacture [A23N](#), domestic cleaning [A47L](#), treatment of textiles [D06](#), laundry [D06F](#), air-conditioning [F24F](#);
- the particular operation performed, e.g. filtering [B01D](#), separating of solids [B03](#), [B07](#), sand-blasting [B24C](#);
- the particular apparatus or device, e.g. brushes [A46B](#), mops [A47L](#), centrifuges [B04](#), hand tools [B25](#) { devices for cleaning paint-applying hand tools after use [B44D 3/006](#) } ;
- the substance cleaned, e.g. metals [B21C](#), [C23](#), water [C02](#), glass [C03B](#), leather [C14B](#), textile fibres [D01](#);
- the substance removed (or prevented from depositing or forming) e.g. { removing paint [B44D 3/00](#), e.g. } implements or apparatus for removing dry paint from surfaces [B44D 3/16](#);
- chemical paint-removers [C09D 9/00](#);

preventing rust [C23F](#);  
the substance used, e.g. macromolecular compounds or compositions [C08](#), anti-icing materials [C09K](#), detergents [C11D](#);  
the operation in connection with which cleaning is done, e.g. metal rolling [B21B](#), metal boring [B23B](#), soldering [B23K](#), textile fabrication [D01G](#), [D01H](#), [D03J](#), [D04B](#);  
the surroundings of a surface to be cleaned or kept clean, e.g. water in a boiler [C02F](#), air in a room [F24F](#).

- B08B 1/00**      **Cleaning by methods involving the use of tools, brushes, or analogous members ([B08B 3/12](#), [B08B 6/00](#), {[B08B 7/02](#)}, [B08B 9/00](#) take precedence)**
- U B08B 3/00**      **Cleaning by methods involving the use or presence of liquid or steam ([B08B 9/00](#) takes precedence)**
- U B08B 3/04      • Cleaning involving contact with liquid
- B08B 3/044      • • {using agitated containers in which the liquid and articles or material are placed (by means of ultrasonic vibrations [B08B 3/12](#); cleaning casks or barrels by agitating [B08B 9/0817](#); mixers with shaking, oscillating or vibrating mechanisms [B01F 11/00](#))}
- U B08B 3/10      • • with additional treatment of the liquid or of the object being cleaned, e.g. by heat, by electricity, by vibration
- B08B 3/102      • • • {with means for agitating the liquid (by agitating the container [B08B 3/042](#), [B08B 3/044](#), [B08B 3/045](#), [B08B 3/06](#))}
- B08B 3/12      • • • by sonic or ultrasonic vibrations (washing or rinsing machines for crockery or tableware using sonic or ultrasonic waves [A47L 15/13](#); of natural teeth, of prostheses using ultrasonic techniques similar to those used for natural teeth [A61C 17/20](#); application of ultrasonic vibrations to chemical, physical, or physico-chemical processes in general [B01J 19/10](#))
- B08B 3/123      • • • • {Cleaning travelling work, e.g. webs, articles on a conveyer (conveyers [B65G](#); handling webs [B65H](#))}
- U B08B 5/00**      **Cleaning by methods involving the use of air flow or gas flow ([B08B 6/00](#) takes precedence)**
- B08B 5/04      • Cleaning by suction, with or without auxiliary action ({[B08B 9/035](#) takes precedence; } suction cleaners [A47L](#))
- B08B 6/00**      **Cleaning by electrostatic means (domestic cleaning implements functioning electrostatically [A47L 13/40](#); cleaning of grooved record carriers [G11B 3/58](#))**
- B08B 9/00**      **Cleaning hollow articles by methods or apparatus specially adapted thereto ([B08B 3/12](#), [B08B 6/00](#) take precedence)**
- B08B 9/02      • Cleaning pipes or tubes or systems of pipes or tubes (apparatus for cleaning metal pipes by chemical methods [C23G 3/04](#); {-removing obstructions in waste pipes or sinks [E03C 1/30](#); cleaning sewer pipes [E03F 9/00](#); cleaning boreholes or wells [E21B 37/00](#); cleaning furnace tubes, flues, chimneys [F23J 3/02](#); cleaning heat-transfer conduits, e.g. water tubes of boilers [F28G](#)})
- U B08B 9/027      • • Cleaning the internal surfaces; Removal of blockages
- B08B 9/032      • • • by the mechanical action of a moving fluid, e.g. by flushing ([B08B 9/04](#) takes precedence; {-by fluid jets mounted on cleaning devices [B08B 9/0433](#)})
- U B08B 9/04      • • • using cleaning devices introduced into and moved along the pipes
- WARNING  
Group [B08B 9/04](#) and subgroups are not complete. See also [B08B 9/02](#) and subgroups

- U B08B 9/043 . . . . moved by externally powered mechanical linkage, e.g. pushed or drawn through the pipes
- B08B 9/0436 . . . . {provided with mechanical cleaning tools, e.g. scrapers, with or without additional fluid jets ([B08B 9/045](#), [B08B 9/047](#) take precedence)}
- U B08B 9/053 . . . . moved along the pipes by a fluid, e.g. by fluid pressure or by suction
- B08B 9/055 . . . . the cleaning devices conforming to, or being conformable to, substantially the same cross-section of the pipes, {e.g. pigs or moles (pigs or moles per se [F16L 55/26](#); their launching and detection [F16L 55/46](#); separating pigs in pipelines [F17D 3/00](#))}
- U B08B 9/08 . . . . Cleaning containers, e.g. tanks
- B08B 9/0839 . . . . {Cleaning milk churns ([B08B 9/0804](#), [B08B 9/20](#) take precedence)}
- B08B 11/00** **Cleaning flexible or delicate articles by methods or apparatus specially adapted thereto ([B08B 3/12](#), [B08B 6/00](#) take precedence)**
- B08B 15/00** **Preventing escape of dirt or fumes from the area where they are produced; Collecting or removing dirt or fumes from that area (parts, details or accessories of cooking-vessels for withdrawing or condensing cooking vapours from such vessels [A47J 36/38](#); refuse disposal [B65F](#); devices for conducting smoke or fumes, e.g. flues, [F23J 11/00](#); removing cooking fumes from domestic stoves or ranges [F24C 15/20](#); air conditioning, ventilation [F24F](#))**
- B08B 15/002 . . . . {using a central suction system, e.g. for collecting exhaust gases in workshops (removing dust from textile machines [D01H 11/00](#); ventilation of mines, galleries or tunnels, e.g. traffic tunnels, [E21F 1/00](#))}

**Project: N/A (B09C)****B09C**

**RECLAMATION OF CONTAMINATED SOIL (gatherers for removing stone or the like from the soil [A01B 43/00](#); sterilising soil by steam [A01G 11/00](#); processes for making harmful chemical substances harmless or less harmful by effecting chemical change in the substance [A62D 3/00](#); separation in general [B01D](#); cleaning beaches [E01H 12/00](#); removing undesirable matter, e.g. rubbish, from the land [E01H 15/00](#))**

NOTE

In this subclass, the following term is used with the meaning indicated:

- "reclamation" means the partial or total elimination or the fixing of contaminants in soil.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B09C 1/04](#) covered by [B09C 1/02](#) ]

**Project: N/A (B21B)****B21B**

**ROLLING OF METAL (auxiliary operations used in connection with metal-working operations covered in [B21](#), see [B21C](#); bending by rolling [B21D](#); manufacture of particular objects, e.g. screws, wheels, rings, barrels, balls, by rolling [B21H](#); pressure welding by means of a rolling mill [B23K 20/04](#))**

NOTE

In this subclass, the following terms or expressions are used with the meanings indicated:

- "rolling" means rolling operations in which plastic deformations occur;

- "continuous process" means a process employing a mill train designed to have the workpiece enter one pair of rolls before leaving the preceding pair.

	<b>B21B 1/00</b>	<b>Metal-rolling methods or mills for making semi-finished products of solid or profiled cross-section (B21B 17/00 to B21B 23/00 take precedence; with respect to composition of material to be rolled B21B 3/00-; extending closed shapes of metal bands by simultaneous rolling at two or more zones B21B 5/00-; metal-rolling stands as units B21B 13/00-; continuous casting into moulds having walls formed by moving rolls B22D 11/06); Sequence of operations in milling trains; Layout of rolling-mill plant, e.g. grouping of stands; Succession of passes or of sectional pass alternations</b>
U	B21B 1/08	• for rolling {structural sections, i.e.} work of special cross-section, e.g. angle steel (rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects <a href="#">B21H 8/00</a> )
	B21B 1/14	• • in a non-continuous process, {i.e. at least one reversing stand ( <del>B21B 1/085 to B21B 1/098 take precedence</del> <a href="#">B21B 1/085 to B21B 1/098 take precedence</a> )}
	B21B 1/46	• for rolling metal immediately subsequent to continuous casting (metal-rolling stands <a href="#">B21B 13/22-</a> ; continuous casting <a href="#">B22D 11/00-</a> , e.g. into moulds with rolls <a href="#">B22D 11/06</a> )
	<b>B21B 3/00</b>	<b>Rolling materials of special alloys so far as the composition of the alloy requires or permits special rolling methods or sequences {Rolling of aluminium, copper, zinc or other non-ferrous metals} (altering special metallurgical properties of alloys, other than structure consolidation or mechanical properties resulting therefrom <a href="#">C21D</a> , <a href="#">C22F</a>)</b>
U	<b>B21B 13/00</b>	<b>Metal-rolling stands, i.e. an assembly composed of a stand frame, rolls, and accessories (B21B 17/00 to B21B 23/00 take precedence; details, component parts, accessories, auxiliary means, procedures in connection with metal rolling, see the relevant groups)</b>
	B21B 13/18	• for step-by-step or planetary rolling; {pendulum mills} (methods <a href="#">B21B 1/42-</a> ; making tubes by pilgrim-step rolling <a href="#">B21B 21/00</a> )
	B21B 13/22	• for rolling metal immediately subsequent to continuous casting, {i.e. in-line rolling of steel} (methods therefor <a href="#">B21B 1/46-</a> ; continuous casting <a href="#">B22D 11/00-</a> , e.g. into moulds with rolls <a href="#">B22D 11/06</a> )
	<b>B21B 23/00</b>	<b>Tube-rolling not restricted to methods provided for in only one of groups <a href="#">B21B 17/00-</a>, <a href="#">B21B 19/00-</a>, <a href="#">B21B 21/00-</a>, e.g. combined processes {planetary tube rolling, auxiliary arrangements, e.g. lubricating, special tube blanks, continuous casting combined with tube rolling}(<a href="#">B21B 25/00</a> takes precedence)</b>
U	<b>B21B 27/00</b>	<b>Rolls, {roll alloys or roll fabrication}{shape of working surfaces required by special processes <a href="#">B21B 1/00</a>}; Lubricating, cooling or heating rolls while in use</b>
U	B21B 27/02	• Shape or construction of rolls (for rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects <a href="#">B21H 8/02</a> {; <a href="#">B21B 27/005</a> takes precedence})
U	B21B 27/03	• • Sleeved rolls {( <a href="#">B21B 27/028</a> takes precedence)}
U	B21B 27/05	• • • with deflectable sleeves
	B21B 27/055	• • • {with sleeves radially deflectable on a stationary beam by means of hydraulic supports (in general <a href="#">F16C 13/00-</a> ; for paper-making machines <a href="#">D21G 1/00-</a> ; regulating devices therefor <a href="#">B21B 37/36</a> )}
U	<b>B21B 35/00</b>	<b>Drives for metal-rolling mills, {e.g. hydraulic drives}</b>

- B21B 35/02      · for continuously-operating mills ([B21B 35/10-](#), [B21B 35/12](#) take precedence)
- B21B 35/06      · for non-continuously-operating mills or for single stands ([B21B 35/10-](#), [B21B 35/12](#) take precedence)
- U B21B 37/00      Control devices or methods specially adapted for metal-rolling mills or the work produced thereby (methods or devices for measuring specially adapted for metal-rolling mills [B21B 38/00](#))**
- B21B 37/46      · Roll speed or drive motor control ([B21B 37/52-](#), [B21B 37/60](#) take precedence)
- B21B 37/74      · Temperature control, e.g. by cooling or heating the rolls or the product ([B21B 37/32-](#), [B21B 37/44](#) take precedence)
- B21B 39/00      Arrangements for moving, supporting, or positioning work, or controlling its movement, combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills (guiding, conveying, or accumulating easily-flexible work in loops or curves [B21B 41/00-](#); specially associated with cooling-beds [B21B 43/00-](#); conveying or transporting in general [B65G](#))**
- B21B 39/008      · {Rollers for roller conveyers (roller-ways in general [B65G 13/00-](#), [B21B 39/00](#))}
- U B21B 39/20      · Revolving, turning-over, or like manipulation of work, {e.g. revolving in trio stands}(guides in which work is subjected to permanent internal twisting [B21B 15/02](#))**
- B21B 39/22      · · by tipping, e.g. by lifting one side by levers or wedges ([B21B 39/26-](#), [B21B 39/28](#) take precedence)
- B21B 39/34      · Arrangements or constructional combinations specifically designed to perform functions covered by more than one of groups [B21B 39/02-](#), [B21B 39/14-](#), [B21B 39/20](#)
- B21B 45/00      Devices for surface {or other} treatment of work, specially combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills ([B21B 15/00-](#), {[B21B 1/227](#) and [B21B 27/005](#)} take precedence; technical features of scaling-off devices [B21C 43/00](#))**
- B21B 45/02      · for lubricating, cooling, or cleaning {(in particular in combination with forging or pressing devices [B21B 15/005-](#), control of flatness or profile using lubricating or cooling [B21B 37/44](#))}
- U B21B 45/0203      · · {Cooling}**
- U B21B 45/0209      · · · {Cooling devices, e.g. using gaseous coolants}**
- U B21B 45/0215      · · · · {using liquid coolants, e.g. for sections, for tubes}**
- B21B 45/0218      · · · · · {for strips, sheets, or plates ([B21B 45/023-](#), [B21B 45/0233](#) take precedence)}
- B21B 45/0224      · · · · · {for wire, rods, rounds, bars ([B21B 45/023-](#), [B21B 45/0233](#) take precedence)}

**Project: N/A (B21C)**

- B21C 29/00      Cooling or heating work or parts of the extrusion press; {-Gas treatment of work}**
- B21C 33/00      Feeding extrusion presses with metal to be extruded; {-Loading the dummy block}**

**Project: N/A (B21D)**

- B21D 1/00      Straightening, restoring form or removing local distortions of sheet metal or specific articles made therefrom ([B21D 3/00](#) takes precedence); Stretching sheet metal combined with rolling (working sheet metal of limited length by stretching [B21D 25/00-](#); by localised hammering [B21D 31/06](#))**

- U B21D 1/06                   · Removing local distortions
- B21D 1/08                   · · of hollow bodies made from sheet metal (of substantially open bodies  
[B21D 1/10](#); {flattening hollow objects for transport and reforming  
[B21D 51/14](#)})
- B21D 3/00                   Straightening or restoring form of metal rods, metal tubes, metal profiles, or  
specific articles made therefrom, whether or not in combination with sheet  
metal parts (straightening of well casings in situ [E21B](#); {straightening rails  
or rail joints [E01B 31/08](#)})**
- B21D 5/00                   Bending sheet metal along straight lines, e.g. to form simple curves  
([B21D 11/06](#) to [B21D 11/18](#) take precedence; corrugating sheet metal  
[B21D 13/00](#); as edge treatment [B21D 19/00](#))**
- B21D 11/00                  Bending not restricted to forms of material mentioned in only one of  
groups [B21D 5/00](#), [B21D 7/00](#), [B21D 9/00](#); Bending not provided for in  
groups [B21D 5/00](#) to [B21D 9/00](#) (corrugating or bending into wave form  
[B21D 13/00](#), [B21D 15/00](#); flanging [B21D 19/00](#)); Twisting**
- B21D 19/00                  Flanging or other edge treatment, e.g. of tubes (connecting by making use  
of folds [B21D 39/00](#); flaring-out tube ends [B21D 41/02](#))**
- U B21D 26/00                **Shaping without cutting otherwise than using rigid devices or tools or  
yieldable or resilient pads, i.e. applying fluid pressure or magnetic forces  
(stamping using resilient pads [B21D 22/10](#))**
- U B21D 26/02                · by applying fluid pressure
- B21D 26/033               · · Deforming tubular bodies (corrugating tubes by applying fluid pressure  
[B21D 15/03](#), [B21D 15/10](#))
- B21D 31/00                  Other methods for working sheet metal, metal tubes, metal profiles  
(deforming one surface of tubes helically by rolling [B21H 3/00](#); upsetting  
[B21J 5/08](#); working metal by removing material therefrom [B23](#); embossing  
[B44B](#))**
- B21D 31/02                · Stabbing or piercing, e.g. for making sieves (dimpling [B21D 22/04](#); perforating  
by punching [B21D 28/24](#))
- B21D 31/04                · Expanding other than provided for in groups [B21D 1/00](#) to [B21D 28/00](#), e.g. for  
making expanded metal ([B21D 47/00](#) takes precedence; enlarging tube ends  
[B21D 41/02](#))
- B21D 35/00                  Combined processes according to {or processes combined with} methods  
covered by groups [B21D 1/00](#) to [B21D 31/00](#) ([B21D 21/00](#) takes precedence)**
- U B21D 35/002              · {Processes combined with methods covered by groups [B21D 1/00](#) to  
[B21D 31/00](#)}
- U B21D 35/005              · · {characterized by the material of the blank or the workpiece ([B21D 26/053](#)  
takes precedence)}
- B21D 35/007              · · · {Layered blanks ([B21D 22/203](#) takes precedence; joining superposed  
plates [B21D 39/031](#), [B21D 39/034](#), [B21D 39/035](#))}
- B21D 39/00                  Application of procedures in order to connect objects or parts, e.g.  
coating with sheet metal otherwise than by plating ({joining mitred profiles  
[B21D 53/745](#); } riveting [B21J](#); uniting components by forging or pressing  
to form integral members [B21K 25/00](#); welding [B23K](#); press-fitting, force-  
fitting, or shrinking in general [B23P 11/00](#), [B21D 19/00](#); by adhesives  
[F16B 11/00](#); {Connections as such [F16L](#), [F16B](#)}); Tube expanders**
- B21D 41/00                  Application of procedures in order to alter the diameter of tube ends  
([B21D 39/00](#) takes precedence; {-plastic tubes [B29C 57/08](#)})**

- U B21D 43/00** **Feeding, positioning or storing devices combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal, metal tubes or metal profiles; Associations therewith of cutting devices (cutting devices associated with the tool, see the relevant group for the tool)**
- B21D 43/003 · {Positioning devices ([B21D 28/04](#) and [B21D 28/265](#) take precedence; stops [B21D 43/26](#); centering moving strips [B21D 43/023](#))}
- U B21D 43/02** · Advancing work in relation to the stroke of the die or tool
- U B21D 43/04** · · by means in mechanical engagement with the work
- B21D 43/10 · · · by grippers {([B21D 43/055](#), [B21D 43/057](#), [B21D 43/145](#) take precedence)}
- B21D 43/20 · Storage arrangements; Piling or unpling (in general [B65G](#), {[B65H](#)})
- U B21D 43/28** · Associations of cutting devices therewith
- B21D 43/285 · · {Devices for handling elongated articles, e.g. bars, tubes or profiles ([B21D 43/282](#), [B21D 43/287](#) take precedence)}
- B21D 47/00 - B21D 55/00** **Processing sheet metal or metal tubes, or processing metal profiles according to any of groups [B21D 1/00](#) - [B21D 45/00](#), in the manufacture of finished or semi-finished articles**
- B21D 49/00** **Sheathing or stiffening objects (by winding wire or tape thereon [B65H 54/00](#), [B65H 81/00](#); specially adapted for manufacturing conductors or cables [H01B 13/26](#))**
- U B21D 51/00** **Making hollow objects (from thick-walled or non uniform tubes [B21K 21/00](#))**
- U B21D 51/16** · characterised by the use of the objects (making heat exchangers [B21D 53/02](#))
- B21D 51/26 · · cans or tins; Closing same in a permanent manner (making outlet arrangements [B21D 51/38](#); welding or soldering [B23K](#))
- B21D 51/2607 · · · {Locally embossing the walls of formed can bodies ([B44B 5/00](#), [B44C 1/24](#), [B44C 3/085](#) take precedence; bulging [B21D 51/2646](#))}
- U B21D 51/38** · · Making inlet or outlet arrangements of cans, tins, baths, bottles, or other vessels; Making can ends; Making closures
- B21D 51/44 · · · Making closures, e.g. caps (folded of thin metal foils in the way of making paper caps [B31D 5/00](#); making closures in conjunction with applying same [B67B](#))
- U B21D 53/00** **Making other particular articles (making wire fabrics [B21F](#); making chains or chain parts [B21L](#))**
- U B21D 53/26** · wheels or the like
- B21D 53/265 · · {parts of wheels ([B21D 53/28](#), [B21D 53/30](#) take precedence)}
- B21D 55/00** **Safety devices protecting the machine or the operator, specially adapted for apparatus or machines dealt with in this subclass (for presses in general [B30B](#); safety devices in general [F16P](#))**

**Project: N/A (B21F)**

- B21F 5/00** **Upsetting wire {-or pressing operations affecting the wire cross-section}(in the manufacture of nails or pins [B21G 3/12](#))**
- B21F 15/00** **Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire (tools for both straining and connecting [B21F 9/00](#); jacketing or reinforcing [B21F 17/00](#); manufacture of wire network [B21F 27/00](#); in making bands [B21F 43/00](#); {bundling machines or tools [B65B 13/00](#); for semiconductors [H01L 24/85](#)})**

B21F 45/00

Wire-working in the manufacture of other particular articles (of pins, needles, nails, hairpins [B21G](#); of chains [B21L](#); {-for semiconductor devices [H01L 24/42](#)})

**Project: N/A (B21G)**

U B21G 3/00

Making pins, nails, or the like (of pins with individual caps [B21G 5/00](#); of U-like shape [B21G 7/00](#); of split-pins [B21G 7/08](#))

B21G 3/18

- by operations not restricted to one of the groups [B21G 3/12](#) to [B21G 3/16](#) ([B21G 3/06](#) to [B21G 3/10](#) take precedence)

**Project: N/A (B21J)**

B21J 1/00

Preparing metal stock {-or similar ancillary operations prior, during or post forging, e.g. heating or cooling (pretreatment for rolling [B21B 1/02](#), [B21B 15/0035](#))}

U B21J 5/00

Methods for forging, hammering, or pressing (for working sheet-metal or metal tubes, rods, or profiles [B21D](#); for working wire [B21F](#)); Special equipment or accessories therefor

B21J 5/02

- Die forging; Trimming by making use of special dies; {-Punching during forging}

U B21J 15/00

**Riveting**

U B21J 15/02

- Riveting procedures

B21J 15/08

- riveting by applying heat {-, e.g.} to the end parts of the rivets to enable heads to be formed {([B21J 15/027](#) takes precedence)}

U B21J 15/10

- Riveting machines (electric heating elements [H05B](#))

U B21J 15/30

- Particular elements, e.g. supports; Suspension equipment specially adapted for portable riveters

U B21J 15/32

- Devices for inserting or holding rivets in position with or without feeding arrangements

B21J 15/34

- for installing {-multiple-type} tubular rivets

**Project: N/A (B21K)**

U B21K 1/00

**Making machine elements**

B21K 1/04

- ball-races {-or sliding bearing races}

**Project: N/A (B22D)**

U B22D 11/00

Continuous casting of metals, i.e. casting in indefinite lengths (metal drawing, metal extruding [B21C](#))

B22D 11/12

- Accessories for subsequent treating or working cast stock *in situ* (rolling immediately subsequent to continuous casting [B21B 1/46](#), [B21B 13/22](#))

B22D 23/00

Casting processes not provided for in groups [B22D 1/00](#) to [B22D 21/00](#) (making metallic powder by casting [B22F 9/08](#); alumino-thermic welding [B23K 23/00](#); remelting metals [C22B 9/16](#))

B22D 37/00

Controlling or regulating the pouring of molten metal from a casting melt-holding vessel {([B22D 11/18](#) takes precedence) [B22D 39/00](#), [B22D 41/00](#) take precedence; specially adapted to particular processes or machines, see the relevant groups of this subclass)

**Project: N/A (B22F)**

**B22F 1/00** Special treatment of metallic powder, e.g. to facilitate working, to improve properties {(treatment of powder by mechanical means, e.g. by grinding, milling, rolling [B22F 9/04](#))}; Metallic powders per se, e.g. mixtures of particles of different composition ([C04](#), [C08](#) take precedence; {amorphous powder [B22F 9/002](#)})

**U B22F 3/00** Manufacture of workpieces or articles from metallic powder characterised by the manner of compacting or sintering; Apparatus specially adapted therefor; {Presses and furnaces}

**U B22F 3/02** · Compacting only

**B22F 3/04** · · by applying fluid pressure {-e.g. by cold isostatic pressing [CIP]}

**B22F 7/00** Manufacture of composite layers, workpieces, or articles, comprising metallic powder, by sintering the powder, with or without compacting {-wherein at least one part is obtained by sintering or compression (application of coating layers by use of metal powders, see [C23C](#))}

**Project: N/A (B23B)**

**U B23B 29/00** Holders for non-rotary cutting tools ([B23B 27/12](#) takes precedence); Boring bars or boring heads; Accessories for tool holders

**U B23B 29/24** · Tool holders for a plurality of cutting tools, e.g. turrets {(indexing devices [B23Q 16/00](#))}

**B23B 29/28** · · Turrets manually adjustable about a vertical {-or horizontal} pivot {(indexing devices [B23Q 16/00](#))}

**Project: N/A (B23K)**

**B23K** **SOLDERING OR UNSOLDERING; WELDING; CLADDING OR PLATING BY SOLDERING OR WELDING; CUTTING BY APPLYING HEAT LOCALLY, e.g. FLAME CUTTING; WORKING BY LASER BEAM (making metal-coated products by extruding metal [B21C 23/22](#); building up linings or coverings by casting [B22D 19/08](#); casting by dipping [B22D 23/04](#); manufacture of composite layers by sintering metal powder [B22F 7/00](#); arrangements on machine tools for copying or controlling [B23Q](#); covering metals or covering materials with metals, not otherwise provided for [C23C](#); burners [F23D](#))**

**NOTES**

1. This subclass covers also electric circuits specially adapted for the purposes covered by the title of the subclass.
2. In this subclass, the following term is used with the meaning indicated:
  - "soldering" means uniting metals using solder and applying heat without melting either of the parts to be united

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">B23K 35/04</a>	-	<a href="#">B23K 35/20</a>	covered by
<a href="#">B23K 35/0205</a>	-	<a href="#">B23K 35/0294</a>	
<a href="#">B23K 35/363</a>	"	<a href="#">B23K 35/3601</a>	-
<a href="#">B23K 35/3618</a>			

**B23K 1/00** Soldering, e.g. brazing, or unsoldering ([B23K 3/00](#) takes precedence; characterised only by the use of special materials or media [B23K 35/00](#); dip or wave soldering in the manufacture of printed circuits [H05K 3/34](#))

- B23K 1/20
- Preliminary treatment of work or areas to be soldered, e.g. in respect of a galvanic coating (preparation of surfaces in particular ways, see the relevant classes for the treatments or the materials treated, e.g. [C04B](#)-, [C23C](#))
- U B23K 3/00** **Tools, devices, or special appurtenances for soldering, e.g. brazing, or unsoldering, not specially adapted for particular methods (materials used for soldering [B23K 35/00](#))**
- B23K 3/04
- Heating appliances (soldering lamps or blowpipes [F23D](#)-, electric heating in general [H05B](#))
- B23K 9/00** **Arc welding or cutting (electro-slag welding [B23K 25/00](#)-, welding transformers [H01F](#)-, welding generators [H02K](#))**
- U B23K 11/00** **Resistance welding; Severing by resistance heating**
- U B23K 11/30
- Features relating to electrodes (form or composition of electrodes [B23K 35/00](#))
- B23K 11/3054
- • {Cooled electrodes ([B23K 11/3018](#)-, [B23K 11/3045](#) take precedence)}
- U B23K 20/00** **Non-electric welding by applying impact or other pressure, with or without the application of heat, e.g. cladding or plating**
- B23K 20/02
- by means of a press; {Diffusion bonding ([B23K 20/001](#)-, [B23K 20/04](#) take precedence)}
- U B23K 20/12
- the heat being generated by friction; Friction welding
- U B23K 20/122
- • {using a non-consumable tool, e.g. friction stir welding}
- B23K 20/127
- • • {friction stir welding involving a mechanical connection (forged connections [B21K 25/005](#)-, riveted connections [B21J 15/027](#))}
- B23K 26/00** **Working by laser beam, e.g. welding, cutting, boring (lasers per se [H01S 3/00](#)-, {laser assisted deposition [C23C](#); laser inspection or alignment [G01B](#); laser sintering of metallic powder [B22F 3/105](#)-, of plastics [B29C 67/00](#)-, of glass [C03B 19/06](#)-, of ceramics [C04B 35/64](#)-, applying identification marks by laser [B41M 5/24](#))}**
- B23K 26/0006
- {taking account of the properties of the material involved ([B23K 26/20](#)-, [B23K 26/36](#) take precedence)}
- B23K 26/0021
- • {Non-metallic material (laser surface treatment of glass not in the form of fibres or filaments [C03C 23/0025](#)-, of glass in the form of fibres or filaments [C03C 25/6233](#))}
- U B23K 26/0024
- • • {Organic material}
- B23K 26/0027
- • • • {Material from living organisms, e.g. skin (surgical instruments, devices or methods for applying laser energy to the body [A61B 18/20](#)-, dental laser [A61C 1/0046](#)-, eye surgery using laser [A61F 9/008](#))}
- B23K 26/0066
- {for surface treatment (for changing the physical structure of ferrous metals or alloys [C21D](#), of non-ferrous metals or alloys [C22E](#); for alloying [C23C](#); annealing crystalline material [C30B 33/02](#)-, laser treatment of semiconductors [H01L](#))}
- B23K 26/0081
- • {by melting (laser re-melting of metals by wave energy [C22B 9/22](#)-, laser melting of glass [C03C](#); laser melting for crystal growth [C30B](#))}
- B23K 26/0093
- {combined with mechanical machining or metal-working covered by other subclasses than [B23K](#) (combined with an electric arc [B23K 26/1429](#)-, combined welding or cutting procedures or apparatus [B23K 28/02](#)) ; Heating a metal workpiece by laser during machining [B23P 25/006](#)}
- B23K 26/0096
- {Portable laser equipment, e.g. hand-held laser apparatus (Surgical laser instruments [A61B 18/20](#)-, Dental Lasers [A61C 1/0046](#)-, Hand-held laser dental apparatus for curing resins [A61C 19/004](#))}
- U B23K 26/02
- Positioning or observing the workpiece, e.g. with respect to the point of impact; Aligning, aiming or focusing the laser beam

- B23K 26/03
  - • Observing, {e.g. monitoring,} the workpiece {(protective devices for the eye, carried on the body or in the hand [A61F 9/02](#)-, [A61F 9/04](#))}
- B23K 26/06
  - • Shaping the laser beam, e.g. by masks or multi-focusing (optical elements, systems, or apparatus, in general [G02B](#){, {beam shaping for applications of laser not covered in this group [H01S 3/005](#))}
- U B23K 26/0604
  - • • {by a combination of beams}
- B23K 26/0608
  - • • • {in the same heat affected zone [HAZ] ([B23K 26/0613](#)-, [B23K 26/0621](#) take precedence)}
- U B23K 26/12
  - in a special atmosphere, e.g. in an enclosure
- B23K 26/126
  - • {in an atmosphere of gases chemically reacting with the workpiece (chemical etching of glass [C03C 15/00](#)-, [C03C 25/68](#)-, chemical etching of metallic material [C23F 1/00](#)-, etching of crystallised non-metallic material with defined structure in gas atmosphere [C30B 33/12](#))}
- B23K 26/18
  - using absorbing layers on the material being worked, e.g. for marking or protecting purposes {(observing devices provided with laser radiation protection devices [B23K 26/03](#)-, using masks on the workpiece for shaping the laser beam [B23K 26/0661](#)-, interposing material for facilitating bonding [B23K 26/203](#)-, laser anti-reflection devices, e.g. optical isolators [H01S 3/0064](#))}
- B23K 26/20
  - Bonding, e.g. welding (soldering by means of radiant energy [B23K 1/005](#)-, joining of preformed plastics parts by heating using laser beam [B29C 65/16](#))
- B23K 26/203
  - • {with interposition of material for facilitating bonding (with interposition of adhesive being heated by laser [C09J 5/06](#)-, with interposition of solder [B23K 1/0056](#))}
- U B23K 26/32
  - • taking account of the properties of the material involved
- B23K 26/324
  - • • {Non-metallic material (joining glass to glass by fusing with laser [C03B 23/20](#)-, by processes other than by fusing using laser [C03C 27/06](#)-, joining ceramics [C04B 37/00](#))}
- B23K 26/3246
  - • • • {Organic material (devices or method using laser on the body [A61B 18/20](#)-, dental laser [A61C 1/0046](#)-, eye laser surgery [A61F 9/008](#)-, Treatment of micro-organisms with electric or wave energy [C12N 13/00](#))}
- B23K 26/36
  - Removing material {(laser wire stripping [H02G 1/128](#)-, cleaning by laser treatment [B08B 7/0042](#))}
- B23K 26/365
  - • {Laser etching, i.e. the material is removed superficially or partially through the workpiece by the laser beam (laser etching for decorative purposes [B44C 1/22](#)-, laser etching for manufacturing printed circuit boards [H05K 3/00](#))}
- U B23K 26/40
  - • taking account of the properties of the material involved
- U B23K 26/4025
  - • • {Non-metal material}
- U B23K 26/403
  - • • • {Organic material}
- B23K 26/4035
  - • • • • {Material from living organisms, e.g. skin (devices or method using laser on the body [A61B 18/20](#)-, dental laser [A61C 1/0046](#)-, eye laser surgery [A61F 9/008](#)-, Treatment of micro-organisms with electric or wave energy [C12N 13/00](#)-, Introduction of foreign genetic material into plant cells by physical or non-biological means [C12N 15/8206](#))}
- U B23K 26/407
  - • • • {Inorganic material}
- B23K 26/4075
  - • • • • {Brittle material, e.g. semi-conductor wafers (severing glass using laser [C03B 33/0222](#)-, [C03B 33/091](#))}
- U B23K 26/42
  - Preliminary treatment; Auxiliary operations or equipment ([B23K 26/16](#) takes precedence)
- U B23K 26/422
  - • {Auxiliary equipment}

- B23K 26/427 . . . {Protective screens (goggles or eye-masks for welders carried on the body or in the hand [A61F 9/02](#)-, [A61F 9/06](#))}
- B23K 31/00** **Processes relevant to this subclass, specially adapted for particular articles or purposes, but not covered by only one of the preceding main groups (making tubes or profiled bars involving operations other than soldering or welding [B21C 37/04](#)-, [B21C 37/08](#))**
- U B23K 35/00** **Rods, electrodes, materials, or media, for use in soldering, welding, or cutting**
- U B23K 35/22 . characterised by the composition or nature of the material
- U B23K 35/36 . . Selection of non-metallic compositions, e.g. coatings, fluxes ([B23K 35/34](#) takes precedence); Selection of soldering or welding materials, conjoint with selection of non-metallic compositions, both selections being of interest (selection of soldering or welding materials proper [B23K 35/24](#))
- B23K 35/362 . . . Selection of compositions of fluxes ([B23K 35/365](#)-, [B23K 35/368](#) take precedence)
- B23K 35/40 . Making wire or rods for soldering or welding (processes involving a single technical art, see the relevant subclasses, e.g. [B05D](#)-, [B21C](#))
- B23K 37/00** **Auxiliary devices or processes, not specially adapted to a procedure covered by only one of the preceding main groups (eye-shields for welders worn on the operator's body or carried in the hand [A61F 9/00](#){ i.e. [A61F 9/02](#)}; applicable to metal-working machines other than soldering, welding, or flame-cutting machines [B23Q](#);} {laser protective screens [B23K 26/427](#)-, } protective shields for other welding methods [F16P 1/06](#))**

**Project: N/A (B23P)**

- B23P 11/00** **Connecting metal parts or objects by metal-working techniques, not covered wholly by either [B21J](#) or [B23K](#) (connecting sheet metal or metal tubes, rods, or profiles [B21D 39/00](#); {objects produced by methods not important per se, see the relevant subclasses dealing with the objects, e.g. [B21F 15/00](#); [B21L 19/00](#)}; hand tools for connecting wire or strip [B25B 25/00](#); connecting metal parts by adhesives [F16B 11/00](#))**
- B23P 23/00** **Machines or arrangements of machines for performing specified combinations of different metal-working operations not covered by a single other subclass (if the particular kinds of operation are not essential [B23Q 37/00](#) to [B23Q 41/00](#); {-working by laser beam combined with other working of metal [B23K 26/0093](#)})**

**Project: N/A (B23Q)**

- U B23Q 1/00** **Members which are comprised in the general build-up of a form of machine, particularly relatively large fixed members ([B23Q 37/00](#) takes precedence)**
- U B23Q 1/25 . Movable or adjustable work or tool supports
- U B23Q 1/26 . . characterised by constructional features relating to the co-operation of relatively movable members; Means for preventing relative movement of such members {(bearings for linearly moving parts [F16C 29/00](#))}
- B23Q 1/42 . . . using T-, V-, dovetail-section or like guides ([B23Q 1/40](#) takes precedence)

**NOTES**

- In groups [B23Q 1/44](#) to [B23Q 1/62](#)-, the following expressions are used with the meaning indicated:
  - "sliding pair" means a pair consisting of two elements operating in such a way that only straight line movement between both elements is possible;

- "rotating pair" means a pair consisting of two elements operating in such a way that only rotary movement between both elements is possible;
- "screw pair" means a pair consisting of two elements operating in such a way as to produce simultaneous rotation and axial translation between both elements.

2. In groups [B23Q 1/44](#) to [B23Q 1/62](#), where more than one pair of elements is provided on the same axis for the same kind of movement, the pairs are regarded as a single pair for the purposes of classification.

- U B23Q 3/00** **Devices holding, supporting, or positioning work or tools, of a kind normally removable from the machine (work-tables or other parts, e.g. faceplates, normally not incorporating means for securing work [B23Q 1/00](#); automatic position control [B23Q 15/00](#); rotary tool heads for turning-machines [B23B 3/24](#), [B23B 3/26](#); non-driven tool holders [B23B 29/00](#); general features of turrets [B23B 29/24](#); tools or bench devices for fastening, connecting, disengaging or holding [B25B](#))**
- U B23Q 3/155 · Arrangements for automatic insertion or removal of tools, {e.g. combined with manual handling ([B23Q 7/046](#) takes precedence)}
- U B23Q 3/157 · · of rotary tools {(in combination with non-rotary tools [B23Q 3/15506](#), [B23Q 3/15513](#))}
- B23Q 3/15713 · · · {a transfer device taking a single tool from a storage device and inserting it in a spindle (~~[B23Q 3/15793](#) takes precedence~~[B23Q 3/15793](#) takes precedence)}
- U B23Q 5/00** **Driving or feeding mechanisms; Control arrangements therefor (automatic control [B23Q 15/00](#); copying [B23Q 33/00](#), [B23Q 35/00](#); specially adapted for boring or drilling machines [B23B 39/10](#), [B23B 47/00](#); {numerical programme-control of machine tools [G05B 19/18](#))}**
- B23Q 5/54 · Arrangements or details not restricted to group [B23Q 5/02](#) or group [B23Q 5/22](#) respectively, {e.g. control handles}
- U B23Q 11/00** **Accessories fitted to machine tools for keeping tools or parts of the machine in good working condition or for cooling work {(accessories specially designed for sawing machines or sawing devices [B23D 59/00](#)); Safety devices specially combined with or arranged in, or specially adapted for use in connection with, machine tools (in respect of boring or drilling machines [B23B 47/32](#) takes precedence; safety devices in general [F16P](#))}**
- B23Q 11/02 · Devices for removing scrap from the cutting teeth of circular {-or non-circular} cutters
- B23Q 11/10 · Arrangements for cooling or lubricating tools or work (incorporated in tools, see the relevant subclass for the tool, {-e.g. [B23B 27/10](#), [B23B 51/06](#), [B23C 5/28](#), [B23D 77/006](#); for circular saw blades [B23D 59/02](#), for cooling grinding surfaces [B24B 55/02](#))}
- B23Q 11/12 · Arrangements for cooling or lubricating parts of the machine ([B23Q 11/14](#) takes precedence; {-movable work or tool supports using fluid bearings or fluid cushion supports [B23Q 1/38](#); cooling or lubricating means used in the working area [B23Q 11/10](#))}
- B23Q 17/00** **Arrangements for {-observing,} indicating or measuring on machine tools (for automatic control or regulation of feed movement, cutting velocity or position of tool or work [B23Q 15/00](#))}**
- B23Q 17/09 · for indicating or measuring cutting pressure or {-for determining} cutting-tool condition, e.g. cutting ability, load on tool (arrangements preventing overload of tools [B23Q 11/04](#); devices for indicating failure of drills during boring [B23B 49/00](#))

B23Q 17/24 · using optics {-or electromagnetic waves}

**B23Q 41/00** Combinations or associations of metal-working machines not directed to a particular result according to classes [B21](#), [B23](#), or [B24](#) ([B23Q 37/00](#), [B23Q 39/00](#) take precedence; features relating to operations performed, if the different metal-working operations are of the same kind, see the subclass for the kind of operation, e.g. punching [B21D](#), welding [B23K](#), grinding [B24B](#); features relating to technically specified combinations of different metal-working operations [B23P 23/00](#))

### Project: N/A (B24B)

**U B24B 31/00** Machines or devices designed for polishing or abrading surfaces on work by means of tumbling apparatus or other apparatus in which the work and/or the abrasive material is loose; Accessories therefor (abrasive blasting machines [B24C 3/26](#))

B24B 31/12 · Accessories; Protective equipment or safety devices; Installations for exhaustion of dust or for sound absorption specially adapted for machines covered by group [B24B 31/00](#) (in general [B24B 55/00](#))

**U B24B 53/00** Devices or means for dressing or conditioning abrasive surfaces (compensation for grinding wheel abrasion resulting from dressing [B24B 47/25](#))

U B24B 53/06 · of profiled abrasive wheels

U B24B 53/08 · · controlled by information means, e.g. patterns, templets, punched tapes or the like

B24B 53/085 · · · for workpieces having a grooved profile, e.g. gears, splined shafts, threads, worms {([B24B 53/082](#), [B24B 53/083](#), [B24B 53/09](#) take precedence)}

**U B24B 55/00** Safety devices for grinding or polishing machines; Accessories fitted to grinding or polishing machines for keeping tools or parts of the machine in good working condition (of general applicability for machine tools [B23Q 11/00](#); in general [F16P](#))

B24B 55/02 · Equipment for cooling the grinding surfaces, e.g. devices for feeding coolant (cooling or lubricating during dressing operation [B24B 53/095](#); incorporated in grinding wheels [B24D](#))

### Project: N/A (B24C)

**U B24C 1/00** Methods for use of abrasive blasting for producing particular effects; Use of auxiliary equipment in connection with such methods

B24C 1/08 · for polishing surfaces, e.g. {-smoothing a surface} by making use of liquid-borne abrasives

**U B24C 5/00** Devices or accessories for generating abrasive blasts

B24C 5/08 · Devices for generating abrasive blasts non-mechanically, e.g. of metallic abrasives by means of a magnetic field {-or by detonating cords}

**B24C 11/00** Selection of abrasive materials {-or additives} for abrasive blasts (polishing compositions [C09G](#))

### Project: N/A (B25B)

**B25B 1/00** Vices (specially adapted for tying flies for angling [A01K 97/28](#); specially adapted for machine tools [B23Q 3/00](#); {-rope or cable splicing vices [D07B 7/162](#)})

**B25B 9/00** Hand-held gripping tools other than those covered by group [B25B 7/00](#) (wrenches [B25B 13/00](#); specially adapted for watchmakers` or like use [G04D](#))

**Project: N/A (B25C)**

**U B25C 1/00** Hand-held nailing tools (hammers per se [B25D](#); nailing machines [B27F 7/02](#)); Nail feeding devices

B25C 1/04 · operated by fluid pressure, {-e.g. by air pressure}

**U B25C 5/00** Manually operated portable stapling tools; Hand-held power-operated stapling tools ({clip clamping hand tools [B25B 27/146](#)}; details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#); stapling machines [B27F 7/17](#)); Staple feeding devices therefor (staples [F16B 15/00](#))

NOTE

In this group the following term is used with the meaning indicated:

- "stapling tools" covers tools for driving U-shaped loops, e.g. of metallic material, into a surface to fix an object thereto, or through layers of relatively thin material to hold them together, e.g. by clinching

**U B25C 5/16** · Staple-feeding devices {e.g. with feeding means, supports for staples or accessories concerning feeding devices}

**U B25C 5/1606** · · {Feeding means}

B25C 5/1624 · · · {employing mechanical feeding means ([B25C 5/161](#)-,[B25C 5/1617](#) take precedence)}

**Project: N/A (B25D)**

**B25D** **PERCUSSIVE TOOLS** {(percussive machines for forging [B21J](#); hand-held drilling machines, in general [B23B 45/00](#), for wood [B27C 3/08](#); drilling machines, used for mining or quarrying, with reciprocating tool which is turned intermittently when out of contact with the working face [E21B 1/00](#))}

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B25D 13/00](#) covered by [B25D 11/064](#)  
[B25D 15/00](#) covered by [B25D 11/066](#)  
[B25D 15/02](#) covered by [B25D 11/068](#)  
[B25D 17/10](#) covered by [B25D 17/00](#), [F16P](#)  
[B25D 17/14](#) covered by [B23Q 11/0042](#)  
[B25D 17/16](#) covered by [B23Q 11/0042](#)  
[B25D 17/18](#) covered by [B23Q 11/0042](#)

**B25D 9/00** Portable percussive tools with fluid-pressure drive, {-i.e. driven directly by fluids}, e.g. having several percussive tool bits operated simultaneously {(portable non-percussive drilling tools driven by fluid pressure or pneumatic power [B23B 45/04](#))}

## Project: N/A (B25J)

**B25J** **MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES** ({manipulators specially adapted for use in surgery [A61B 19/22](#); manipulators used in cleaning hollow articles [B08B 9/04](#)}; manipulators associated with rolling mills [B21B 39/20](#); manipulators associated with forging machines [B21J 13/10](#); {-manipulators associated with picking-up and placing mechanisms [B23P 19/007](#)}; means for holding wheels or parts thereof [B60B 30/00](#); {-vehicles with ground-engaging propulsion means, e.g. walking members [B62D 57/02](#), [B62D 57/032](#)}; devices for picking-up and depositing articles or materials between conveyers [B65G 47/90](#), [B65G 47/91](#); manipulators with gripping or holding means for transferring packages [B65H 67/065](#)}; cranes [B66C](#);{- {manipulators used in the protection or supervision of pipe-line installations [F17D 5/00](#)}; walking equipment adapted for nuclear steam-generators [F22B 37/006](#)}; manipulators specially adapted for, or associated with, nuclear reactors [G21C](#);{- {apparatus used for handling wafers during manufacture or treatment of semiconductor [H01L 21/68](#)}}

NOTE

In this subclass, the following term is used with the meaning indicated :

- "manipulator" covers handling tools, devices, or machines having a gripping or work head capable of bodily movement in space and of change of orientation, such bodily movement and change of orientation being controlled, at will, by means remote from the head.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B25J 9/18](#) covered by [B25J 9/16](#)  
[B25J 9/22](#) " " [B25J 9/1656](#) ~~\_\_\_\_\_~~,  
[G05B 19/42](#)

**B25J 1/00** **Manipulators positioned in space by hand (of master-slave type [B25J 3/00](#); micromanipulators [B25J 7/00](#))**

**B25J 5/00** **Manipulators mounted on wheels or on carriages ([B25J 1/00](#) takes precedence; programme-controlled manipulators [B25J 9/00](#); {-vehicle aspects [B60](#), [B62](#), e.g. remote-controlled steering for motor vehicles [B62D 1/24](#); control of position of vehicles [G05D 1/00](#))}**

**B25J 7/00** **Micromanipulators** {(specimen supports for investigating or analysing materials [G01N 23/2204](#); associated with microscopes [G02B 21/32](#); means for supporting or positioning the objects or the material in discharge tubes [H01J 37/20](#))}

**U B25J 9/00** **Programme-controlled manipulators**

**B25J 9/16** • Programme controls (programme controls in general [G05B 19/00](#), e.g. numerical programme controls [G05B 19/18](#); {-recording or playback systems [G05B 19/42](#))}

**B25J 13/00** **Controls for manipulators (programme controls [B25J 9/16](#); control in general [G05](#))**

**B25J 13/02** • Hand grip control means {(handles or pedals for crane control [B66C 13/56](#); for measuring the force applied to control members [G01L 5/22](#); hand-held casings for switching devices, e.g. joy-sticks [H01H 9/0214](#))}

**U B25J 13/08** • by means of sensing devices, e.g. viewing or touching devices

**U B25J 13/081** • • {Touching devices, e.g. pressure-sensitive}

- B25J 13/082      · · · {Grasping-force detectors (in general [G01L 5/16](#)-, [G01L 5/22](#))}
- B25J 13/084      · · · {Tactile sensors (in general [G01L 5/16](#)-, [G01L 5/22](#))}
- B25J 13/085      · · {Force or torque sensors ([B25J 13/082](#)-, [B25J 13/084](#) take precedence)}
- B25J 15/00**      **Gripping heads {and other end effectors (grippers used in machine tools [B23Q 7/04](#)-, gripping members fitted on cranes [B66C 1/42](#)-, [B66C 1/44](#)-, gripping means used in the manufacture of semiconductors [H01L 21/68707](#) -, gripping means used for mounting electrical components [H05K 13/04](#))}**
- B25J 15/08      · having finger members ([B25J 15/02](#)-, [B25J 15/04](#) take precedence)
- B25J 19/00**      **Accessories fitted to manipulators, e.g. for monitoring, for viewing; Safety devices combined with or specially adapted for use in connection with manipulators (safety-devices in general [F16P](#)-, protection against radiation in general [G21F](#))**
- B25J 21/00**      **Chambers provided with manipulation devices (constructional features of the mounting of the manipulator in the wall [B25J 1/08](#)-, {-glove-boxes for nuclear applications [G21F 7/04](#))}**
- B25J 21/02      · Glove-boxes, i.e. chambers in which manipulations are performed by the human hands in gloves built into the chamber walls {(glove- boxes for removal of dirt [B08B 15/026](#)-, glove-boxes shielded against radiation [G21F 7/04](#))};  
Gloves therefor

**Project: N/A (B26B)****B26B**

**HAND-HELD CUTTING TOOLS NOT OTHERWISE PROVIDED FOR (for harvesting [A01D](#); for horticulture, for forestry [A01G](#); for butchering or meat treatment [A22](#); for manufacturing or repairing footwear [A43D](#); nail clippers or cutters [A45D 29/02](#); kitchen equipment [A47J](#); {-vegetable slicers, julienne cutters and similar devices and holders therefor, [B26D 3/28](#)}; for surgical purposes [A61B](#); for metal [B23D](#); cutting by abrasive fluid jets [B24C 5/02](#); plier-like tools with cutting edges [B25B 7/22](#); pincers [B25C 11/02](#); handles for hand implements, in general [B25G](#); guillotine-type cutters [B26D](#); {-perforating by non-mechanical means, e.g. by fluid jet, [B26F 1/26](#)}; for erasing [B43L 19/00](#); for textile materials [D06H](#))**

- U B26B 21/00**      **Razors of the open or knife type; Safety razors or other shaving implements of the planing type; Hair-trimming devices involving a razor-blade; Equipment therefor**
- U B26B 21/08      · involving changeable blades
- U B26B 21/14      · · Safety razors with one or more blades arranged transversely to the handle
- B26B 21/28      · · · of the drawing cut type, i.e. with the cutting edge of the blade arranged obliquely {-or curved} to the handle

**Project: N/A (B26D)****B26D**

**CUTTING; DETAILS COMMON TO MACHINES FOR PERFORATING, PUNCHING, CUTTING-OUT, STAMPING-OUT OR SEVERING (soil-working [A01B](#); for growing crops or plants [A01D](#), [A01G](#); for fodder or straw [A01F](#); for bulk butter [A01J](#); for dough [A21C](#); slaughtering [A22B](#); for tobacco, cigars or cigarettes [A24](#); marking-out, perforating or making buttonholes [A41H 25/00](#); manufacturing footwear [A43D](#); brushmaking [A46D](#); surgery [A61B](#); disintegrating, mincing or shredding in general [B02C](#); cutting wire, making pins or nails [B21F](#), [B21G](#); of the kind used for metal [B23](#); cutting by abrasive fluid jets [B24C 5/02](#); hand-held cutting tools [B26B](#); perforating, cutting-out, stamping-out or punching, or severing by means other than cutting [B26F](#); for wood [B27](#); for stone [B28D](#); working of plastics or substances in a plastic state [B29](#); making boxes, cartons, envelopes or bags, of paper or similarly worked materials, e.g. metal foil, [B31B](#); article or web delivery apparatus incorporating cutting or line-perforating devices [B65H 35/00](#); for leather or upholstery [B68](#); [C14B](#); for glass [C03B](#); making matches [C06F](#); for peat [C10F](#); for sugar [C13B 45/00](#); for textile materials [D06H](#); civil engineering, building, mining, see Section E; for light guides [G02B 6/25](#); cutting processed photographic material [G03D 15/04](#))**

**NOTES**

1. This subclass covers:

- cutting non-metallic sheet material and metal foil in general;
- cutting other forms of non-metallic material not otherwise provided for;
- features specific to machines for cutting, perforating, punching, cutting-out, stamping-out and severing by means other than cutting, which relate to a requirement or problem of a nature which is not peculiar to a machine for these purposes, that is, details of or arrangements for operating or controlling such machines, although the realisation of such features may differ according to the kind of machine concerned. This subclass covers such features in general even if the feature in any particular case is to some extent peculiar to, or is claimed only for, a machine designed for perforating, punching, cutting-out, stamping-out, or for severing other than by cutting.

2. If the details or arrangements have no essential features specific to cutting, perforating, punching, cutting-out, stamping-out or severing machines, the more general classes, e.g. [F16](#), take precedence.

3. In this subclass, in groups [B26D 5/00](#) and [B26D 7/00](#), the following term is used with the meaning indicated:

- "cutting" includes cutting-out, stamping-out, punching, perforating, and severing by means other than cutting.

**U B26D 3/00**

**Cutting work characterised by the nature of the cut made; Apparatus therefor**

## B26D 3/16

- Cutting rods or tubes transversely {(cutting tubes longitudinally [B26D 3/001](#))}
- {Note: [B26D 3/161](#) takes precedence over groups [B26D 3/162](#) to [B26D 3/168](#)}

**Project: N/A (B27B)****B27B 31/00**

**Arrangements for conveying, loading, turning, adjusting, or discharging the log or timber, specially designed for saw mills or sawing machines ([B27B 29/00](#) takes precedence; {-arrangements for raising or lowering the feed rollers of gang saw mills [B27B 3/14](#)-; driving mechanisms for the feed rollers of gang saw mills [B27B 3/16](#)})**

**Project: N/A (B27F)**

B27F

DOVETAILED WORK; TENONS; SLOTTING MACHINES FOR WOOD OR SIMILAR MATERIAL; NAILING OR STAPLING MACHINES (hand-held nailing or stapling tools [B25C](#); manufacture of cases, trunks or boxes from wood [B27M 3/34](#); connections for building structures in general, e.g. dowels for use in building constructions [E04B 1/38](#); jointing elements in general, e.g. dowels in general, [F16B](#) {; manufacture of long strips or planks by bonding together pieces of wood, e.g. by glueing, [B27M 3/0013](#)})

NOTE

This subclass covers also the assembling of the elements to be jointed, e.g. using adhesives, but the application of adhesives or glue to surfaces of wood to be jointed per se is dealt with in group [B27G 11/00](#) {manufacture of specific semi-finished or finished articles [B27M 3/00](#)}

B27F 4/00

Machines for inserting dowels, with or without drilling equipment (manufacture of wooden dowels [B27M 3/28](#) {dowels [F16B](#); for use in building constructions [E04B 1/38](#); drills for making holes for dowels})

**Project: N/A (B27G)**

B27G 11/00

Applying adhesives or glue to surfaces of wood to be joined (applying liquids, e.g. liquid adhesives, to surfaces in general [B05C](#),[B05D](#); adhesive processes [C09J 5/00](#); associated with particular wood-working, see the relevant subclasses)

**Project: N/A (B27K)**

U B27K 3/00

Impregnating wood, {e.g. impregnation pretreatment, for example puncturing; Wood impregnation aids not directly involved in the impregnation process}(dyeing, staining [B27K 5/00](#))

U B27K 3/02

· Processes; Apparatus

B27K 3/15

· · Impregnating involving polymerisation {-including use of polymer-containing impregnating agents (macromolecular compounds derived from lignocellulosic materials [C08H](#); compositions of lignin-containing materials [C08L 97/02](#))}

NOTES

1. When classifying in group [B27K 3/15](#), classification is additionally made in the groups of subclass [C08L](#) for defining the chemical polymeric structure
2. In groups [B27K 3/16](#) to [B27K 3/50](#), in the absence of an indication to the contrary, impregnating agents are classified in the last appropriate place

**Project: N/A (B27L)**

B27L 5/00

Manufacture of veneer (working veneer or plywood [B27D](#) ){Preparatory processing therefor (drying [F26B](#))}

**Project: N/A (B27M)**

U B27M 1/00

Working of wood not provided for in subclasses [B27B](#) to [B27L](#), e.g. by stretching

B27M 1/06

· by burning or charring, e.g. cutting with hot wire (as surface treatment [B44B](#) {cutting synthetic materials with heated tools [B26F 3/06](#) to [B26F 3/12](#)})

- U B27M 3/00** **Manufacture or reconditioning of specific semi-finished or finished articles (features of copying devices [B23Q](#); manufacture of plywood or veneer, shaping plywood or veneer into articles [B27D](#); of central layers for plywood [B27D 1/06](#); nailing or stapling machines in general [B27F 7/00](#); of elements for cooperage or wheel making [B27H](#) {presses therefor [B27D 3/00](#)})**
- B27M 3/34 · of cases, trunks, or boxes, of wood or equivalent material which cannot satisfactorily be bent without softening (nailing or stapling in general [B25C](#), [B27F](#); of cardboard, paper, or similarly workable material [B31B](#) ){Manufacture of cleats therefor (manufacture of tubes, coops or barrels [B27D 1/00](#), [B27D 1/08](#); by folding grooved panels [B27G 5/00](#))}

**Project: N/A (B28B)****B28B**

**SHAPING CLAY OR OTHER CERAMIC COMPOSITIONS, SLAG, OR MIXTURES CONTAINING CEMENTITIOUS MATERIAL, e.g. PLASTER (foundry moulding [B22C](#); working stone or stone-like material [B28D](#); shaping of substances in a plastic state, in general [B29C](#); making layered products not composed wholly of these substances [B32B](#); shaping in situ, see the relevant classes of section E)**

NOTE

In this subclass, the following term is used with the meaning indicated:

- "the material" means:
  - a. clay or other ceramic compositions;
  - b. slag;
  - c. mixtures with water-setting properties given by clay, cementitious material, or slag.

WARNING

The following IPC group(s) are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

[B28B 23/08](#) covered by [B28B 21/60](#) ~~\_\_\_\_\_~~, [B28B 23/06](#)

- B28B 1/00** **Producing shaped {prefabricated} articles from the material (using presses [B28B 3/00](#); shaping on moving conveyers [B28B 5/00](#); producing tubular articles [B28B 21/00](#); {-producing articles with embedded elements [B28B 23/00](#)})**
- B28B 1/001 · {Rapid manufacturing of 3D objects by additive depositing, agglomerating or laminating of material (selective deposition modelling of metallic powder [B22F 3/008](#); rapid manufacturing of 3D objects in general and in particular of plastics [B29C 67/0051](#))}
- B28B 1/004 · {Devices for shaping artificial aggregates from ceramic mixtures or from mixtures containing hydraulic binder (from slag [C04B 5/00](#); composition of artificial aggregates [C04B 18/02](#))}
- B28B 1/005 · {Devices or processes for obtaining articles having a marble appearance (producing decorative effects [B44C](#); design of stone surfaces, e.g. marble, [B44F 9/04](#))}
- B28B 1/008 · {made from two or more materials having different characteristics or properties (casting for producing layered articles [B28B 1/16](#); feeding several successive layers, optionally of different materials [B28B 13/022](#); coating [B28B 11/04](#); applying material to surfaces to form a permanent layer thereon [B28B 19/00](#))}
- B28B 1/08 · by vibrating or jolting {(of moulding sand [B22C 15/10](#); of concrete in general [E04G 21/063](#))}
- B28B 1/20 · by centrifugal or rotational casting (slip-casting involving rotation of the mould [B28B 1/28](#); for molten material [B28B 1/54](#))

- B28B 1/24
  - by injection moulding {(injection moulding of ceramic slips [B28B 1/265](#); of tubular articles [B28B 21/38](#))}
- B28B 1/29
  - by profiling or strickling the material in open moulds or on moulding surfaces {(in rotary moulds [B28B 1/02](#); by means of profiled rollers [B28B 3/12](#), [B28B 3/123](#))}
- U B28B 1/30
  - by applying the material on to a core or other moulding surface to form a layer thereon (to form a permanent layer [B28B 19/00](#))
- B28B 1/32
  - • by projecting, e.g. spraying (spraying in general [B05B](#), [B05D](#))
- B28B 1/38
  - • by dipping (in general [B05C](#), [B05D](#); {shaping from synthetic resin [B29C 41/14](#))}
- U B28B 1/52
  - specially adapted for producing articles from mixtures containing fibres, (e.g. asbestos cement){by wrapping on +o mandrels [B28B 1/42](#)}
- B28B 1/521
  - • {from dry mixtures to which a setting agent is applied after forming ([B28B 1/526](#), [B28B 1/527](#) take precedence)}
- B28B 1/522
  - • {for producing multi-layered articles ([B28B 1/526](#), [B28B 1/527](#) take precedence)}
- B28B 1/523
  - • {containing metal fibres ([B28B 1/526](#), [B28B 1/527](#) take precedence)}
- B28B 1/525
  - • {containing organic fibres, e.g. wood fibres ([B28B 1/526](#), [B28B 1/527](#) take precedence)}
- B28B 1/528
  - • {for producing corrugated sheets ([B28B 1/526](#), [B28B 1/527](#) take precedence)}
- B28B 1/54
  - specially adapted for producing articles from molten material, e.g. slag {refractory ceramic materials} (chemical aspects [C04B](#); {-from molten bituminous material [B29C](#))}
- U **B28B 3/00**

**Producing shaped articles from the material by using presses (shaping on moving conveyers [B28B 5/00](#)); Presses specially adapted therefor (presses in general [B30B](#))**
- B28B 3/006
  - {Pressing by atmospheric pressure, as a result of vacuum generation or by gas or liquid pressure acting directly upon the material, e.g. jets of compressed air (moulds for treating with gases or degassing [B28B 7/44](#); compacting concrete by means of vacuum in general [E04G 21/061](#))}
- B28B 7/00**

**Moulds; Cores; Mandrels (specially adapted for the production of the tubular articles [B28B 21/00](#); {-for casting metals [B22C 9/00](#); moulds for plastic materials in general [B29C 33/00](#); falsework, forms or shutterings for forming buildings or parts thereof in situ [E04G 9/00](#) to [E04G 15/00](#))}**
- B28B 7/0029
  - {Moulds or moulding surfaces not covered by [B28B 7/0058](#) to [B28B 7/36](#) and [B28B 7/40](#) to [B28B 7/465](#), e.g. moulds assembled from several parts}
- B28B 7/0064
  - {Moulds characterised by special surfaces for producing a desired surface of a moulded article, e.g. profiled or polished moulding surfaces ([B28B 7/36](#) takes precedence; producing decorative effects [B44C](#); designs of stone surfaces [B44F](#))}
- B28B 7/0082
  - • {with surfaces for moulding parallel grooves or ribs ([B28B 7/0073](#), [B28B 7/0079](#) takes precedence)}
- B28B 7/10
  - Moulds with means incorporated therein, or carried thereby, for ejecting {or detaching} the moulded article ({flexible moulds bent open for ejecting [B28B 7/06](#); ejecting by tilting or inverting the mould [B28B 7/08](#); } devices, not forming part of the mould, for ejecting the moulded article [B28B 13/06](#))}
- B28B 7/14
  - Moulds with means incorporated therein, or carried thereby, for cutting the moulded article into parts ({for expanded material [B28B 1/506](#); } cutting means independent of the mould [B28B 11/14](#))}

- B28B 7/28
- Cores; Mandrels ({[B28B 1/44](#) takes precedence; of special materials in general [B28B 7/34](#); cores for making blind holes in situ [E04G 15/04](#); for making recesses [E04G 15/06](#)})
- U B28B 7/38
- Treating surfaces of moulds, cores, or mandrels to prevent sticking
- B28B 7/384
- {Treating agents (for plastic moulding materials in general [B29C 33/60](#); lubricants in general [C10M](#))}
- B28B 11/00**
- Apparatus or processes for treating or working the shaped {or preshaped} articles (specially adapted for tubular articles [B28B 21/92](#); decoration or surface treatment in general [B05](#), [B44](#); compacting concrete in situ in connection with building [E04G 21/06](#); drying [F26](#))**
- U B28B 13/00
- Feeding the unshaped material to moulds or apparatus for producing shaped articles; Discharging shaped articles from such moulds or apparatus (feeding or discharging devices incorporated in, or operatively associated with, a particular type of shaping apparatus, or specially designed to supply materials to a particular type of shaping apparatus, see the relevant groups for the apparatus)**
- B28B 13/04
- Discharging the shaped articles ({discharging tubular articles after shaping [B28B 21/90](#); } conveying systems for ceramic mouldings [B65G 49/08](#))
- U B28B 15/00
- General arrangement or lay-out of plant {Industrial outlines, plant installations}**
- B28B 15/005
- {Machines using pallets co-operating with a bottomless mould; Feeding or discharging means for pallets (Feeding pallets for making a continuous moulding surface [B28B 5/025](#), [B28B 5/028](#))}
- B28B 17/00**
- Details of, or accessories for, apparatus for shaping the material; Auxiliary measures taken in connection with such shaping (moulds [B28B 7/00](#); after-treatment [B28B 11/00](#); feeding or discharging [B28B 13/00](#); arrangements for embedding elements in the material [B28B 23/00](#); details, accessories, or auxiliary measures special to any one type of shaping, machine or method of shaping, see the relevant groups for such machines or methods)**
- B28B 19/00**
- Machines or methods for applying the material to surfaces to form a permanent layer thereon (making shaped articles on mandrels [B28B 1/30](#); applying liquids or other fluent materials to surfaces in general [B05C](#); glazing or engobing [C04B](#); applying the material to walls or other fixed structures, see the relevant classes of section E)**
- U B28B 21/00
- Methods or machines specially adapted for the production of tubular articles**
- U B28B 21/86
- Cores (in general [B28B 7/00](#))
- B28B 21/88
- • adjustable, collapsible or expansible (using inflatable cores [B28B 21/20](#) {for compacting [B28B 21/18](#)})

**Project: N/A (B28C)**

- B28C 1/00**
- Apparatus or methods for obtaining or processing clay (filtration in general [B01D](#); separation of solids from solids [B03](#), [B07](#); chemical part [C04B](#); by mining or quarrying [E21C 41/16](#), [E21C 41/26](#), [E21C 47/10](#))**
- U B28C 1/10
- for processing clay-containing substances in non-fluid condition (clay slurries [B28C 1/02](#)); {Plants}
- B28C 1/14
- • specially adapted for homogenising, comminuting or conditioning clay in non-fluid condition or for separating undesired admixtures therefrom (processes involving conversion to a slurry [B28C 1/02](#); conditioning in storage [B28C 1/12](#); comminuting in general [B02C](#); chemical features in eliminating iron or lime [C04B](#))

**B28C 3/00 -  
B28C 9/00** Mixing clay or cement with other material (general arrangement or layout of plant [B28C 9/00](#); mixers in general [B01F](#); concrete paving mixers combined with distributing devices [E01C 19/00](#); machines for preparing mixtures of road-metal with bitumen [E01C 19/10](#))

**NOTE**

In groups [B28C 3/00](#) to [B28C 7/00](#), the following term is used with the meaning indicated:

- "mixing" includes preliminary mixing, e.g. of some of the ingredients final mixing, and agitating the mixture to prevent segregation thereof

**B28C 5/00** **Apparatus or methods for producing mixtures of cement with other substances, e.g. slurries, mortars, porous or fibrous compositions (controlling the mixing apparatus and supplying the ingredients [B28C 7/00](#); {separating cement from waste concrete [B03B 9/063](#)})**

- B28C 5/003 • {Methods for mixing ([B28C 5/386](#), [B28C 5/402](#) take precedence)}
- U B28C 5/02 • without using driven mechanical means effecting the mixing ([B28C 5/48](#) takes precedence)
- B28C 5/026 • • {Mixing guns or nozzles; Injector mixers (applying plaster by gas pressure [E04F 21/12](#); both conveying and distributing concrete [E04G 21/04](#); conveying concrete [B65G 53/32](#); accelerating or decelerating material flow in troughs or tubes [B65G 53/58](#))}
- B28C 5/08 • using driven mechanical means affecting the mixing ([B28C 5/40](#), [B28C 5/42](#), [B28C 5/48](#) take precedence; in combination with the action of a fluid [B28C 5/38](#))
- U B28C 5/10 • • Mixing in containers not actuated to effect the mixing
- U B28C 5/12 • • • with stirrers sweeping through the materials {,e.g. with incorporated feeding or discharging means or with oscillating stirrers}
- U B28C 5/1238 • • • • {for materials flowing continuously through the mixing device and with incorporated feeding or discharging devices (feeding or discharging devices per se [B28C 5/0818](#))}
- B28C 5/1246 • • • • {with feeding devices ([B28C 5/1276](#), [B28C 5/1292](#) take precedence)}
- B28C 5/1253 • • • • {with discharging devices ([B28C 5/1276](#), [B28C 5/1292](#) take precedence)}
- U B28C 5/18 • • Mixing in containers to which motion is imparted to effect the mixing
- U B28C 5/1825 • • • {Mixers of the tilted-drum type, e.g. mixers pivotable about an axis perpendicular to the axis of rotation for emptying}
- B28C 5/1837 • • • • {provided with feeding means, e.g. hoisting skips ([B28C 5/1831](#), [B28C 5/185](#), [B28C 5/1856](#) take precedence)}
- U B28C 5/20 • • • rotating about a horizontal or substantially horizontal axis during mixing, e.g. without independent stirrers
- B28C 5/2036 • • • • {with the material travelling through the mixer, the discharge being opposite the feed inlet ([B28C 5/2072](#), [B28C 5/22](#), [B28C 5/24](#) take precedence)}
- U B28C 5/38 • wherein the mixing is effected both by the action of a fluid and by directly-acting driven mechanical means, e.g. stirring means; {Producing cellular concrete}
- B28C 5/381 • • {Producing cellular concrete ([B28C 5/1269](#) takes precedence; producing foam [B01F 3/04446](#), [B01F 3/04992](#))}
- B28C 5/42 • Apparatus specially adapted for being mounted on vehicles with provision for mixing during transport ({[B28C 5/1893](#) takes precedence; mounted on a wheelbarrow [B28C 5/1215](#), [B28C 5/1818](#), [B28C 5/2018](#); } vehicle aspect [B60P 3/16](#))}
- U B28C 5/4203 • • {Details; Accessories}

- U B28C 5/4234      · · · {Charge or discharge systems therefor}
- U B28C 5/4244      · · · · {Discharging; Concrete conveyer means, chutes or spouts therefor (in general [B28C 7/168](#))}
- B28C 5/4248      · · · · · {using chutes (combined with transporting belts [B28C 5/4255](#)-, combined with pumps or screws [B28C 5/4258](#))}
- B28C 5/4296      · · {mounted on a tractor or on a tractor wheel (for tilted-drum type mixers [B28C 5/1831](#)-, charging thereof [B28C 5/4237](#))}
  
- B28C 7/00**      **Controlling the operation of apparatus for producing mixtures of clay or cement with other substances; Supplying or proportioning the ingredients for mixing clay or cement with other substances; Discharging the mixture {([B28C 5/42](#) takes precedence; feeding material in general [B65G](#)-, proportioning in general [G01F](#)-, [G01G](#)-, controlling in general [G05](#))}**
- U B28C 7/04      · Supplying or proportioning the ingredients {([B28C 7/022](#) takes precedence; forming a predetermined ratio of the components to be mixed, in general [B01F 15/04](#))}
- B28C 7/0481      · · {Plant for proportioning, supplying or batching ([B28C 7/0436](#)-, [B28C 7/0811](#) take precedence; plant in general [B28C 9/00](#))}
- U B28C 7/06      · · Supplying the solid ingredients, e.g. by means of endless conveyers or jiggling conveyers
- U B28C 7/08      · · · by means of scrapers or skips
- B28C 7/0835      · · · · {using skips to be hoisted along guides or to be tilted, to charge working-site concrete mixers (proportioning by means of a skip [B28C 7/0427](#)-, [B28C 7/0459](#))}
- U B28C 7/16      · Discharge means, {e.g. with intermediate storage of fresh concrete}
- U B28C 7/162      · · {by means of conveyers, other than those comprising skips or containers, e.g. endless belts, screws, air under pressure}
- U B28C 7/163      · · · {using a pump}
- B28C 7/165      · · · · {using a fluid, e.g. gas ([B28C 5/06](#)-, [B28C 5/1261](#) take precedence)}
  
- B28C 9/00**      **General arrangement or layout of plant {([B28C 7/0061](#)-, [B28C 7/0481](#) take precedence)}**
- B28C 9/04      · the plant being mobile, {e.g. mounted on a carriage or a set of carriages} ([B28C 5/42](#)-, {[B28C 9/004](#)-, [B28C 9/006](#)} take precedence)
- B28C 9/0454      · · {Self-contained units, i.e. mobile plants having storage containers for the ingredients ([B28C 9/0472](#)-, [B28C 9/0481](#) take precedence)}

**Project: N/A (B29B)**

- B29B 11/00      **Making preforms ([B29C 61/06](#) takes precedence; {-combined with blow-moulding [B29C 49/02](#), with thermoforming [B29C 51/02](#); making preforms for manufacturing of light guides [B29D 11/00721](#))}**
- U B29B 17/00      **Recovery of plastics or other constituents of waste material containing plastics; ({volume reduction of waste plastics, e.g. by mechanical compacting or melting disposal of solid waste [B09B](#);}) chemical recovery [C08J 11/00](#))**
- B29B 17/04      · Disintegrating plastics, {e.g. by milling}([B29B 9/02](#), [B29B 11/02](#), [B29B 13/10](#), {[B29B 17/02](#)} take precedence)

## Project: N/A (B29C)

## B29C

**SHAPING OR JOINING OF PLASTICS; SHAPING OF SUBSTANCES IN A PLASTIC STATE, IN GENERAL; AFTER-TREATMENT OF THE SHAPED PRODUCTS, e.g. REPAIRING** ({moulding devices for producing toilet or cosmetic sticks [A45D 40/16](#)}; working in the manner of metal [B23](#); grinding, polishing [B24](#); cutting [B26D](#), [B26F](#); making preforms [B29B 11/00](#); making laminated products by combining previously unconnected layers which become one product whose layers will remain together [B32B 37/00](#) - [B32B 41/00](#))

NOTES

1. Attention is drawn to Note (3) following the title of class [B29](#).

2. In this subclass:

- repairing of articles made from plastics or substances in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass [B29D](#), is classified in group [B29C 73/00](#);
- component parts, details, accessories or auxiliary operations which are applicable to more than one moulding technique a reclassified in groups [B29C 31/00](#) to [B29C 37/00](#);
- component parts, details, accessories or auxiliary operations which are only of use for one specific shaping technique a reclassified only in the relevant subgroups of groups [B29C 39/00](#) to [B29C 71/00](#).

## B29C 31/00

**Handling, e.g. feeding of the material to be shaped, {storage of plastics material before moulding; Automation, i.e. automated handling lines in plastics processing plants, e.g. using manipulators or robots (discharging moulded articles from the mould [B29C 37/0003](#); storage of prepregs or SMC after impregnation or during ageing [B29C 70/54](#); baling of rubber [B29B 15/02](#); in general [B65G](#))}**

## B29C 31/006

• {Handling moulds, e.g. between a mould store and a moulding machine (movable moulds [B29C 33/34](#); for injection moulding [B29C 45/1756](#))}

## B29C 31/008

• {Handling preformed parts, e.g. inserts ([B29C 37/001](#) takes precedence; for injection moulding [B29C 45/14008](#); for blow moulding [B29C 49/2408](#); for thermoforming [B29C 51/165](#))}

## B29C 31/02

• Dispensing from vessels, e.g. hoppers {(into a mould cavity [B29C 31/04](#); large containers characterised by discharge means [B65D 88/28](#), [B65D 88/54](#))}

## U B29C 31/04

• Feeding {of the material to be moulded}, e.g. into a mould cavity ({[B29C 39/08](#) takes precedence; using a material distribution system to two or more fixed injection moulds [B29C 45/125](#)}; to presses in general [B30B 15/30](#))

## U B29C 31/042

• • {using dispensing heads, e.g. extruders, placed over or apart from the moulds (positioning extruded preforms on conveyers [B29C 31/085](#))}

## B29C 31/047

• • {combined with moving moulds ([B29C 31/044](#), [B29C 31/048](#) take precedence)}

## B29C 31/06

• • in measured doses, {e.g. by weighting (feeding mixers with measured doses [B01F 15/0216](#), [B01F 15/0454](#), [B29B 7/24](#), [B29B 7/603](#); in general [G01F](#))}

## B29C 31/08

• • of preforms {to be moulded, e.g. tablets, fibre reinforced preforms, extruded ribbons, tubes or profiles; Manipulating means specially adapted for feeding preforms, e.g. supports conveyers ([B29C 31/066](#), [B29C 37/001](#), [B29C 43/085](#) take precedence)}

NOTE

Documents describing feeding preforms, e.g. parisons, tubes, sheets in connection with shaping techniques described in groups [B29C 49/00](#) to [B29C 65/00](#) are not classified in group [B29C 31/08](#), but in the relevant groups of these techniques

- U B29C 33/00 Moulds or cores; Details thereof or accessories therefor**
- U B29C 33/0011 · {thin-walled moulds}
  - B29C 33/0016 · · {Lost moulds, e.g. staying on the moulded object (flexible bags without particular shape filled with expandable material [B29C 44/182](#); single use mandrels for winding and forming [B29C 53/822](#))}
  - B29C 33/0038 · {with sealing means or the like (seals on envelopes used in tyre retreading [B29D 30/542](#); for injection moulding footwear [B29D 35/0045](#))}
  - U B29C 33/30 · Mounting, exchanging or centering {(moulds, mould parts or cores; [B29C 33/485](#) takes precedence)}
  - B29C 33/305 · · {Mounting of moulds or mould support plates (handling of moulds [B29C 31/006](#); mounting of moulds for injection moulding [B29C 45/1742](#))}
  - B29C 33/306 · · {Exchangeable mould parts, e.g. cassette moulds, mould inserts (moulds with exchangeable mould parts for injection moulding [B29C 45/2673](#); mounting of exchangeable mould inserts for injection moulding [B29C 45/2675](#))}
  - B29C 33/307 · · {Mould plates mounted on frames; Mounting the mould plates; Frame constructions therefor (shaping plates for making moulds [B29C 33/3842](#); thin walled moulds [B29C 33/0011](#))}
  - B29C 33/38 · characterised by the material or the manufacturing process ([B29C 33/44](#) takes precedence; manufacture of moulds or parts thereof from metal [B22](#), [B23](#))
  - U B29C 33/3842 · · {Manufacturing moulds, e.g. shaping the mould surface by machining}
  - B29C 2033/385 · · · {by laminating a plurality of layers (moulds built up by stacking mould elements, e.g. plates, blocks, rods, in general [B29C 33/301](#); tyre moulds made of a plurality of laminations [B29D 2030/0609](#))}
  - U B29C 33/44 · with means for , or specially constructed to facilitate, the removal of articles, e.g. of undercut articles
  - U B29C 33/48 · · with means for collapsing or disassembling
  - B29C 33/485 · · · {cores or mandrels (collapsible mandrels for shaping tube ends [B29C 57/02](#); collapsible mandrels for winding and joining [B29C 53/824](#))}
  - U B29C 33/50 · · · elastic {or flexible (for isostatic pressing [B29C 43/3642](#))}
  - B29C 33/505 · · · · {cores or mandrels, e.g. inflatable ([B29C 33/0016](#) takes precedence; for winding and joining [B29C 53/824](#); for supporting articles during joining [B29C 66/634](#); flexible cores for vulcanizing tyres [B29D 30/0654](#))}
  - B29C 33/56 · Coatings, {e.g. enamelled, galvanised}; Releasing, lubricating or separating agents {(in-mould coating [B29C 37/0028](#); using or applying separating agents [B29C 37/0067](#))}
  - U B29C 33/70 · Maintenance
  - B29C 33/72 · · Cleaning {(extruder parts [B29C 47/0877](#); in general [B08B 7/00](#))}
  - B29C 33/76 · Cores ([B29C 33/02](#) to [B29C 33/70](#), {[B29C 41/40](#), [B29C 53/74](#), [B29C 53/82](#) take precedence)
- B29C 35/00 Heating, cooling or curing, e.g. crosslinking, vulcanising; Apparatus therefor (moulds with incorporated heating or cooling means [B29C 33/02](#); {thermal after-treatment of shaped articles [B29C 71/02](#)}; curing devices for plastic dental prostheses [A61C 13/14](#); before moulding [B29B 13/00](#); Chemical aspects [C08J 3/00](#))**
- B29C 35/02 · Heating or curing, e.g. crosslinking, vulcanising {during moulding, e.g. in a mould} (coldvulcanisation [B29C 35/18](#); {vulcanising tyres, presses therefor [B29D 30/0601](#))}
  - B29C 35/0272 · · {using lost heating elements, i.e. heating means incorporated and remaining in the formed article (for preforms with internal stresses [B29C 61/0625](#); joining using lost heating elements [B29C 65/34](#); making electrically conductive articles [B29C 70/882](#))}

- B29C 35/0277
- {Apparatus with continuous transport of the material to be cured ([B29C 35/025](#)-, [B29C 35/06](#)-, [B29C 35/10](#)-, [B29C 35/14](#) take precedence)}
- B29C 35/08
- • by wave energy or particle radiation {([B29C 67/0051](#)-, [B29C 71/04](#) take precedence)}
- B29C 35/16
- Cooling {(cooling extruded material [B29C 47/8815](#)-, cooling preforms for blow moulding [B29C 49/6427](#)-, cooling blown articles [B29C 49/66](#)-, cooling tyres during post cure inflation [B29D 30/0643](#))}
- U B29C 37/00**      **Component parts, details, accessories or auxiliary operations, not covered by group [B29C 33/00](#) or [B29C 35/00](#)**
- B29C 37/0025
- {Applying surface layers, e.g. coatings, decorative layers, printed layers, to articles during shaping, e.g. in-mould printing (moulding on preformed layers as inserts [B29C 70/68](#)-, applying fluent material to surfaces in general [B05](#))}
- B29C 37/0053
- {Moulding articles characterised by the shape of the surface, e.g. ribs, high polish (mould construction therefor [B29C 33/42](#)-, surface shaping of articles [B29C 59/00](#)-, by incorporating filler in or near the surface [B29C 70/64](#))}
- B29C 37/0078
- {Measures or configurations for obtaining anchoring effects in the contact areas between layers (surface shaping [B29C 59/00](#)-, [B29C 66/02](#) takes precedence)}
- U B29C 39/00**      **Shaping by casting, i.e. introducing the moulding material into a mould or between confining surfaces without significant moulding pressure; Apparatus therefor ([B29C 41/00](#) takes precedence)**
- U B29C 39/02
- for making articles of definite length, i.e. discrete articles
- B29C 39/10
- • incorporating preformed parts or layers, e.g. casting around inserts or for coating articles {(coating a surface by casting in general [B05D 1/30](#)-, [B29C 39/126](#) takes precedence)}
- B29C 41/00**      **Shaping by coating a mould, core or other substrate, i.e. by depositing material and stripping-off the shaped article; Apparatus therefor (with compacting pressure [B29C 43/00](#) ; {-by lay-up of reinforcement of substantial or continuous length [B29C 70/30](#))}**
- U B29C 43/00**      **Compression moulding, i.e. applying external pressure to flow the moulding material; Apparatus therefor ({by liberation of internal stresses [B29C 61/006](#) } ; shaping or impregnating by compression composites comprising reinforcements other than fibres of short length [ [B29C 70/12](#) ] ; presses in general [B30B](#))**
- U B29C 43/02
- of articles of definite length, i.e. discrete articles {([B29C 35/0227](#) takes precedence)}
- U B29C 43/021
- • {characterised by the shape of the surface}
- B29C 2043/022
- • • {having locally depressed lines, e.g. hinges (single grooves [B29C 37/0057](#)-, folding lines [B29C 53/06](#)-, parting line of the mould parts [B29C 33/005](#))}
- U B29C 43/18
- • incorporating preformed parts or layers, e.g. compression moulding around inserts or for coating articles {([B29C 43/206](#) takes precedence)}
- U B29C 2043/185
- • • {using adhesives (joining using adhesives [B29C 65/48](#))}
- B29C 2043/186
- • • • {hot-melt or heat activated adhesives (applying molten plastics [B29C 65/40](#)-, joining using adhesives [B29C 65/48](#))}
- U B29C 43/32
- Component parts, details or accessories; Auxiliary operations
- U B29C 43/34
- • Feeding the material to the mould or the compression means {([B29C 43/085](#) takes precedence)}
- B29C 2043/3433
- • • {using dispensing heads, e.g. extruders, placed over or apart from the moulds (feeding using dispensing heads [B29C 31/042](#)-, applying fluent material for coatings [B05D 1/26](#)-, extrusion coating [B05D 1/265](#))}

- B29C 2043/3438 . . . {moving during dispensing over the moulds, e.g. laying up (feeding using moving dispensing heads [B29C 31/044](#); applying fluent material for coatings [B05D 1/26](#); extrusion coating [B05D 1/265](#))}
- B29C 2043/3466 . . . {using rotating supports, e.g. turntables, drums (in general [B29C 31/065](#); turntables as movable moulds [B29C 43/08](#); feeding materials to moulding presses [B30B 15/302](#); transfer turntables [B65G 47/80](#))}
- U B29C 43/36 . . Moulds for making articles of definite length, i.e. discrete articles
- B29C 2043/3602 . . . {with means for positioning, fastening or clamping the material to be formed or preforms inside the mould (moulds with incorporated means for positioning inserts [B29C 33/14](#); positioning articles in the mould for injection moulding [B29C 45/14065](#))}
- B29C 43/361 . . . {with pressing members independently movable of the parts for opening or closing the mould, e.g. movable pistons (transfer moulding [B29C 45/02](#); injection-compression moulding [B29C 45/561](#))}
- B29C 2043/3615 . . . {forming elements, e.g. mandrels, rams, stampers, pistons, plungers, punching devices (ram pressing [B30B 11/02](#), [B30B 11/04](#); forming pockets in sheets [B65B 47/04](#); moulding lenses [B29D 11/00413](#))}
- U B29C 43/3642 . . . {Bags, bleeder sheets or cauls for isostatic pressing (flexible cores for vulcanizing tyres [B29D 30/0654](#))}
- B29C 2043/3644 . . . {vacuum bags and related details e.g. fixing, clamping (vacuum bagging [B29C 70/44](#); flexible pressing means [B30B 5/02](#); membrane press [B30B 9/22](#); applying pressure through membranes [B29C 51/28](#); bladders for making tires [B29D 30/0601](#); vacuum laminating [B32B 37/1018](#))}
- B29C 2043/3647 . . . {membranes, diaphragms (vacuum bagging [B29C 70/44](#); applying pressure through membranes [B29C 51/28](#); bladders for making tires [B29D 30/0601](#); vacuum laminating [B32B 37/1018](#); flexible pressing means [B30B 5/02](#); membrane press [B30B 9/22](#))}
- B29C 2043/3649 . . . {infatable bladders using gas or fluid and related details (vacuum bagging [B29C 70/44](#); flexible moulds [B29C 33/50](#); flexible pressing means [B30B 5/02](#); membrane press [B30B 9/22](#); deep drawing membranes [B29C 51/28](#); bladders for making tires [B29D 30/0601](#); vacuum laminating [B32B 37/1018](#))}
- B29C 2043/3652 . . . {elastic moulds or mould parts, e.g. cores, inserts (isostatic pressing [B29C 43/10](#); moulds in elastomer [B29C 33/405](#); plastic cores [B29C 33/50](#))}
- U B29C 2043/3665 . . . {cores or inserts, e.g. pins, mandrels, sliders}
- B29C 2043/3668 . . . {destructible or fusible (moulds for making articles with holes [B29C 33/0033](#); lost moulds [B29C 33/0016](#); fusible cores [B29C 33/52](#); making porous articles [B22F 3/11](#))}
- U B29C 2043/3676 . . . {moulds mounted on rotating supporting constructions}
- B29C 2043/3678 . . . {on cylindrical supports with moulds or mould cavities provided on the periphery (rollers for making indefinite articles [B29C 43/46](#); turntables presses [B30B 11/08](#), roller presses [B30B 11/006](#))}
- B29C 2043/3689 . . . {on a support table, flat disk-like tables having moulds on the periphery (press rams on turntables [B30B 11/08](#), [B30B 9/042](#))}
- U B29C 43/50 . . Removing moulded articles
- B29C 2043/5084 . . . {using rotary devices, e.g. turntables, carousels (blow moulding machines [B29C 49/36](#), [B29C 49/4205](#))}

- U B29C 44/00**      **Shaping by internal pressure generated in the material, e.g. swelling, foaming; {Producing porous or cellular expanded plastics articles}**  
**WARNING**  
 Group [B29C 44/00](#) and subgroups are not complete, see also [B29C 67/22](#) and subgroups
- U B29C 44/02      · for articles of definite length, i.e. discrete articles
- U B29C 44/12      · · Incorporating or moulding on preformed parts, e.g. inserts, reinforcements
- B29C 44/1214      · · · {Anchoring by foaming into a preformed part, e.g. by penetrating through holes (anchoring by moulding in general [B29C 37/0078](#)-; outsert moulding [B29C 45/14344](#)-, [B29C 70/74](#))}
- U B29C 44/18      · · · Filling preformed cavities {([B29C 44/1204](#) takes precedence)}
- B29C 44/186      · · · · {Filling multiple cavities ([B29C 44/181](#)-, [B29C 44/182](#) and [B29C 44/188](#) takes precedence)}
- U B29C 44/34      · Auxiliary operations
- U B29C 44/36      · · Feeding the material to be shaped {([B29C 44/0492](#) takes precedence)}
- B29C 44/46      · · · into an open space or onto moving surfaces, i.e. to make articles of indefinite length {([B29C 44/365](#)-, [B29C 44/367](#) take precedence)}
- U B29C 45/00**      **Injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a closed mould; Apparatus therefor (injection blow-moulding [B29C 49/06](#))**
- U B29C 45/14      · incorporating preformed parts or layers, e.g. injection moulding around inserts or for coating articles {([B29C 45/1671](#) takes precedence)}
- U B29C 45/14336      · · {Coating a portion of the article, e.g. the edge of the article ([B29C 45/14573](#) and [B29C 45/14598](#) take precedence)}
- B29C 45/14434      · · · {Coating brittle material, e.g. glass ([B29C 45/14377](#)-, [B29C 45/14418](#) take precedence)}
- B29C 45/14467      · · {Joining articles or parts of a single article ([B29C 45/14377](#)-, [B29C 45/14385](#)-, [B29C 45/14581](#)-, [B29C 45/14614](#) and [B29C 45/006](#) take precedence)}
- U B29C 45/16      · Making multilayered or multicoloured articles {([B29C 45/0062](#) takes precedence; feeding colouring materials into the injection unit [B29C 45/1816](#))}
- B29C 45/1684      · · {Injecting parison-like articles ([B29C 45/1625](#)-, [B29C 45/1643](#) and [B29C 45/1646](#) take precedence)}
- U B29C 45/17      · Component parts, details or accessories; Auxiliary operations
- U B29C 2045/1784      · · {Component parts, details or accessories not otherwise provided for; Auxiliary operations not otherwise provided for}
- B29C 2045/1797      · · · {Machine parts provided with a shroud or cover or shield, e.g. for preventing oil or dust scattering (used as safety device [B29C 45/84](#)-, for guiding or orienting ejected articles [B29C 45/1771](#)-, for obtaining a particular moulding environment [B29C 45/1701](#)-, for obtaining a vacuum environment [B29C 45/34](#))}
- B29C 47/00**      **Extrusion moulding, i.e. expressing the moulding material through a die or nozzle which imparts the desired form; Apparatus therefor (extrusion blow-moulding [B29C 49/04](#)-, extrusion presses in general [B30B 11/22](#))**
- U B29C 47/0038      · {Combined shaping operations}
- B29C 47/0054      · · {Extrusion moulding combined with blow-moulding or thermoforming (blow-moulding in general [B29C 49/00](#)-, thermoforming in general [B29C 51/00](#))}

- B29C 47/0057
  - {Extrusion moulding combined with shaping by orienting, stretching or shrinking, e.g. film blowing ([B29C 47/0054](#) takes precedence; shaping by stretching in general [B29C 55/00](#); shaping by liberation of internal stresses in general [B29C 61/00](#))}
- B29C 47/0064
  - {Extrusion moulding combined with joining, lining or laminating (joining in general [B29C 65/00](#); lining in general [B29C 63/00](#); laminating in general [B32B 37/00](#))}
- U B29C 47/08
  - Component parts, details or accessories; Auxiliary operations
- U B29C 47/0811
  - {Flow control means, i.e. adjustable parts, e.g. valves (throttling of flow [B29C 47/0871](#))}
- B29C 47/0816
  - • {provided in or in the proximity of dies ([B29C 47/124](#)-, [B29C 47/16](#)-, [B29C 47/22](#) take precedence)}
- U B29C 47/0838
  - {General arrangement or layout of plants}
- B29C 47/084
  - • {for extruding parallel streams of material, e.g. several separate parallel streams of extruded material forming separate articles ([B29C 47/30](#)-, [B29C 47/0045](#) take precedence)}
- U B29C 47/10
  - • Feeding the material to the extruder
- B29C 47/1018
  - • Raw material pre-treatment while feeding (pre-treatment of the material to be shaped in general [B29B 15/00](#);-; handling of the material to be shaped in general [B29C 31/00](#);-; [B29C 47/78](#) takes precedence)

**B29C 49/00**

**Blow-moulding, i.e. blowing a preform or parison to a desired shape within a mould; Apparatus therefor {(extrusion moulding of tubular films [B29C 47/0026](#);-; enlarging tube ends using pressure difference [B29C 57/08](#))}**

- U B29C 49/22
  - using multilayered preforms or parisons
- B29C 49/221
  - {at least one layer being injected (injection moulding of multilayered parisons [B29C 45/1643](#)-, [B29C 45/1646](#))}
- U B29C 49/42
  - Component parts, details or accessories; Auxiliary operations
- B29C 49/4205
  - {Handling means, e.g. transfer, loading or discharging means (handling of inserts or reinforcements [B29C 49/20](#);-; handling of labels [B29C 49/2408](#))}
- B29C 49/4252
  - {Auxiliary operations prior to the blow moulding operation, e.g. cutting ([B29C 49/64](#)-, [B29C 49/76](#)-, [B29C 49/78](#) take precedence)}
- B29C 49/4268
  - {Auxiliary operations during the blow moulding operation ([B29C 49/64](#)-, [B29C 49/76](#)-, [B29C 49/78](#) take precedence)}
- B29C 49/4273
  - {Auxiliary operations after the blow moulding operation ([B29C 49/64](#)-, [B29C 49/70](#)-, [B29C 49/72](#)-, [B29C 49/76](#)-, [B29C 49/78](#) take precedence)}

**B29C 51/00**

**Shaping by thermoforming, {i.e. shaping sheets or sheet like preforms after heating}, e.g. shaping sheets in matched moulds or by deep-drawing; Apparatus therefor {(blow moulding of tubular preforms [B29C 49/00](#);-; deforming of tubular or hollow preforms [B29C 67/0014](#))}**

- U B29C 51/002
  - {characterised by the choice of material}

NOTE

When classifying in this group, it is desirable to add the indexing codes of subclass [B29K](#) to identify the moulding materials and their properties. Documents concerning the choice of moulding materials having a particular influence on the moulding technique should be classified in this group if of interest

- B29C 51/004
  - {Textile or other fibrous material made from plastics fibres (combined with plastic layers [B29C 51/145](#);-; compression moulding of reinforced plastic articles in matched moulds [B29C 70/46](#);-; using pressure difference [B29C 70/44](#))}

- U B29C 51/10  
B29C 51/105
- Forming by pressure difference, e.g. vacuum
  - • {Twin sheet thermoforming, i.e. deforming two parallel opposing sheets or foils at the same time by using one common mould cavity and without welding them together during thermoforming ([B29C 51/267](#)-, [B29C 49/0047](#) take precedence)}
- U B29C 51/16  
B29C 51/165
- Lining or labelling
  - • {combined with the feeding or the shaping of the lining or the labels (by injection moulding [B29C 45/14008](#)-, [B29C 45/1418](#))}
- U B29C 51/26  
B29C 51/264  
B29C 51/265  
B29C 51/266
- Component parts, details or accessories; Auxiliary operations
  - • {Auxiliary operations prior to the thermoforming operation, e.g. cutting ([B29C 51/42](#)-, [B29C 51/46](#) take precedence)}
  - • {Auxiliary operations during the thermoforming operation ([B29C 51/42](#)-, [B29C 51/46](#) take precedence)}
  - • {Auxiliary operations after the thermoforming operation ([B29C 51/42](#)-, [B29C 51/44](#)-, [B29C 51/46](#) take precedence)}
- U B29C 51/30  
B29C 51/306
- • Moulds
  - • • {with means for forming a rim (combined with cutting [B29C 51/325](#);- rim rolling per se [B29C 53/34](#))}
- U B29C 51/42  
B29C 51/421
- • Heating or cooling
  - • • {of preforms, specially adapted for thermoforming (preheating sheets in general [B29B 13/023](#);- [B29C 51/427](#) takes precedence)}
- U B29C 53/00**      **Shaping by bending, folding, twisting, straightening or flattening; Apparatus therefor ([B29C 61/10](#) takes precedence)**
- B29C 53/02
- Bending or folding ([B29C 53/22](#)-, [B29C 53/34](#)-, [B29C 53/36](#)-, [B29C 53/56](#) take precedence)
- B29C 53/04
- • of plates or sheets {([B29C 63/04](#) takes precedence; bending or folding paper [B31F 1/0003](#);- folding films [B65H 45/00](#))}
- B29C 53/36
- Bending and joining, e.g. for making hollow articles ([B29C 53/56](#) takes precedence; from paper [B31C](#)-, {[B31F](#)})
- B29C 59/00**      **Surface shaping {of articles} e.g. embossing; Apparatus therefor {(in-mould printing [B29C 37/0025](#);- by using liquids [B29C 71/0009](#);- by using gases without chemical reaction [B29C 71/009](#);- for decorating in general [B44](#);- abrasive blasting [B24C](#);- chemical aspects [C08J 7/00](#))}**
- B29C 59/005
- {characterised by the choice of material}
- NOTE**
- Documents in which moulding materials are mentioned are indexed using indexing codes of subclass [B29K](#)-. However, when, for example, documents concerning the choice of moulding material having a particular influence on the moulding technique cannot be satisfactorily indexed, the documents may be classified in this group if of interest
- B29C 59/007
- {Forming single grooves or ribs, e.g. tear lines, weak spots (by moulding [B29C 37/0057](#);- folding lines [B29C 53/06](#);- in metal articles [B21D 17/00](#);- by cutting [B26D 3/08](#))}
- B29C 61/00**      **Shaping by liberation of internal stresses; Making preforms having internal stresses; Apparatus therefor (for surface shaping [B29C 59/18](#);- for lining articles [B29C 63/38](#);- for joining preformed parts [B29C 65/66](#) {-; for packaging [B65B 53/00](#);- connecting arrangements or other fittings for plastics pipes using shrink-down material [F16L 47/22](#)-, electrical connections insulated using heat shrinking insulating sleeves [H01R 4/72](#);- cable junctions protected by sleeves [H02G 15/18](#))}**

- U B29C 61/06      · Making preforms having internal stresses, e.g. plastic memory  
 B29C 61/08      · · by stretching tubes {(in general [B29C 55/22](#)-, [B29C 55/28](#))}
- B29C 63/00      Lining or sheathing, i.e. applying preformed layers or sheathing of plastics; Apparatus therefor ([B29C 73/00](#) takes precedence; by blowing [B29C 49/00](#);- by thermoforming [B29C 51/00](#))**
- B29C 63/02      · using sheet or web-like material ([B29C 63/26f](#) {and [B29C 63/38](#)} take precedence)
- U B29C 63/04      · · by folding, winding, bending or the like  
 B29C 63/044      · · · {continuously ([B29C 63/065](#)-, [B29C 63/105](#) take precedence)}
- B29C 63/18      · using tubular layers or sheathings ([B29C 63/26f](#) {and [B29C 63/38](#)} take precedence;f {placing tubular labels around rigid containers [B65C 3/065](#))}
- B29C 63/22      · using layers or sheathings having a shape adapted to the shape of the article ([B29C 63/26f](#) {and [B29C 63/38](#)} take precedence)
- B29C 65/00      Joining {or sealing} of preformed parts, {e.g. welding of plastics materials}; Apparatus therefor ({general aspects of processes or apparatus for joining preformed parts [B29C 66/00](#);- using porous material formed by internal pressure generated therein for joining preformed parts [B29C 44/1228](#)-, [B29C 44/326](#);- } for making boxes, cartons, envelopes or bags [B31B](#); for sealing or securing package folds or closures [B65B 51/00](#);- joining constructional elements in general [F16B](#); splicing of light guides [G02B 6/255](#))**
- WARNING  
 Groups [B29C 65/00](#) to [B29C 65/70](#) are not complete, mainly for documents published before the year 1995, pending reclassification; see also [B29C 65/74](#) and its subgroups
- U B29C 65/02      · by heating, with or without pressure
- WARNING  
 Group [B29C 65/02](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/48](#) and its subgroups
- U B29C 65/06      · · using friction, e.g. spin welding {(non-plastics elements to plastic elements [B29C 65/645](#))}
- WARNING  
 Subgroups of [B29C 65/06](#) are not complete, pending a reorganisation; see also this group and its subgroups
- U B29C 65/0609      · · · {characterised by the movement of the parts to be joined ([B29C 65/0672](#) takes precedence)}
- U B29C 65/0636      · · · · {Orbital}
- B29C 65/0663      · · · · · {Other specific orbital movements not provided for in [B29C 65/0645](#) to [B29C 65/0654](#)-, e.g. Lissajous}
- B29C 65/14      · · using wave energy {, i.e. electromagnetic radiation,} or particle radiation {(using mechanical waves [B29C 65/06](#);- using ultrasonic waves [B29C 65/08](#);- pressing means transparent to electromagnetic radiation [B29C 66/81267](#))}
- WARNING  
 Subgroups [B29C 65/1403](#) to [B29C 65/1496](#) are not complete pending a reorganisation; see also this group and its subgroups
- U B29C 65/18      · · using heated tools

- B29C 65/24
- • • characterised by the means for heating the tool {(by impulse heating [B29C 65/38](#))}
- NOTES
1. Classification is made in groups [B29C 65/24](#) to [B29C 65/32](#) only if the details or adaptations of the heating means are of interest.
  2. When classifying in this group, heated tools are additionally classified in groups [B29C 65/18](#)-, [B29C 65/20](#) or [B29C 65/22](#)
- U B29C 65/34
- • using heated elements which remain in the joint, e.g. "verlorenes Schweisselement"
- WARNING
- Subgroups [B29C 65/3404](#) to [B29C 65/3472](#) are not complete, pending a reorganisation; see also [B29C 65/34](#)
- U B29C 65/3404
- • • {characterised by the type of heated elements which remain in the joint ([B29C 65/3604](#) takes precedence)}
- U B29C 65/342
- • • • {comprising at least a single wire, e.g. in the form of a winding}
- B29C 65/3432
- • • • • {comprising several wires, e.g. in the form of several independent windings ([B29C 65/3436](#)-, [B29C 65/344](#) take precedence)}
- B29C 65/40
- • Applying molten plastics, e.g. hot melt (using welding bar {combined with hot gases} [B29C 65/12](#)-, by moulding [B29C 65/70](#))
- B29C 65/48
- using adhesives {, i.e. using supplementary joining material} (heat-activated {to be additionally classified in} [B29C 65/02](#) {and subgroups}; {applying molten plastics, e.g.} hot melts {to be additionally classified in} [B29C 65/40](#)-, non-mechanical parts of adhesive processes, in general [C09J 5/00](#)); {solvent bonding}
- NOTE
- When classifying in this group, heat-activated adhesives are further classified in group [B29C 65/02](#)-. When classifying in this group, applying molten plastics is further classified in group [B29C 65/40](#)-.
- WARNING
- Subgroups [B29C 65/4805](#) to [B29C 65/4895](#) are not complete, pending a reorganisation; see also this group and [B29C 65/4895](#)
- U B29C 65/56
- using mechanical means {or mechanical connections, e.g. form-fits}
- WARNING
- Subgroups [B29C 65/561](#) to [B29C 65/568](#) are not complete, pending a reorganisation; see also this group and its subgroups
- B29C 65/562
- • {using extra joining elements, i.e. which are not integral with the parts to be joined (using plastic snap elements [B29C 65/58](#)-, using plastic rivets [B29C 65/601](#))}
- B29C 65/70
- by moulding (using a particular moulding technique, see the relevant technique{ e.g. by injection [B29C 45/14467](#))}
- NOTE
- This group covers only techniques involving the use of a mould

- U B29C 65/74
- by welding and severing, {or by joining and severing, the severing being performed in the area to be joined, next to the area to be joined, in the joint area or next to the joint area}
- NOTE  
When classifying in this group, joining techniques are additionally classified in the relevant groups, e.g. in [B29C 65/02](#) and subgroups
- B29C 65/741
- {characterised by the relationships between the joining step and the severing step (cutting as mechanical pre-treatment [B29C 66/02241](#); cutting as thermal pre-treatment [B29C 66/0246](#); cutting as mechanical after-treatment [B29C 66/0326](#); cutting as thermal after-treatment [B29C 66/0346](#))}
- U B29C 65/78
- Means for handling the parts to be joined, e.g. for making containers or hollow articles {e.g. means for handling sheets, plates, web-like materials, tubular articles, hollow articles or elements to be joined therewith; Means for discharging the joined articles from the joining apparatus}
- WARNING  
Subgroups of [B29C 65/78](#) are not complete, pending a reorganisation; see also this group and its subgroups and [B29C 65/20](#) and its subgroups
- U B29C 65/7802
- {Positioning the parts to be joined, e.g. aligning, indexing or centring}
- U B29C 65/7805
- • {the parts to be joined comprising positioning features}
- B29C 65/7814
- • • {in the form of inter-cooperating positioning features (holding or clamping means cooperating with specially formed features of at least one of the parts to be joined [B29C 65/7844](#)), e.g. tenons and mortises (tenon and mortise joints [B29C 66/126](#); tongue and groove joints [B29C 66/124](#))}
- B29C 65/7835
- • • {by using stops ([B29C 65/7823](#); [B29C 66/92651](#) take precedence; tongue and groove joints [B29C 66/124](#); tenon and mortise joints [B29C 66/126](#))}
- B29C 65/7841
- {Holding or clamping means for handling purposes (clamping means for the purpose of applying pressure on the parts to be joined, in the area to be joined [B29C 66/81](#); work holders in general [B25B](#); devices for holding or positioning work for welding metal [B23K 37/04](#))}
- B29C 65/7844
- • • {cooperating with specially formed features of at least one of the parts to be joined, e.g. cooperating with holes or ribs of at least one of the parts to be joined (parts to be joined comprising holes or slots for the purpose of positioning said parts [B29C 65/7808](#); parts to be joined comprising inter-cooperating positioning features [B29C 65/7814](#); welding using friction, the welding tool cooperating with specially formed features of at least one of the parts to be joined, e.g. cooperating with holes or ribs of at least one of the parts to be joined [B29C 65/069](#))}
- U B29C 65/7858
- {characterised by the feeding movement of the parts to be joined}
- B29C 65/7861
- • • {In-line machines, i.e. feeding, joining and discharging are in one production line ([B29C 65/7879](#); [B29C 65/7888](#) take precedence)}
- B29C 65/787
- • • • {using conveyer belts or conveyer chains ([B29C 66/83421](#); [B29C 66/83521](#); [B29C 66/83531](#) take precedence)}
- B29C 65/7873
- • • • • {using cooperating conveyer belts or cooperating conveyer chains ([B29C 66/83423](#); [B29C 66/83523](#); [B29C 66/83533](#) take precedence)}
- B29C 65/80
- Rotatable transfer means {for loading or unloading purposes, i.e. turret transfer means ([B29C 65/7879](#) takes precedence; in-line machines using carriers, provided with holding means, said carriers moving in a closed path [B29C 65/7867](#); in-line machines using conveyer belts or conveyer chains [B29C 65/787](#))}

**B29C 66/00** {General aspects of processes or apparatus for joining preformed parts (means for handling the parts to be joined [B29C 65/78](#); testing the joint [B29C 65/82](#))}

WARNING

Groups [B29C 66/00](#) - [B29C 66/98](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [B29C 66/00](#) - [B29C 66/98](#) : [B29C 65/00](#) ]

B29C 66/003 • {Protecting areas of the parts to be joined from overheating ([B29C 66/348](#)-, [B29C 66/8744](#) take precedence)}

U B29C 66/004 • {Preventing sticking together, e.g. of some areas of the parts to be joined}

B29C 66/0042 • • {of the joining tool and the parts to be joined ([B29C 66/0046](#) takes precedence; joining tool characterized by its composition [B29C 66/8122](#);-; joining tool characterized by its microstructure [B29C 66/8124](#))}

B29C 66/006 • {Preventing damaging, e.g. of the parts to be joined ([B29C 66/003](#)-, [B29C 66/004](#)-, [B29C 66/348](#) take precedence)}

WARNING

Group [B29C 66/006](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and subgroups

B29C 66/01 • {General aspects dealing with the joint area or with the area to be joined ([B29C 65/76](#)-, [B29C 65/82](#) take precedence)}

U B29C 66/02 • • {Preparation of the material, in the area to be joined, prior to joining or welding ([B29C 66/32](#) takes precedence)}

U B29C 66/022 • • • {Mechanical pre-treatments, e.g. reshaping}

WARNING

Subgroups of [B29C 66/022](#) are not complete, pending a reorganisation; see also this group

U B29C 66/0224 • • • • {with removal of material}

B29C 66/02241 • • • • • {Cutting, e.g. by using waterjets, or sawing (using heat [B29C 66/0246](#);-; cutting-off or cutting-out a part of a strip-like or sheet-like material, transferring that part and fixing it to an article [B29C 69/005](#))}

U B29C 66/024 • • • {Thermal pre-treatments}

WARNING

Subgroups of [B29C 66/024](#) are not complete, pending a reorganisation; see also this group

B29C 66/0246 • • • • {Cutting or perforating, e.g. burning away by using a laser or using hot air (simultaneously welding and severing using a fluid [B29C 65/7471](#);-; simultaneously welding and severing using radiation [B29C 65/7473](#);-; cutting-off or cutting-out a part of a strip-like or sheet-like material, transferring that part and fixing it to an article [B29C 69/005](#))}

U B29C 66/03 • • {After-treatments in the joint area ([B29C 66/3262](#) takes precedence)}

U B29C 66/034 • • • {Thermal after-treatments}

B29C 66/0346 • • • • {Cutting or perforating, e.g. burning away by using a laser or using hot air (simultaneously joining and severing using a fluid [B29C 65/7471](#);-; simultaneously welding and severing using radiation [B29C 65/7473](#))}

WARNING

Not complete, pending a reorganisation; see also [B29C 66/034](#)

- U B29C 66/05
- • {Particular design of joint configurations}
- NOTE  
In this group the possible supplementary joining material, e.g. adhesive or adhesive tape, is not taken into account for the joint configuration. The use of supplementary joining material, e.g. adhesive or adhesive tape, has to be additionally classified as such, e.g. in [B29C 65/48](#) and subgroups or [B29C 65/50](#) and subgroups
- WARNING  
Group [B29C 66/05](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/10
- • • {particular design of the joint cross-sections}
- NOTE  
The scope of the subgroups is defined by the drawings in the Definitions
- U B29C 66/11
- • • • {Joint cross-sections comprising a single joint-segment, i.e. one of the parts to be joined comprising a single joint-segment in the joint cross-section ([B29C 66/12](#) and subgroups take precedence)}
- U B29C 66/112
- • • • • {Single lapped joints}
- B29C 66/1122
- • • • • • {Single lap to lap joints, i.e. overlap joints ([B29C 66/45](#)-, [B29C 66/472](#)-, [B29C 66/52272](#) take precedence)}
- U B29C 66/20
- • • {particular design of the joint lines, e.g. of the weld lines}
- NOTE  
The scope of the subgroups is defined by the drawings in the Definitions
- U B29C 66/22
- • • • {said joint lines being in the form of recurring patterns ([B29C 66/234](#) takes precedence)}
- U B29C 66/227
- • • • • {being in the form of repetitive interlocking undercuts, e.g. in the form of puzzle cuts (tongue and groove joints or tenon and mortise joints comprising interlocking undercuts [B29C 66/1242](#))}
- B29C 66/2276
- • • • • • {Other specific local geometries of interlocking undercuts not provided for in [B29C 66/2272](#) to [B29C 66/2274](#) (tongue and groove joints or tenon and mortise joints comprising other specific interlocking undercuts [B29C 66/12425](#))}
- B29C 66/301
- • • {Three-dimensional joints, i.e. the joined area being substantially non-flat ([B29C 66/5223](#)-, [B29C 66/5224](#)-, [B29C 66/5225](#) take precedence)}
- B29C 66/303
- • • {the joint involving an anchoring effect ([B29C 66/341](#)-, [B29C 65/56](#) and subgroups take precedence)}
- B29C 66/345
- • {Progressively making the joint, e.g. starting from the middle ([B29C 66/8341](#)-, [B29C 65/12](#)-, [B29C 65/14](#)-, [B29C 65/16](#) take precedence)}
- U B29C 66/40
- {General aspects of joining substantially flat articles, e.g. plates, sheets or web-like materials; Making flat seams in tubular or hollow articles; Joining single elements to substantially flat surfaces}
- WARNING  
Group [B29C 66/40](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/41
- • {Joining substantially flat articles ([B29C 66/47](#) and subgroups take precedence); Making flat seams in tubular or hollow articles ([B29C 66/51](#) and subgroups take precedence)}
- U B29C 66/43
- • • {Joining a relatively small portion of the surface of said articles ([B29C 66/45](#) takes precedence)}

- U B29C 66/431      · · · · {Joining the articles to themselves ([B29C 66/4322](#) and [B29C 66/4332](#) take precedence)}
- U B29C 66/4312      · · · · · {for making flat seams in tubular or hollow articles, e.g. transversal seams}
- U B29C 66/43121      · · · · · · {Closing the ends of tubular or hollow single articles, e.g. closing the ends of bags (closing tube ends [B29C 57/10](#))}
- B29C 66/43123      · · · · · · · {Closing the ends of squeeze tubes, e.g. for toothpaste or cosmetics (producing flexible squeeze tubes by combined operations [B29D 23/20](#); collapsible tubes [B65D 35/00](#))}
- B29C 66/433      · · · · {Casing-in, i.e. enclosing an element between two sheets by an outlined seam (for bookbinding [B42C 11/06](#); for packaging [B65B](#); by laminating [B32B 37/00](#); enclosing tubular articles between substantially flat elements [B29C 66/53261](#))}
- U B29C 66/50      · {General aspects of joining tubular articles; General aspects of joining long products, i.e. bars or profiled elements; General aspects of joining single elements to tubular articles, hollow articles or bars; General aspects of joining several hollow-preforms to form hollow or tubular articles}
- WARNING  
                          Group [B29C 66/50](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- B29C 66/65      · · {with a relative motion between the article and the welding tool ([B29C 65/10](#)-, [B29C 65/12](#) take precedence)}
- B29C 66/69      · {General aspects of joining filaments (bundling articles [B65B 13/00](#)-, interconnecting successive lengths of material [B65H 69/00](#))}
- B29C 66/70      · {characterised by the composition, physical properties or the structure of the material of the parts to be joined; Joining with non-plastics material (chemical aspects [C08J 5/12](#)-, [C09J](#))}
- WARNING  
                          Group [B29C 66/70](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/72      · · {characterised by the structure of the material of the parts to be joined}
- B29C 66/723      · · · {being multi-layered ([B29C 66/7292](#)-, [B29C 66/72941](#) take precedence)}
- U B29C 66/725      · · · {being hollow-walled or honeycombs}
- U B29C 66/7252      · · · · {hollow-walled}
- B29C 66/72523      · · · · · {multi-channelled or multi-tubular ([B29C 66/438](#)-, [B29C 66/5227](#) take precedence)}
- U B29C 66/80      · {General aspects of machine operations or constructions and parts thereof}
- WARNING  
                          Group [B29C 66/80](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/81      · · {General aspects of the pressing elements, i.e. the elements applying pressure on the parts to be joined in the area to be joined, e.g. the welding jaws or clamps (holding or clamping means for handling purposes [B29C 65/7841](#))}
- WARNING  
                          Group [B29C 66/81](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- U B29C 66/814      · · · {characterised by the design of the pressing elements, e.g. of the welding jaws or clamps}

- U B29C 66/8145      · · · {characterised by the constructional aspects of the pressing elements, e.g. of the welding jaws or clamps ([B29C 66/816](#) and [B29C 66/818](#) take precedence; adaptable for making articles or joints of different dimensions [B29C 66/841](#))}
- B29C 66/81451      · · · · {being adaptable to the surface of the joint ([B29C 66/81453](#)-, [B29C 66/81455](#)-, [B29C 66/81457](#)-, [B29C 66/81459](#)-, [B29C 66/81461](#) take precedence)}
- U B29C 66/816      · · · {characterised by the mounting of the pressing elements, e.g. of the welding jaws or clamps}
- B29C 66/8169      · · · · {the mounting of said pressing elements being laterally movable, e.g. adjustable ([B29C 66/836](#)-, [B29C 66/841](#)-, [B29C 66/863](#) take precedence)}
- U B29C 66/83      · · {characterised by the movement of the joining or pressing tools}
- WARNING  
Group [B29C 66/83](#) and subgroups are not complete, pending a reorganisation; see also this group and its subgroups and [B29C 65/00](#) and its subgroups
- U B29C 66/832      · · · {Reciprocating joining or pressing tools ([B29C 66/834](#) takes precedence)}
- B29C 66/8324      · · · · {Joining or pressing tools pivoting around one axis (scissor or lever transmission mechanisms [B29C 66/8221](#)-, tools self-aligning to the joining plane [B29C 66/8163](#))}
- B29C 67/00      Shaping techniques not covered by groups [B29C 39/00](#) to [B29C 65/00](#)-, [B29C 70/00](#) or [B29C 73/00](#)**
- B29C 67/0029      · {Cold deforming of thermoplastics material ([B29C 43/16](#)-, [B29C 59/00](#) take precedence)}
- B29C 67/0037      · {Forming articles from a moulding composition enclosed in a deformable bag (making moulds composed of particles enclosed in a bag [B29C 33/3821](#)-, from expandable material in flexible bags [B29C 44/182](#)-, with reinforcements placed in a covering element [B29C 70/542](#))}
- B29C 67/0051      · {Rapid manufacturing and prototyping of 3D objects by additive depositing, agglomerating or laminating of plastics material, e.g. by stereolithography or selective laser sintering (stereolithographic techniques for making dental prostheses [A61C 13/0013](#)-, selective sintering of metallic powder [B22F 3/1055](#)-, from ceramic or cementitious material [B28B 1/00](#)-, photomechanical, e.g. photolithographic, production of textured or patterned surfaces [G03F 7/00](#)-, selective printers for printing on three-dimensional objects [B41J 3/4073](#))}
- NOTE  
Material and product properties are classified with the relevant indexing codes
- U B29C 67/0055      · · {using only liquids or viscous materials, e.g. depositing a continuous bead of viscous material}
- U B29C 67/0062      · · · {using layers of liquid which are selectively solidified}
- B29C 67/007      · · · · {by a source of energy not covered by [B29C 67/0066](#)-, e.g. by global irradiation combined with a mask}
- B29C 67/02      · Moulding by agglomerating {([B29C 67/0051](#)-, [B29C 67/20](#) take precedence)}
- B29C 67/04      · Sintering ({sintering layers coated on a mould, core or substrate [B29C 41/00](#)-, } combined with compression [B29C 43/00](#)-, {-selective sintering for rapid manufacturing or prototyping of 3D objects [B29C 67/0077](#))}
- U B29C 67/24      · characterised by the choice of material
- B29C 67/242      · {Moulding mineral aggregates bonded with resin, e.g. resin concrete (shaping ceramic compositions without binder or water-setting cementitious material [B28B](#)-, compositions per se [C04B](#))}

- B29C 67/246
- {Moulding high reactive monomers or prepolymers, e.g. by reaction injection moulding [RIM], liquid injection moulding [LIM] (casting monomers [B29C 39/006](#)-, mixing construction [B29B 7/74](#))}
- B29C 67/248
- {Moulding mineral fibres or particles bonded with resin, e.g. for insulating or roofing board (articles from wood or lignocellulosic material with binding agents [B27N](#)-, mineral aggregates bonded with resin [B29C 67/242](#)-, thermal insulation in general [F16L 59/00](#))}
- B29C 69/00**
- {Combinations of shaping techniques not provided for in a single one of main groups [B29C 39/00](#) to [B29C 67/00](#)-, e.g. associations of moulding and joining techniques; Apparatus therefore ([B29C 47/0038](#) takes precedence)}**
- B29C 69/001
- {a shaping technique combined with cutting, e.g. in parts or slices combined with rearranging and joining the cut parts (for reinforced material [B29C 70/545](#)-, [B29C 49/4278](#)-, [B29C 51/268](#) take precedence)}
- B29C 69/004
- {making articles by joining parts moulded in separate cavities, said parts being in said separate cavities during said joining ([B29C 45/006](#)-, [B29C 51/267](#) take precedence)}
- B29C 69/005
- {cutting-off or cutting-out a part of a strip-like or sheet-like material, transferring that part and fixing it to an article (if labeling see [B65C](#)-, in combination with box-making [B31B 1/90](#)-, labelling in general [B65C](#))}
- B29C 70/00**
- Shaping composites, i.e. plastics material comprising reinforcements, fillers or preformed parts, e.g. inserts (chemical aspects [C08](#)-, e.g. [C08J 5/00](#))**
- NOTE
- In this group, the following terms or expressions are used with the meanings indicated:
- "reinforcement" means a structure in the form of fibres, wires, rods, bars, sections, plates or blocks, which improves the strength of an article;
  - "filler" means a relatively inert substance in the form of particles, powder, beads, flakes or spheres, which improves the physical properties or increases the bulk or weight of an article;
  - "preformed part" means a part made of any material, being completely shaped to have a determined form and which is not used as a reinforcement, e.g. wires or nets forced only into the surface of an article;
  - "insert" means a preformed part incorporated in an article during moulding.
- U B29C 70/02
- comprising combinations of reinforcements, {e.g. non-specified reinforcements, fibrous reinforcing inserts} and fillers, {e.g. particulate fillers}, incorporated in matrix material, forming one or more layers and with or without non-reinforced or non-filled layers {(combinations of fibrous reinforcement only [B29C 70/04](#)-, combinations of fillers only [B29C 70/58](#)-, combinations with non reinforcing inserts, e.g. foam blocks, [B29C 70/68](#))}
- B29C 70/026
- {and with one or more layers of pure plastics material, e.g. foam layers (applying a non-preformed coating, e.g. a gel-coat [B29C 37/0025](#)-, with foam blocks [B29C 70/86](#))}
- U B29C 70/04
- comprising reinforcements only, e.g. self-reinforcing plastics
- U B29C 70/06
- • Fibrous reinforcements only
- U B29C 70/08
- • • comprising combinations of different forms of fibrous reinforcements incorporated in matrix material, forming one or more layers, and with or without non-reinforced layers
- B29C 70/083
- • • • {Combinations of continuous fibres or fibrous profiled structures oriented in one direction and reinforcements forming a two dimensional structure, e.g. mats ([B29D 24/00](#)-, [B29D 99/001](#) take precedence)}

- B29C 70/086
  - • • {and with one or more layers of pure plastics material, e.g. foam layers (applying a non-preformed coating, e.g. a gel-coat, [B29C 37/0025](#); with foam blocks [B29C 70/86](#))}
- U B29C 70/10
  - • • characterised by the structure of fibrous reinforcements, {e.g. hollow fibres}
- U B29C 70/16
  - • • using fibres of substantial or continuous length {(non-woven fabrics per se [D04H 3/00](#))}
- B29C 70/20
  - • • • oriented in a single direction, e.g. roofing or other parallel fibres {([B29C 70/083](#), [B29C 70/226](#) take precedence)}
- B29C 70/22
  - • • • oriented in at least two directions forming a two dimensional structure {(woven fabrics per se [D03D](#); knitted fabrics per se [D04D](#); braid per se [D04C](#))}
- B29C 70/26
  - • Non-fibrous reinforcements only {([B29C 35/0272](#), [B29C 61/0625](#), [B29C 70/887](#) take precedence; combined with fibres [B29C 70/023](#))}
- U B29C 70/28
  - • Shaping operations therefor

#### NOTES

##### 1. This group covers:

- the shaping of a coherent fibrous reinforcements which are pre-impregnated or without binder; or of non-coherent reinforcements of fibres in a mould or on a support;
- the impregnation or introduction of a plastics matrix in reinforcements during shaping;

##### 2. This group does not cover:

- the moulding by a single technique of plastics matrix material mixed with and containing reinforcing fibres of short length, which is covered by the appropriate place for that technique;
- the pretreatment, e.g. impregnation, of reinforcements per se, i.e. independently of their shaping, which is covered by group [B29B 15/08](#)

- B29C 70/30
  - • Shaping by lay-up, i.e. applying fibres, tape or broadsheet on a mould, former or core; Shaping by spray-up, i.e. spraying of fibres on a mould, former or core {(by winding and joining, e.g. filament winding [B29C 53/56](#); for building tyres [B29D 30/08](#))}
- B29C 70/305
  - • • {Spray-up of reinforcing fibres with or without matrix to form a non-coherent mat in or on a mould ([B29C 41/365](#), [B29C 70/32](#), [B29C 70/34](#), [B29C 70/502](#), [B29C 70/508](#) take precedence; coating a former by spraying plastics [B29C 41/08](#))}
- U B29C 70/54
  - • • Component parts, details or accessories; Auxiliary operations, {e.g. feeding or storage of prepregs or SMC after impregnation or during ageing (pretreatment, e.g. impregnation, of reinforcements [B29B 15/08](#))}
- B29C 70/541
  - • • {Positioning reinforcements in a mould, e.g. using clamping means for the reinforcement (positioning inserts in moulds [B29C 33/12](#); lay-up on a mould [B29C 70/30](#))}
- B29C 70/58
  - comprising fillers only, {e.g. particles, powder, beads, flakes, spheres ([B29C 70/025](#) takes precedence, agglomerating hollow spheres to produce synthetic foam [B29C 70/66](#); compounding ingredients per se [C08K](#))}

#### NOTE

Moulding of plastics matrix material mixed with fillers by a single technique is classified in the appropriate place for that technique.

- U B29C 70/60
  - • comprising a combination of distinct filler types incorporated in matrix material, forming one or more layers, and with or without non-filled layers
- B29C 70/603
  - • • {and with one or more layers of pure plastics material, e.g. foam layers (applying a non-preformed coating, e.g. a gel-coat [B29C 37/0025](#); with foam blocks [B29C 70/86](#))}

- B29C 70/68
- by incorporating or moulding on preformed parts, e.g. inserts, layers, {e.g. foam blocks (mould constructions therefor [B29C 33/12](#); joining preformed parts by moulding [B29C 65/70](#))}
- NOTE**
- This group does not cover:
- incorporating, or moulding on, preformed parts by a single technique, which is covered by the appropriate place for that technique;
  - pretreatment of preformed parts per se, i.e. independently of their shaping, which is covered by group [B29B 15/00](#)
- B29C 70/688
- {the inserts being meshes or lattices ([B29C 70/82](#), [B29C 70/683](#) take precedence)}
- U B29C 70/88
- characterised primarily by possessing specific properties, e.g. electrically conductive, locally reinforced
- B29C 70/882
- {partly or totally electrically conductive, e.g. for EMI shielding (conductive floors or floor coverings [H05F 3/025](#); EMI shielding in general [H05K 9/00](#))}
- B29C 70/885
- • {with incorporated metallic wires, nets, films or plates (as lost heating elements [B29C 35/0272](#), [B29C 61/0625](#))}
- B29C 71/00**
- After-treatment of articles without altering their shape; Apparatus therefor ([B29C 73/00](#) takes precedence; surface shaping [B29C 59/00](#); {for joined or sealed parts [B29C 66/03](#); after-treatment specially adapted for vulcanising tyres [B29D 30/0633](#)}; chemical aspects [C08J 7/00](#))**
- B29C 71/0009
- {using liquids, e.g. solvents, swelling agents (spectacle cases, e.g. for cleaning contact lenses [A45C 11/04](#); disinfecting or sterilising contact lenses [A61L 12/00](#); using liquid substances [A61L 2/20](#); cleaning involving the use of liquid in general [B08B 3/00](#); for hydrating contact lenses [B29D 11/00067](#))}
- B29C 2071/0027
- {Removing undesirable residual components, e.g. solvents, unreacted monomers (of material to be shaped [B29B 9/16](#), [B29B 13/00](#))}
- B29C 71/0081
- {using an electric field, e. g. for electrostatic charging (electrostatic pinning of extruded material [B29C 47/887](#); fixing linings by electrostatic charges [B29C 63/0043](#))}
- B29C 71/009
- {using gases without chemical reaction ([C08J 7/12](#) takes precedence; in combination with blow-moulding [B29C 49/46](#); surface treatment using plasma [B29C 59/14](#), ionised gas [B29C 59/16](#))}
- B29C 73/00**
- Repairing of articles made from plastics or substances in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass [B29D](#) (retreading tyres [B29D 30/54](#); {linings for tyres acting locally [B60C5/145](#); } devices for covering leaks in pipes or hoses [F16L 55/16](#))**
- WARNINGS**
1. This group was introduced on 24 June, 1987
  2. Documents from the backlog of [B60C21/00](#) - [B60C21/08B](#), [B60C 25/16](#) are in the process of being systematically transferred to [B29C 73/00](#) ]
- U **B29C 2791/00**
- Shaping characteristics in general**
- U B29C 2791/004
- Shaping under special conditions
- B29C 2791/009
- • Using laser (curing using laser [B29C 2035/0838](#), welding using laser beams [B29C 65/16](#))

**Project: N/A (B29D)**

- B29D 11/00 Producing optical elements, e.g. lenses or prisms (grinding or polishing of optical elements [B24B](#); constructional form of optical elements [G02B](#); {optical parts of spectacles [G02C 7/00](#)})
- B29D 28/00 Producing nets or the like, {e.g. meshes, lattices}(by knotting [D04G](#))
- U B29D 30/00 Producing pneumatic or solid tyres or parts thereof (producing inner tubes [B29D 23/24](#); constructional form of tyres or parts thereof [B60C](#); connection of valves to inflatable elastic bodies [B60C 29/00](#); testing of tyres [G01M 17/02](#))
- U B29D 30/06 · Pneumatic tyres or parts thereof {(e.g. produced by casting, moulding, compression moulding, injection moulding, centrifugal casting)}
- B29D 30/52 · · Unvulcanised treads, e.g. on used tyres; Retreading (apparatus for forming {treads by extrusion [B29C 47/00](#); apparatus for} vulcanising treads [B29C 35/02](#); apparatus characterised by the means for holding wheels or parts thereof [B60B 30/00](#))
- B29D 99/00 Subject matter not provided for in other groups of this subclass {(not used, see subgroups)}-~~üC1203~~

**Project: N/A (B29K)**

B29K

**INDEXING SCHEME ASSOCIATED WITH SUBCLASSES [B29B](#), [B29C](#) OR [B29D](#), RELATING TO MOULDING MATERIALS**NOTES

- This subclass constitutes an indexing scheme associated with subclasses [B29B](#), [B29C](#) or [B29D](#).
- In this subclass, the following term is used with the meaning indicated:
  - "rubber" covers:
    - natural or conjugated diene rubbers;
    - rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for such macromolecular compounds)
- Documents relating to compositions or properties of the materials to be shaped, said compositions having a particular influence on the shaping technique, should be classified in the shaping technique, e.g. [B29C 39/003](#)-, [B29C 41/003](#)-, [B29C 43/003](#)-, [B29C 45/0001](#)-, [B29C 47/0004](#)-, [B29C 49/0005](#)-, [B29C 51/002](#)-, [B29C 53/005](#)-, [B29C 55/005](#)-, [B29C 61/003](#)-, [B29C 63/0017](#) and **[B2965/00S](#)**

Copolymers are indexed with the same indexing code as the majority polymers

WARNINGS

- The following IPC indexing codes are not being used: [B29K 105/02](#)-, [B29K 105/22](#)-, [B29K 105/28](#)-, [B29K 105/30](#)-, [B29K 105/32](#) and [B29K 105/34](#)-  
The aspect of [B29K 105/02](#) is covered by [B29K 2995/0064](#)-  
The aspect of [B29K 105/22](#) is covered by [B29K 705/00](#)-  
The aspect of [B29K 105/28](#) is covered by [B29K 2995/0025](#)-  
The aspect of [B29K 105/30](#) is covered by [B29K 2995/003](#)-  
The aspect of [B29K 105/32](#) is covered by [B29K 2995/0026](#)-  
The aspects of [B29K 105/34](#) are covered by [B29K 2995/002](#)-, [B29K 2995/0007](#) and [B29K 2995/0015](#)-

## Subclass indexes

Compositions for moulding materials, condition, form or state of moulded material: ~~[B29K1/00](#) - [B29K105/00](#)~~Compositions for reinforcements: ~~[B29K201/00](#) - [B29K313/00](#)~~Compositions for fillers: ~~[B29K401/00](#) - [B29K511/00](#)~~Compositions for preformed parts: ~~[B29K601/00](#) - [B29K713/00](#)~~

Compositions for moulds: ~~B29K801/00 - B29K913/00~~  
Properties of moulding materials, reinforcements, fillers, preformed parts or moulds: ~~B29K995/00~~  
Compositions for moulding materials;  
Condition, form or state of moulded material

2. From the date indicated below, the following groups have been deleted from the classification scheme. The documents of these groups have been transferred to the new groups as follows :

[B29K 105/28](#) transferred to [B29K 2995/0025](#)

[B29K 105/30](#) transferred to [B29K 2995/003](#)

[B29K 105/32](#) transferred to [B29K 2995/0026](#)

[B29K 105/34](#) transferred to [B29K 2995/002](#), [B29K 2995/0007](#), ~~B29K00D4~~

- U B29K 2023/00** Use of polyalkenes {or derivatives thereof} as moulding material {(as such [C08L 23/00](#))}
- U B29K 2023/04 · {Polymers of ethylene (as such [C08L 23/04](#))}
- B29K 2023/08 · · {Use of copolymers of ethylene as moulding material (as such [C08L 23/08](#); [B29K 2023/16](#) takes precedence)}
- U B29K 2023/10 · {Polymers of propylene (as such [C08L 23/10](#))}
- B29K 2023/14 · · {Copolymers of polypropylene (as such [C08L 23/14](#); [B29K 2023/16](#) takes precedence)}
- U B29K 2025/00** Use of polymers of vinyl-aromatic compounds {or derivatives thereof} as moulding material {(as such [C08L 25/00](#))}
- U B29K 2025/04 · {Polymers of styrene (as such [C08L 25/04](#))}
- B29K 2025/08 · · {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (as such [C08L 25/08](#); ~~B29K55/02~~ takes precedence)}
- U B29K 2029/00** Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof} as moulding material {(as such [C08L 29/00](#))}
- B29K 2029/04 · {PVOH, i.e. polyvinyl alcohol (as such [C08L 29/04](#); [B29K 2031/04](#) takes precedence)}
- B29K 2055/00** Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups ~~B29K23/00~~ to {~~B29K49/00~~, e.g. having a vinyl group}, as moulding material {(as such [C08L 55/00](#))}
- B29K 2079/00** Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain {not provided for in groups ~~B29K61/00~~ to ~~B29K77/00~~}, as moulding material {(as such [C08L 79/00](#))}
- B29K 2086/00** Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups ~~B29K59/00~~ to ~~B29K85/00~~, as moulding material
- B29K 2093/00** {Use of natural resins (as such [C08L 93/00](#)), e.g. shellac (as such [C08L 93/02](#)) or derivatives thereof, as moulding material (~~B29K1/00~~, ~~B29K 2003/00~~, ~~B29K 2005/00~~, ~~B29K7/00~~ and [B29K 2089/00](#) take precedence)}
- B29K 2096/00** Use of specified macromolecular materials not provided for in a single one of main groups ~~B29K1/00 - B29K95/00~~, as moulding material
- B29K 2101/00** Use of unspecified macromolecular compounds as moulding material (unspecified rubbers ~~B29K21/00~~ {as such [C08L 101/00](#))}

- U B29K 2105/00** **Condition, form or state of moulded material {or of the material to be shaped}**
- B29K 2105/0005 · {containing compounding ingredients (releasing, lubricating or separating agents [B29C 33/56](#), fibers [B29K105/08](#), [B29K105/12](#); fillers [B29K105/16](#), recycled material [B29K105/26](#))}
- U B29K 2223/00** **Use of polyalkenes {or derivatives thereof} as reinforcement {(as such [C08L 23/00](#))}**
- U B29K 2223/04 · {Polymers of ethylene (as such [C08L 23/04](#))}
- B29K 2223/08 · · {Use of copolymers of ethylene as reinforcement (as such [C08L 23/08](#); [B29K 2223/16](#) takes precedence)}
- U B29K 2223/10 · {Polymers of propylene (as such [C08L 23/10](#))}
- B29K 2223/14 · · {Copolymers of polypropylene (as such [C08L 23/14](#); [B29K 2023/16](#) takes precedence)}
- U B29K 2225/00** **Use of polymers of vinyl-aromatic compounds {or derivatives thereof} as reinforcement {(as such [C08L 25/00](#))}**
- U B29K 2225/04 · {Polymers of styrene (as such [C08L 25/04](#))}
- B29K 2225/08 · · {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (as such [C08L 25/08](#); [B29K255/02](#) takes precedence)}
- U B29K 2229/00** **Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof}, as reinforcement {(as such [C08L 29/00](#))}**
- B29K 2229/04 · {PVOH, i.e. polyvinyl alcohol (as such [C08L 29/04](#); [B29K 2231/04](#) takes precedence)}
- B29K 2255/00** **Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups [B29K223/00](#) to [B29K 2249/00](#), e.g. having a vinyl group}, as reinforcement {(as such [C08L 55/00](#))}**
- B29K 2279/00** **Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain {not provided for in groups [B29K261/00](#) to [B29K277/00](#)}, as reinforcement {(as such [C08L 79/00](#))}**
- B29K 2286/00** **Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups [B29K259/00](#) to [B29K285/00](#), as reinforcement**
- B29K 2293/00** **{Use of natural resins (as such [C08L 93/00](#)), e.g. shellac (as such [C08L 93/02](#)) or derivatives thereof, as reinforcement ([B29K201/00](#), [B29K 2203/00](#), [B29K 2205/00](#), [B29K207/00](#) and [B29K 2289/00](#) take precedence)}**
- B29K 2296/00** **Use of specified macromolecular materials not provided for in a single one of main groups [B29K201/00](#) - [B29K295/00](#), as reinforcement**
- B29K 2301/00** **Use of unspecified macromolecular compounds as reinforcement (unspecified rubbers [B29K221/00](#) ){as such [C08L 101/00](#)}**
- B29K 2309/00** **Use of inorganic materials not provided for in groups [B29K303/00](#) - [B29K307/00](#), as reinforcement**
- B29K 2311/00** **Use of natural products or their composites, not provided for in groups [B29K201/00](#) - [B29K309/00](#), as reinforcement**
- U B29K 2423/00** **Use of polyalkenes {or derivatives thereof} as filler {(as such [C08L 23/00](#))}**

- U B29K 2423/04  
B29K 2423/08
- {Polymers of ethylene (as such [C08L 23/04](#))}
  - · {Use of copolymers of ethylene as filler (as such [C08L 23/08](#); [B29K 2423/16](#) takes precedence)}
- U B29K 2423/10  
B29K 2423/14
- {Polymers of propylene (as such [C08L 23/10](#))}
  - · {Copolymers of polypropylene (as such [C08L 23/14](#); [B29K 2423/16](#) takes precedence)}
- U B29K 2425/00**      **Use of polymers of vinyl-aromatic compounds {or derivatives thereof} as filler {(as such [C08L 25/00](#))}**
- U B29K 2425/04  
B29K 2425/08
- {Polymers of styrene (as such [C08L 25/04](#))}
  - · {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (as such [C08L 25/08](#); [B29K455/02](#) takes precedence)}
- U B29K 2429/00**      **Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof}, as filler {(as such [C08L 29/00](#))}**
- B29K 2429/04
- {PVOH, i.e. polyvinyl alcohol (as such [C08L 29/04](#); [B29K 2431/04](#) takes precedence)}
- B29K 2455/00**      **Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups [B29K23/00](#) to {[B29K49/00](#)}, e.g. having a vinyl group}, as filler {(as such [C08L 55/00](#))}**
- B29K 2479/00**      **Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain {not provided for in groups [B29K461/00](#) to [B29K477/00](#)}, as filler {(as such [C08L 79/00](#))}**
- B29K 2486/00**      **Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups [B29K459/00](#) to [B29K485/00](#), as filler**
- B29K 2493/00**      **{Use of natural resins (as such [C08L 93/00](#)), e.g. shellac (as such [C08L 93/02](#)) or derivatives thereof, as filler ([B29K401/00](#), [B29K 2403/00](#), [B29K 2405/00](#), [B29K407/00](#) and [B29K 2489/00](#) take precedence)}**
- B29K 2496/00**      **Use of specified macromolecular materials not provided for in a single one of main groups [B29K401/00](#) - [B29K495/00](#), as filler**
- B29K 2501/00**      **Use of unspecified macromolecular compounds as filler (unspecified rubbers [B29K421/00](#) ) {(as such [C08L 101/00](#))}**
- B29K 2509/00**      **Use of inorganic materials not provided for in groups [B29K503/00](#) - [B29K507/00](#), as filler**
- B29K 2511/00**      **Use of natural products or their composites, not provided for in groups [B29K401/00](#) - [B29K509/00](#), as filler**
- U B29K 2623/00**      **Use of polyalkenes {or derivatives thereof} for preformed parts, e.g. inserts {(as such [C08L 23/00](#))}**
- U B29K 2623/04  
B29K 2623/08
- {Polymers of ethylene (as such [C08L 23/04](#))}
  - · {Use of copolymers of ethylene for preformed parts, e.g. inserts (as such [C08L 23/08](#); [B29K 2623/16](#) takes precedence)}
- U B29K 2623/10  
B29K 2623/14
- {Polymers of propylene (as such [C08L 23/10](#))}
  - · {Copolymers of polypropylene (as such [C08L 23/14](#); [B29K 2623/16](#) takes precedence)}

- U B29K 2625/00** Use of polymers of vinyl-aromatic compounds {or derivatives thereof} for preformed parts, e.g. inserts {(as such [C08L 25/00](#))}
- U B29K 2625/04 · {Polymers of styrene (as such [C08L 25/04](#))}
- B29K 2625/08 · · {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (as such [C08L 25/08](#); **B29K655/02** takes precedence)}
- U B29K 2629/00** Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof}, for preformed parts, e.g. inserts {(as such [C08L 29/00](#))}
- B29K 2629/04 · {PVOH, i.e. polyvinyl alcohol (as such [C08L 29/04](#); [B29K 2631/04](#) takes precedence)}
- B29K 2655/00** Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups **B29K623/00** to {[B29K 2649/00](#), e.g. having a vinyl group}, for preformed parts, e.g. inserts {(as such [C08L 55/00](#))}
- B29K 2679/00** Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain {not provided for in groups **B29K661/00** to **B29K677/00**}, for preformed parts, e.g. inserts {(as such [C08L 79/00](#))}
- B29K 2686/00** Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups **B29K659/00** to **B29K685/00**, for preformed parts, e.g. inserts
- B29K 2693/00** {Use of natural resins (as such [C08L 93/00](#)), e.g. shellac (as such [C08L 93/02](#)) or derivatives thereof, for preformed parts, e.g. inserts (**B29K601/00**, [B29K 2603/00](#), [B29K 2605/00](#), [B29K607/00](#) and [B29K 2689/00](#) take precedence)}
- B29K 2696/00** Use of specified macromolecular materials not provided for in a single one of main groups **B29K601/00** - **B29K695/00**, for preformed parts, e.g. inserts
- B29K 2701/00** Use of unspecified macromolecular compounds for preformed parts, e.g. inserts (unspecified rubbers **B29K621/00**){(as such [C08L 101/00](#))}
- B29K 2709/00** Use of inorganic materials not provided for in groups [B29K 2603/00](#) - **B29K607/00**, for preformed parts, e.g. for inserts
- B29K 2711/00** Use of natural products or their composites, not provided for in groups **B29K601/00** - **B29K709/00**, for preformed parts, e.g. for inserts
- B29K 2819/00** {Use of rubber not provided for in a single one of main groups [B29K 2807/00](#) to [B29K 2811/00](#), as mould material}
- U B29K 2823/00** {Use of polyalkenes or derivatives thereof as mould material (as such [C08L 23/00](#))}
- U B29K 2823/04 · {Polymers of ethylene (as such [C08L 23/04](#))}
- B29K 2823/08 · · {Use of copolymers of ethylene as mould material (as such [C08L 23/08](#); [B29K 2823/16](#) takes precedence)}
- U B29K 2823/10 · {Polymers of propylene (as such [C08L 23/10](#))}
- B29K 2823/14 · · {Copolymers of polypropylene (as such [C08L 23/14](#); [B29K 2823/16](#) takes precedence)}
- U B29K 2825/00** {Use of polymers of vinyl-aromatic compounds or derivatives thereof as mould material (as such [C08L 25/00](#))}
- U B29K 2825/04 · {Polymers of styrene (as such [C08L 25/04](#))}

- B29K 2825/08 · {Copolymers of styrene, e.g. AS or SAN, i.e. acrylonitrile styrene (as such [C08L 25/08](#); [B29K 2855/02](#) takes precedence)}
- U B29K 2829/00** {Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals or derivatives thereof, as mould material (as such [C08L 29/00](#))}
- B29K 2829/04 · {PVOH, i.e. polyvinyl alcohol (as such [C08L 29/04](#); [B29K 2831/04](#) takes precedence)}
- B29K 2855/00** {Use of specific polymers obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in a single one of main groups [B29K 2823/00](#) to [B29K 2849/00](#), e.g. having a vinyl group, as mould material (as such [C08L 55/00](#))}
- B29K 2886/00** {Use of specific polymers obtained by polycondensation or polyaddition, not provided for in a single one of main groups [B29K 2859/00](#) to [B29K 2885/00](#), as mould material}
- B29K 2893/00** {Use of natural resins (as such [C08L 93/00](#)), e.g. shellac (as such [C08L 93/02](#)) or derivatives thereof, as mould material ([B29K 2801/00](#), [B29K 2803/00](#), [B29K 2805/00](#), [B29K 2807/00](#) and [B29K 2889/00](#) take precedence)}
- B29K 2896/00** {Use of specified macromolecular materials not provided for in a single one of main groups [B29K 2801/00](#) - [B29K 2895/00](#), as mould material}
- B29K 2909/00** {Use of inorganic materials not provided for in groups [B29K 2803/00](#) - [B29K 2807/00](#), as mould material}
- B29K 2911/00** {Use of natural products or their composites, not provided for in groups [B29K 2801/00](#) - [B29K 2809/00](#), as mould material}

## Project: N/A (B29L)

B29L

**INDEXING SCHEME ASSOCIATED WITH SUBCLASS [B29C](#), RELATING TO PARTICULAR ARTICLES**

## NOTE

This subclass constitutes an indexing scheme for non-obligatory use only. The indexing scheme may be used to identify information which supplements subject matter already classified in subclass [B29C](#). The indexing codes of this subclass, of which only the pertinent ones should be selected, are added in conformity with paragraph 82 of the Guide so as to provide information concerning the articles produced

This subclass constitutes an indexing scheme associated with subclass [B29C](#) {and group [B29B 17/00](#). Parts of specified articles are indexed with the same index codes as the articles}

- B29L 2019/00** Buttons or semi-finished parts of buttons {for haberdashery (push-buttons [B29L 2031/46](#))}
- U B29L 2022/00** Hollow articles (tubular articles [B29L 2023/00](#); pneumatic tyres [B29L 2030/00](#))
- B29L 2022/02 · Inflatable articles (balls [B29L 2031/54](#); {inner tyres [B29L 2023/245](#)})
- B29L 2023/00** Tubular articles ([B29L 2024/00](#) takes precedence; {catheters [B29L 2031/7542](#)})

**U B29L 2031/00****Other particular articles****WARNING**

Groups [B29L 2031/70](#) - [B29L 2031/7782](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: [B29L 2031/70](#) - [B29L 2031/7782](#): [B29L 31/00](#)

- B29L 2031/06 · Rods, e.g. connecting rods, {-rails, stakes (shafts [B29L 2031/75](#); poles, masts, posts [B29L 2031/766](#))}
- B29L 2031/22 · Hinges, {-pivots}
- B29L 2031/32 · Wheels, pinions, pulleys, castors or rollers, {-Rims (inner tubes [B29L 2023/245](#); gears [B29L 2015/003](#); tyres [B29L 2030/00](#))}
- B29L 2031/40 · Test specimens; {-Models, e.g. model cars (mannequins [B29L 2031/7028](#)); Probes}
- B29L 2031/46 · Knobs or handles, {-push-buttons, grips (buttons for haberdashery [B29L 2019/00](#), press-buttons as fastening element [B29L 2031/7282](#))}
- B29L 2031/52 · Sports equipment; {-Games; Articles for amusement}; Toys ([B29L 2031/54](#) takes precedence)
- B29L 2031/56 · Stoppers or lids for bottles, jars, or the like {-e.g. closures}

**Project: N/A (B30B)****B30B**

**PRESSES IN GENERAL (producing ultra-high pressure or ultra-high pressure and high temperature to effect modifications of a substance, e.g. for making artificial diamonds [B01J 3/00](#) )}{(compressing means for refuse receptacles [B65F 1/1405](#))}**

**NOTE**

This subclass provides for presses in general and also for those presses, for particular purposes, which are not provided for elsewhere.

**U B30B 9/00****Presses specially adapted for particular purposes**

## B30B 9/02

- for squeezing-out liquid from liquid-containing material, e.g. juice from fruits, oil from oil-containing material (kitchen equipment [A47J](#); filtering, e.g. straining solids from liquids, using presses in combination with filtering elements [B01D](#); expelling water from textile fabrics or laundry [D06C](#), [D06F](#); drying [F26](#) {clothes presses [D06F 69/00](#), [D06F 71/00](#)})

## B30B 11/00

**Presses specially adapted for forming shaped articles from material in particulate or plastic state, e.g. briquetting presses, tableting presses (for clay or mixtures containing cement [B28B](#); for plastics materials [B29](#))**

**U B30B 15/00****Details of, or accessories for, presses; Auxiliary measures in connection with pressing (safety devices [F16P](#))**

## B30B 15/16

- Control arrangements for fluid-driven presses (pumps per se [F04](#); hydraulic accumulators per se [F15B](#); valves per se [F16K](#); control devices in general [G05](#))

**Project: N/A (B31B)****B31B**

**MAKING BOXES, CARTONS, ENVELOPES OR BAGS OF PAPER OR CARDBOARD (incising, scoring, in general [B26D 3/08](#); combined making and filling [B65B](#))**

**NOTES**

1. In this subclass, envelopes or bags are regarded as being essentially flexible containers, the final shape of which is determined by their contents.
2. In this subclass, the following expression is used with the meaning indicated:

- "boxes or cartons" includes bags formed similarly to cartons, trays with upstanding side-walls, barrels, tubes and cups, other than articles formed by winding.

3. In this subclass, it is desirable to add the indexing codes of [B31B 2201/00](#) - [B31B 2247/00](#)

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B31B 7/02](#) covered by [B31B 1/02](#)

[B31B 7/14](#) covered by [B31B 1/14](#)  
[B31B 7/60](#) covered by [B31B 1/60](#)  
[B31B 7/74](#) covered by [B31B 1/74](#)  
[B31B 9/00](#) covered by [B31B 3/00](#)  
[B31B 9/02](#) covered by [B31B 3/02](#)  
[B31B 9/14](#) covered by [B31B 3/14](#)  
[B31B 9/26](#) covered by [B31B 3/26](#)  
[B31B 9/60](#) covered by [B31B 3/60](#)  
[B31B 9/74](#) covered by [B31B 3/74](#)  
[B31B 11/02](#) covered by [B31B 1/02](#)  
[B31B 11/14](#) covered by [B31B 1/14](#)  
[B31B 11/26](#) covered by [B31B 1/26](#)  
[B31B 11/60](#) covered by [B31B 1/60](#)  
[B31B 11/74](#) covered by [B31B 1/74](#)  
[B31B 13/02](#) covered by [B31B 1/02](#)  
[B31B 13/14](#) covered by [B31B 1/14](#)  
[B31B 13/60](#) covered by [B31B 1/60](#)  
[B31B 13/74](#) covered by [B31B 1/74](#)  
[B31B 15/14](#) covered by [B31B 1/14](#)  
[B31B 15/26](#) covered by [B31B 1/26](#)  
[B31B 15/60](#) covered by [B31B 1/60](#)  
[B31B 15/74](#) covered by [B31B 1/74](#)  
[B31B 21/02](#) covered by [B31B 19/02](#)  
[B31B 21/14](#) covered by [B31B 19/14](#)  
[B31B 21/26](#) covered by [B31B 19/26](#)  
[B31B 21/60](#) covered by [B31B 19/60](#)  
[B31B 21/74](#) covered by [B31B 19/74](#)  
[B31B 23/02](#) covered by [B31B 19/02](#), [B31B 23/00](#)  
[B31B 23/14](#) covered by [B31B 19/14](#), [B31B 23/00](#)  
[B31B 23/26](#) covered by [B31B 19/26](#), [B31B 23/00](#)  
[B31B 23/60](#) covered by [B31B 19/60](#), [B31B 23/00](#)  
[B31B 23/74](#) covered by [B31B 19/74](#), [B31B 23/00](#)  
[B31B 25/02](#) covered by [B31B 19/02](#), [B31B 25/00](#)  
[B31B 25/14](#) covered by [B31B 19/14](#), [B31B 25/00](#)  
[B31B 25/26](#) covered by [B31B 19/26](#), [B31B 25/00](#)  
[B31B 25/60](#) covered by [B31B 19/60](#), [B31B 25/00](#)  
[B31B 25/74](#) covered by [B31B 19/74](#), [B31B 25/00](#)  
[B31B 27/02](#) covered by [B31B 19/02](#), [B31B 27/00](#)  
[B31B 27/14](#) covered by [B31B 19/14](#), [B31B 27/00](#)  
[B31B 27/26](#) covered by [B31B 19/26](#), [B31B 27/00](#)  
[B31B 27/60](#) covered by [B31B 19/60](#), [B31B 27/00](#)  
[B31B 27/74](#) covered by [B31B 19/74](#), [B31B 27/00](#)  
[B31B 29/02](#) covered by [B31B 19/02](#), [B31B 29/00](#)  
[B31B 29/14](#) covered by [B31B 19/14](#), [B31B 29/00](#)  
[B31B 29/26](#) covered by [B31B 19/26](#), [B31B 29/00](#)  
[B31B 31/00](#) covered by [B31B 29/00](#)  
[B31B 31/02](#) covered by [B31B 19/02](#), [B31B 29/00](#)  
[B31B 31/14](#) covered by [B31B 19/14](#), [B31B 29/00](#)  
[B31B 31/26](#) covered by [B31B 19/26](#), [B31B 29/00](#)

B31B 31/60	covered by	<a href="#">B31B 29/60</a>
B31B 31/74	covered by	<a href="#">B31B 29/74</a>
B31B 33/00	covered by	<a href="#">B31B 29/00</a>
B31B 33/02	covered by	<a href="#">B31B 19/02</a> , <a href="#">B31B 29/00</a>
B31B 33/14	covered by	<a href="#">B31B 19/14</a> , <a href="#">B31B 29/00</a>
B31B 33/26	covered by	<a href="#">B31B 19/26</a> , <a href="#">B31B 29/00</a>
B31B 33/60	covered by	<a href="#">B31B 29/60</a>
B31B 33/74	covered by	<a href="#">B31B 29/74</a>
B31B 35/00	covered by	<a href="#">B31B 29/00</a>
B31B 35/02	covered by	<a href="#">B31B 19/02</a> , <a href="#">B31B 29/00</a>
B31B 35/14	covered by	<a href="#">B31B 19/14</a> , <a href="#">B31B 29/00</a>
B31B 35/26	covered by	<a href="#">B31B 19/26</a> , <a href="#">B31B 29/00</a>
B31B 35/60	covered by	<a href="#">B31B 29/60</a>
B31B 35/74	covered by	<a href="#">B31B 29/74</a>
B31B 37/02	covered by	<a href="#">B31B 19/02</a> , <a href="#">B31B 37/00</a>
B31B 37/14	covered by	<a href="#">B31B 19/14</a> , <a href="#">B31B 37/00</a>
B31B 37/26	covered by	<a href="#">B31B 19/26</a> , <a href="#">B31B 37/00</a>
B31B 37/60	covered by	<a href="#">B31B 19/60</a> , <a href="#">B31B 37/00</a>
B31B 37/74	covered by	<a href="#">B31B 19/74</a> , <a href="#">B31B 37/00</a>
B31B 39/02	covered by	<a href="#">B31B 19/02</a> , <a href="#">B31B 39/00</a>
B31B 39/14	covered by	<a href="#">B31B 19/14</a> , <a href="#">B31B 39/00</a>
B31B 39/26	covered by	<a href="#">B31B 19/26</a> , <a href="#">B31B 39/00</a>
B31B 39/60	covered by	<a href="#">B31B 19/60</a> , <a href="#">B31B 39/00</a>
B31B 41/02	covered by	<a href="#">B31B 19/02</a> , <a href="#">B31B 41/00</a>
B31B 41/14	covered by	<a href="#">B31B 19/14</a> , <a href="#">B31B 41/00</a>
B31B 41/26	covered by	<a href="#">B31B 19/26</a> , <a href="#">B31B 41/00</a>
B31B 41/60	covered by	<a href="#">B31B 19/60</a> , <a href="#">B31B 41/00</a>
B31B 41/74	covered by	<a href="#">B31B 19/74</a> , <a href="#">B31B 41/00</a>

**U B31B 19/00 Machinery characterised by making rectangular envelopes or bags of flat form, i.e. without structural provision at the base for thickness of contents ([B31B 21/00](#), [B31B 23/00](#) take precedence)**

- U B31B 19/74     • Auxiliary operations; {Parts; Components}
- B31B 19/90     • - Attaching accessories not otherwise provided for, e.g. opening or closure devices, tear strings {patches}

**B31B 21/00 Machinery characterised by making rectangular envelopes or bags of flat form, i.e. without structural provision at the base for thickness of contents, from sheets or blanks, e.g. from flattened tubes {e.g. making mailing envelopes}**

**B31B 29/00 Machinery characterised by making envelopes or bags with structural provision at the base for thickness or contents ([B31B31/00](#) to [B31B 37/00](#) take precedence; {~~[B31B31/00](#)~~,~~[B31B33/00](#)~~,~~[B31B35/00](#)~~ takes precedence)}**

**B31B 49/00 Machinery, accessories or processes not provided for in [B31B 1/00](#) to [B31B 47/00](#) (forms or constructions of boxes, cartons, envelopes or bags [B65D](#))**

NOTE

Processes dependent on the use of specific machinery provided for in groups [B31B 1/00](#) to [B31B 45/00](#) are classified in those groups.

**Project: N/A (B31D)**

B31D 5/00

**Multiple-step processes for making three-dimensional articles; {Making three-dimensional articles}{assembly {or manufacture} of garlands [A41G 1/04](#); making receptacles or containers [B31B](#); making tubes [B31B](#), [B31C](#)}**

NOTE

Making drinking straws is classified in group [B31D 5/00](#), e.g. [B31D 5/0095](#)

**Project: N/A (B32B)**

B32B

**LAYERED PRODUCTS, i.e. PRODUCTS BUILT-UP OF STRATA OF FLAT OR NON-FLAT, e.g. CELLULAR OR HONEYCOMB, FORM**

NOTES

1. This subclass covers:

- layered products comprising different kinds of material or layered products not characterised by the particular kind of material used;
- a product similar to a layered product but comprising only material in the form of a sheet or network embedded in a mass of plastics or of physically-similar substances which mass penetrates the said sheet or network and lies on both sides of the latter (e.g. so that the sheet or network reinforces the plastics substance) PROVIDED THAT the embedded sheet or network extends coherently or connectedly over substantially the whole area of the product; thus the embedded sheet or network may be a fabric or a series of rods connected by cross wires. The manner of making such a product is, however, classified in this subclass only if it is essentially a process of building-up an assembly of layers of which at least one outer layer is preformed. If the embedded material comprises only a series of unconnected rods, the product is not classified in this subclass.

2. This subclass does not cover:

- processes or apparatus used in, or in connection with, the production or treatment of any product, if the process or apparatus is fully classifiable in a single other class or subclass for processes or apparatus, e.g. [B05](#), [B29](#), [B44D](#), [C08J](#), [C09J](#), [C23](#);
- compositions or preparation or treatment thereof, unless they are essentially restricted to layered products and cannot be fully classified in another class without ignoring this restriction;
- etched metallic pattern on the surface of a printed circuit board.

3. In this subclass:

- a film formed on a layer by spreading a substance thereon is not considered to constitute a layer itself if it serves only as an adhesive or its purpose is merely to finish a surface of a product;
- groups designating products cover also methods or apparatus specially adapted for producing such products.

4. In this subclass, the following terms or expressions are used with the meanings indicated:

- "layer" is a sheet or strip or anything else having a small thickness relatively to its other dimensions which, together with at least one other layer, exists in a product, whether it pre-existed, e.g. as a separate sheet or strip, or was formed during the production of the layered product. It may or may not be homogeneous or cohesive; it may be an assembly of fibres or pieces of material. It may be discontinuous, e.g. in the form of a grating, honeycomb, or frame. It may or may not be in complete contact with the next layer, e.g. a corrugated layer against a flat layer;
- "layered product" comprises at least two layers secured together. The term "secured" includes any method of uniting layers, e.g. needling,

stitching, gluing, nailing, dovetailing or the interposition of an adhesive or adhesive impregnated support. It may also be an intermediate stage in the production of an article which is not layered in its final form, e.g. a panel with a protective layer which is stripped off when the panel is placed in its position of use. The layers are preformed layers or layers formed IN SITU on a preformed layer and may consist of coherent solid materials, including honeycombs and other cellular materials or of non-coherent solid materials composed of assemblies of strands, strips, fibres, tiles or the like;

- "filamentary layer" means a layer of threads or filaments of any substance (e.g. wires) of more or less unlimited length placed in an orderly arrangement and secured together; it may be woven, knitted, braided, or netted, or formed of threads crossed or laid side by side and bonded together;
- "fibrous layer" means a random assembly of fibres of limited length, e.g. felt, fleece; the fibres {being} interengaged or connected, e.g. by adhesive.

5. In this subclass,

- "First place rule" is used in the following groups [B32B 9/04](#)<sup>-</sup>, [B32B 11/04](#)<sup>-</sup>, [B32B 13/04](#)<sup>-</sup>, [B32B 15/04](#)<sup>-</sup>, [B32B 19/04](#)<sup>-</sup>, [B32B 21/04](#)<sup>-</sup>, [B32B 23/046](#)<sup>-</sup>, [B32B 23/12](#)<sup>-</sup>, [B32B 25/04](#)<sup>-</sup>, [B32B 27/06](#)<sup>-</sup>, [B32B 29/002](#)<sup>-</sup>.

However, when these groups are not characterised by the specific material adjacency to be classified, then, multiple classification is given, e.g. a layered product having a stone layer next to a bituminous layer would be classified in [B32B 9/04](#) and in [B32B 11/04](#)<sup>-</sup>. For a cellulosic plastic layer next to a metal layer or to a wood layer [B32B 23/042](#) or [B32B 23/044](#)<sup>-</sup>, respectively, take precedence (i.e. first rule does not apply). For layered products comprising at least two ceramic layers, products comprising only ceramic layers are classified in group [B32B 18/00](#) and products comprising two ceramics layers and at least one layer of another material are classified in [B32B 18/00](#) and [B32B 9/04](#)<sup>-</sup>.

#### WARNING

The following IPC are not used in the CPC scheme Subject matter covered by these groups is classified in the following CPC groups—~~[B32B 1/04](#)~~  
~~covered by [B32B 3/02](#)—[B32B 3/08](#)—[B32B 1/06](#) covered by [B32B 13/02](#)—[B32B 3/08](#)—[B32B 3/22](#) covered by [B32B 3/08](#)—[B32B 3/22](#)—[B32B 3/24](#) covered by [B32B 3/266](#)—[B32B 5/28](#) covered by [B32B 2260/021](#)—[B32B 2260/023](#)—[B32B 17/02](#) covered by [B32B 2262/101](#)—[B32B 17/04](#) covered by [B32B 2262/101](#) and [B32B 2260/04](#)—[B32B 17/12](#) covered by [B32B 17/067](#)—[B32B 23/02](#) covered by [B32B 2262/04](#) and [B32B 5/02](#)—[B32B 5/12](#)—[B32B 27/02](#)—covered by [B32B 2262/02](#)—[B32B 2262/0292](#) and [B32B 5/02](#)—[B32B 5/12](#)—[B32B 27/04](#) covered by [B32B 2260/048](#)~~

- ~~[B32B 1/04](#) covered by [B32B 3/02](#) - [B32B 3/08](#)~~
- ~~[B32B 1/06](#) covered by [B32B 13/02](#)~~
- ~~[B32B 3/08](#) - [B32B 3/22](#) covered by [B32B 3/08](#) -[B32B 3/22](#)~~
- ~~[B32B 3/24](#) covered by [B32B 3/266](#)~~
- ~~[B32B 5/28](#) covered by [B32B 2260/021](#) - [B32B 2260/023](#)~~
- ~~[B32B 17/02](#) covered by [B32B 2262/101](#)~~
- ~~[B32B 17/04](#) covered by [B32B 2262/101](#) and [B32B 2260/04](#)~~
- ~~[B32B 17/12](#) covered by [B32B 17/067](#)~~
- ~~[B32B 23/02](#) covered by [B32B 2262/04](#) and [B32B 5/02](#) - [B32B 5/12](#)~~
- ~~[B32B 27/02](#) covered by [B32B 2262/02](#) - [B32B 2262/0292](#) and [B32B 5/02](#)~~
- ~~[B32B 5/12](#)~~
- ~~[B32B 27/04](#) covered by [B32B 2260/048](#)~~

- B32B 3/00** **Layered products comprising a layer with external or internal discontinuities or unevennesses, or a layer of non-planar form {(fibrous or filamentary layers [B32B 5/02](#); particulate layers [B32B 5/16](#); foamed layers [B32B 5/18](#)); Layered products having particular features of form (receptacles or tubular products [B32B 1/00](#))}**
- U B32B 3/02 · characterised by features of form at particular places, e.g. in edge regions {(non-uniform thickness [B32B 3/263](#))}
- B32B 3/08 · · characterised by added members at particular parts {(layer formed of separate pieces of material which are juxtaposed side-by-side [B32B 3/14](#); [B32B 3/18](#))}
- U B32B 3/26 · characterised by a particular shape of the outline of the cross-section of a continuous layer; characterised by a layer with cavities or internal voids {([B32B 27/205](#) takes precedence; foam layer [B32B 15/08](#)); {characterised by an apertured layer}
- B32B 3/30 · · characterised by a layer formed with recesses or projections, e.g. {hollows, grooves, protuberances, ribs (apertured layer [B32B 3/266](#); layer with cavities or internal voids [B32B 3/26](#))}
- U **B32B 5/00** **Layered products characterised by the non-homogeneity or physical structure {, i.e. comprising a fibrous, filamentary, particulate or foam layer; Layered products characterised by having a layer differing constitutionally or physically in different parts}**
- NOTE
- In this group, fibres, filaments, granules, or powder forming or included in a layer may be impregnated, bonded together, or embedded in a substance such as synthetic resin. If the substance of the fibres, or the like, or the impregnating, bonding, or embedding substance, is important it is classified in the relevant group for the substance.
- B32B 5/02 · characterised by structural features of a {fibrous or filamentary layer ([B32B 15/02](#); [B32B 21/02](#) take precedence; layer formed of particles [B32B 5/16](#); layers formed of natural mineral fibres [B32B 19/00](#); coated or impregnated fibrous or filamentary layers [B32B 2255/02](#) or [B32B 2260/021](#))}
- B32B 5/16 · characterised by features of a layer formed of particles, e.g. chips, powder {, granules ([B32B 21/02](#) takes precedence; layers formed of natural mineral particles [B32B 19/00](#); coated or impregnated particulate layers [B32B 2255/04](#) or [B32B 2260/025](#))}
- B32B 5/22 · characterised by the presence of two or more layers which {are next to each other and are fibrous, filamentary, formed of particles or foamed ([B32B 19/06](#); [B32B 19/048](#)[B32B 19/047](#); [B32B 29/005](#) to [B32B 29/04](#) take precedence)}
- U B32B 5/24 · · one layer being a fibrous or filamentary layer
- B32B 5/26 · · · another layer {next to it also being fibrous or filamentary (relative arrangement of fibres or filaments of different layers [B32B 5/12](#); all layers being fibrous or filamentary [B32B 2250/20](#); two or more impregnated fibrous or filamentary layers [B32B 2260/023](#))}
- B32B 9/00 - B32B 33/00** **Layered products characterised by particular substances used**
- NOTE
- In groups [B32B 9/00](#) to [B32B 29/00](#), the following expressions are used with the meanings indicated:
- "specific substance" covers specified alternative substances if they are all covered by a single main group;
  - "particulate layer" means a layer of particles, e.g. chips, chopped fibres, powder;

- {"essentially" means that if an alteration or removal of such a layer occurred it would alter the scope of the invention}

- U B32B 15/00 Layered products comprising {a layer of} metal**
- B32B 15/01 • all layers being exclusively metallic {(making layered metal workpieces by pressure cladding [B23K 20/22](#); making coatings with a metallic material characterised by its composition [C23C 30/00](#))}
- B32B 15/04 • comprising metal as the main or only constituent of a layer, {which is next to another layer of the same or of a different material ([B32B 17/061](#) and [B32B 23/042](#) take precedence; next to a bituminous or tarry layer [B32B 11/08](#); next to a water-setting substance layer [B32B 13/06](#))}
- B32B 15/18 • comprising iron or steel {([B32B 15/011](#); [B32B 15/012](#) and [B32B 15/013](#) take precedence)}
- U B32B 17/00 Layered products essentially comprising sheet glass, or glass, slag, or like fibres**
- B32B 17/06 • comprising glass as the main or only constituent of a layer, next to another layer of a specific {material (coating on glass [C03C 17/00](#); safety glazings [B32B 17/08](#) or [B32B 17/10](#); fire protective glazing with intumescent layers [B32B 17/069](#))}
- B32B 17/10 • of synthetic resin {(producing optical elements from plastics [B29D 11/00](#); constructional form of optical elements [G02B](#))}
- NOTES**
1. In this group a layer of organic glass is not considered as a glass layer but as a synthetic resin layer];
2. [N: Inventions related to safety glazings (laminated glazings) are classified in all appropriate subgroups [B32B 17/10009](#) to [B32B 17/10807](#), whereby transparent polymeric layers other than the interlayer ( [B32B 17/1055](#) ) are classified using indexing codes
- U B32B 17/10165 • • • {particular functional features of the laminated glazing}
- B32B 17/10339 • • • • {Specific parts of the laminated glazing being colored or tinted (tinted glass [B32B 17/1011](#); tinted interlayer [B32B 17/10651](#))}
- B32B 17/10431 • • • • {Devices for the modulation of light incorporated into the laminated glazing (metallic or dielectric coatings [B32B 17/10174](#); coating on glass in general [C03C 17/00](#))}
- B32B 17/10541 • • • • {The laminated glazing acting as an illumination device , i.e. comprising a light source or a light guide (light guides in general [G02B 6/00](#); structural combinations of lighting devices with other articles [F21V 33/00](#); lighting devices for vehicle interior [B60Q 3/02](#))}
- U B32B 17/1055 • • • {characterized by the resin layer , i.e. interlayer}
- U B32B 17/10651 • • • • {comprising colorants, e.g. dyes or pigments}
- B32B 17/10669 • • • • • {Luminescent agents (luminescent materials [C09K 11/00](#); optical brightening agents [C08K 5/0041](#))}
- U B32B 17/10807 • • • {Making layered products containing glass and synthetic resin layers; apparatus therefor}
- U B32B 17/10899 • • • • {by introducing interlayers of synthetic resin}
- U B32B 17/10908 • • • • • {in liquid form}
- B32B 17/10917 • • • • • • {between two pre-positioned glass layers (between preformed layers in general [B29C 39/126](#); spacing elements for window units comprising two or more parallel panes [E06B 3/663](#))}

- B32B 18/00** Laminated products composed mainly of ceramics, e.g. refractory materials **{(semi-permeable membranes made of inorganic material [B01D 71/02](#); ceramic coatings on glass [C03C 17/00](#); joining of ceramic layers [C04B 37/00](#); coating of ceramics [C04B 41/45](#); applying ceramic coatings on metallic materials [C23](#); applying ceramic coatings on silicon for semi-conductor purposes [H01L](#))}**
- NOTE  
In group [B32B 18/00](#), from 01-10-2008 onwards, features relating to interlayers, additional compositional information or further processing are indexed with codes chosen from [C04B 2237/00](#) to [C04B 2237/88](#)
- U B32B 21/00** Layered products comprising **{a layer of} wood, e.g. wood board, veneer, wood particle board**
- B32B 21/04 · {comprising wood as the main or only constituent of a layer, which is next to another layer of the same or of a different material} ([B32B 17/062](#) and [B32B 23/044](#) take precedence; next to a layer of a particular substance [B32B 9/042](#); next to a bituminous or tarry layer [B32B 11/042](#); next to a water setting substance layer [B32B 13/10](#); next to a metal layer [B32B 15/10](#); next to a layer formed of natural mineral fibres or particles [B32B 19/042](#))
- B32B 25/00** Layered products comprising **{a layer of} natural or synthetic rubber **{(B32B 5/02, B32B 5/16, B32B 5/18 take precedence; thermoplastic elastomer [B32B 2274/00](#))}****
- B32B 25/04 · comprising rubber as the main or only constituent of a layer, {which is next to another layer of the same or of a different material ([B32B 17/063](#) takes precedence; next to a layer of a particular substance [B32B 9/043](#); next to a bituminous or tarry layer [B32B 11/044](#); next to a water setting substance layer [B32B 13/042](#); next to a metal layer [B32B 15/06](#); next to a layer formed of natural mineral fibres or particles [B32B 19/043](#); next to a wood layer [B32B 21/045](#); next to a cellulosic plastic layer [B32B 23/046](#))}
- B32B 27/00** Layered products comprising **{a layer of} synthetic resin **{(B32B 5/02, B32B 5/16, B32B 5/18 take precedence; thermoplastic elastomer [B32B 2274/00](#))}****
- NOTE  
This group covers all synthetic resins except those covered by [B32B 25/00](#) or [B32B 23/00](#)
- B32B 27/06 · as the main or only constituent of a layer, {which is next to another layer of the same or of a different material ([B32B 17/064](#) takes precedence; next to a layer of a particular substance [B32B 9/045](#); next to a bituminous or tarry layer [B32B 11/046](#); next to a water setting substance layer [B32B 13/12](#); next to a metal layer [B32B 15/08](#); next to a layer formed of natural mineral fibres or particles [B32B 19/045](#); next to a wood layer [B32B 21/08](#); next to a cellulosic plastic layer [B32B 23/08](#); next to a natural or synthetic rubber layer [B32B 25/08](#))}
- B32B 27/08 · · of synthetic resin **{(all layers being polymeric, made of polymers belonging to those covered by [B32B 27/32](#), by [B32B 27/36](#), or by [B32B 27/30](#) and [B32B 27/32](#), [B32B 2250/24](#) to [B32B 2250/246](#))}**
- U B32B 29/00** Layered products comprising **{a layer of} paper or cardboard**

- B32B 29/002
- {as the main or only constituent of a layer, which is next to another layer of the same or of a different material ([B32B 17/065](#) takes precedence; next to a layer of a particular substance [B32B 9/06](#); next to a bituminous or tarry layer [B32B 11/06](#); next to a water-setting substance layer [B32B 13/08](#); next to a metal layer [B32B 15/12](#); next to a layer formed of natural mineral fibres or particles [B32B 19/046](#); next to a wood layer [B32B 21/06](#); next to a cellulosic plastic layer [B32B 23/06](#); next to a natural or synthetic rubber layer [B32B 25/06](#); next to a synthetic resin layer [B32B 27/10](#))}
- B32B 29/06
- specially treated, e.g. surfaced, parchmentised {([B32B 2255/12](#)-, [B32B 2260/028](#) take precedence)}
- B32B 37/00 -  
B32B 43/00**
- Methods or apparatus for making layered products; Treatment of the layers or of the layered products**
- NOTE
- In groups [B32B 37/00](#) { , [B32B 38/00](#)-, [B32B 41/00](#)} and [B32B 39/00](#)-, the following expressions are used with the meaning indicated:
- {"lay-up" is considered to be the action of combining separate layers, one on top of the other, in order to form a half-product for entering the laminating process}
  - "laminating" means the action of combining previously unconnected {but possibly laid up} layers to become one product whose layers will remain together;
  - "partial laminating" occurs when one layer does not fully cover a surface of another layer, whereby the layer with the greater surface area is laminated on only part of its surface;
  - "adhesive" means a layer, or part of a layer, applied in any state or in any manner which is incorporated for the purpose of bonding.
- B32B 37/00**
- Methods or apparatus for laminating, e.g. by curing or by ultrasonic bonding {(making non-planar products [B32B 1/00](#); making products characterised by particular features of structure or of composition, see the relevant groups for such products, e.g. making layered products containing glass and synthetic resin layers [B32B 17/10807](#); coating of single webs or the like [B05](#))}**
- U B32B 37/14
- characterised by the properties of the layers
- B32B 37/24
- with at least one layer not being coherent before laminating, e.g. made up from granular material sprinkled onto a substrate ([B32B 37/15](#) takes precedence)
- NOTE
- When classifying in group [B32B 37/24](#)-, the technique can be further indexed by using the indexing codes chosen from [B32B 37/24](#) and subgroups
- B32B 37/26
- with at least one layer which influences the bonding during the lamination process, e.g. release layers or pressure equalising layers
- NOTE
- When classifying in group [B32B 37/26](#)-, said at least one layer can be further indexed by using the indexing codes chosen from [B32B 37/26](#) and subgroups
- U B32B 38/00**
- Ancillary operations in connection with laminating processes**
- B32B 38/0004
- {Cutting, tearing or severing, e.g. bursting; Cutter details (cutting in general [B26D](#);- laminating combined with punching or perforating [B32B 38/04](#);- removing all or part of the layers [B32B 38/10](#);- cutting in combination with laying up and registration [B32B 38/185](#) takes precedence)}

- B32B 38/0012 · {Mechanical treatment, e.g. roughing, deforming, stretching}
- NOTE  
When classifying in group [B32B 38/0012](#), the treatment can be further indexed by using the indexing codes chosen from [B32B 38/0012](#) and subgroups
- B32B 38/0036 · {Heat treatment (for heating or cooling of layers during lamination [B32B 37/06](#)-, [B32B 37/08](#))}
- NOTE  
When classifying in group [B32B 38/0036](#)-, the heat treatment can be further indexed by using the indexing codes chosen from [B32B 38/0036](#) and subgroups
- B32B 38/04 · Punching, slitting or perforating
- NOTE  
When classifying in group [B32B 38/04](#)-, the operation can be further indexed by using the indexing codes chosen from [B32B 38/04](#) and subgroups
- U B32B 38/16 · Drying; Softening; Cleaning
- B32B 38/164 · · {Drying}
- NOTE  
When classifying in group [B32B 38/164](#)-, the drying operation can be further indexed by using the indexing codes chosen from [B32B 38/164](#) and subgroups
- U B32B 2264/00 Composition of particles which form a particulate layer or are present as additives**
- U B32B 2264/02 · Synthetic macromolecular particles
- U B32B 2264/0214 · · Particles made of materials belonging to [B32B 27/00](#)
- B32B 2264/0257 · · · Polyolefin particles (vinyl or acrylic copolymers [B32B 2264/0228](#)-, [B32B 2264/025](#))
- U B32B 2266/00 Composition of foam**
- U B32B 2266/02 · Organic
- U B32B 2266/0214 · · Materials belonging to [B32B 27/00](#)
- B32B 2266/025 · · · Polyolefin (vinyl or acrylic copolymers [B32B 2266/0221](#)-, [B32B 2266/0242](#))
- B32B 2274/00 Thermoplastic elastomer material (thermoplastic elastomer fibres [B32B 2262/0215](#)-, thermoplastic elastomer particles [B32B 2264/0221](#)-, thermoplastic elastomer foam [B32B 2266/0292](#))**
- U B32B 2317/00 Animal or vegetable based**
- B32B 2317/18 · Cellulose, modified cellulose or cellulose derivatives, e.g. viscose ([B32B 2317/10](#)-, [B32B 2317/12](#)-, [B32B 2317/16](#) take precedence)
- B32B 2413/00 Belts (conveyer belts [B32B 2433/02](#)-, drive belts [B32B 2433/04](#))**
- Project: N/A (B41C)**
- U B41C 1/00 Forme preparation**
- U B41C 1/02 · Engraving; Heads therefor (recording on record carriers, heads therefor [G11B](#))

- B41C 1/025
- {characterised by means for the liquid etching of substrates for the manufacturing of relief or intaglio printing forms, already provided with resist pattern}
- NOTE  
Attention is drawn to the title of class [B41](#) and to subclass [H04N](#), in particular to the Notes following the title of that subclass and to the group [H04N 1/00](#)
- B41C 1/055
- Thermographic processes for producing printing formes {e.g. with a thermal print head} ([B41C 1/02](#) takes precedence; {-fabrication of relief or intaglio plates by ablative recording with a laser beam [B41C 1/05](#); production of lithographic forms [B41C 1/10](#); producing of screen printing forms or stencils [B41C 1/14](#)})
- B41C 1/06
- Transferring ([B41C 1/10](#), [B41C 1/18](#) take precedence)
- B41C 1/18
- Curved printing formes or printing cylinders {([B41C 1/10](#), [B41C 1/14](#) take precedence)}

**Project: N/A (B41F)**

**B41F** **PRINTING MACHINES OR PRESSES (machines for manufacturing footwear incorporating printing or embossing apparatus [A43D](#), e.g. [A43D 8/26](#), [A43D 95/14](#); presses in general [B30B](#); making of printing surfaces [B41C](#), [B41D](#); manifolding devices, office printing machines [B41L](#); stencilling [B41L](#), {[B44D](#)} ; printing processes not dependent on the use of special machines [B41M](#); duplicating or marking by sublimation or volatilisation of design [B41M 5/035](#); thermography [B41M 5/26](#); embossing decorations or marks [B44B 5/00](#); {-applying transfers or decalcomanias [B44C 1/16](#)}; handling thin or filamentary material [B65H](#); electrography, electrophotography, magnetography [G03G](#))**

NOTE

Attention is drawn to Notes 1 and 2 following the title of subclass [B41L](#).

- U B41F 1/00** **Platen presses, i.e. presses in which printing is effected by at least one essentially-flat pressure-applying member co-operating with a flat type-bed**
- U B41F 1/04
- for mono-impression printing, e.g. on sheets
- B41F 1/06
- with platen maintained parallel to bed during movement (preparing stereotype matrices using presses [B41D 1/06](#); {-presses [B30B](#)})
- U B41F 7/00** **Rotary lithographic machines {(such office printing machines [B41L 7/00](#))}**
- U B41F 7/20
- Details
- U B41F 7/24
- Damping devices
- B41F 7/37
- with supercooling for condensation of air moisture (cooling forme or impression cylinders [B41F 13/22](#); {-cooling ink or ink rollers [B41F 31/002](#)})
- U B41F 13/00** **Common details of rotary presses or machines**
- U B41F 13/008
- Mechanical features of drives, e.g. gears, clutches
- B41F 13/012
- Taking-up backlash {(devices for taking-up backlash in general [F16H 55/00](#), e.g. [F16H 55/18](#))}
- B41F 13/02
- Conveying or guiding webs through presses or machines (web handling in general [B65H](#), e.g. step-by-step advancement [B41F 21/00](#), turning or reversing [B65H 23/32](#))
- B41F 13/54
- Auxiliary folding, cutting, collecting, or depositing of sheets or webs (in general [B26D](#), [B65H](#))
- U B41F 15/00** **Screen printers (for selective printing [B41J 2/005](#))**
- U B41F 15/14
- Details

- B41F 15/44
- squeegees or doctors (doctors of rotary intaglio printing presses [B41F 9/10](#) {for photographic purposes [G03D 15/00](#)})
- B41F 17/00** Printing apparatus or machines of special types or for particular purposes, not otherwise provided for (hand stamps, plier-like tools for printing or punching tickets or the like [B41K](#); addressographs or other office printing equipment [B41L](#); coding or marking of packaging material or of completed packages in packaging machines [B65B 61/00](#); ticket printing and issuing apparatus [G07B](#))
- B41F 17/003
- {Special types of machines for printing textiles (using the screen printing process [B41F 15/00](#); printing on knitted fabrics [B41F 17/38](#)})
- B41F 19/00** Apparatus or machines for carrying out printing operations combined with other operations (auxiliary perforating apparatus associated with printing devices [B41G 7/00](#); coding or marking in association with packaging [B65B 61/00](#); label dispensers having printing equipment [B65C](#))
- B41F 21/00** Devices for conveying sheets through printing apparatus or machines (through platen presses [B41F 1/28](#); feeding sheets to or from printing apparatus or machines [B65H](#); {through manifolding apparatus or the like [B41L 21/00](#)})
- B41F 21/02
- Pins ([B41F 21/12](#), [B41F 21/14](#) take precedence)
- B41F 21/04
- Grippers ({[B41F 21/08](#), [B41F 21/10](#)} [B41F 21/12](#), [B41F 21/14](#) take precedence)
- B41F 23/00** Devices for treating the surfaces of sheets, webs, or other articles in connection with printing (cleaning in general [B08B](#); as a final step in the manufacture of such articles, see appropriate subclasses, e.g. [B29C 71/00](#), [D21H 23/00](#) or [D21H 25/00](#); {in manifolding apparatus or the like [B41L 23/00](#)} ; surface treatment in general [B44D](#), of metal [C23G](#))
- B41F 30/00** Devices for attaching coverings or make-ready devices; Guiding devices for coverings (make-ready devices [B41N 6/00](#); blankets or like coverings [B41N 10/00](#))
- B41F 31/00** Inking arrangements or devices (inking units for platen presses [B41F 1/40](#); for cylinder presses [B41F 3/81](#); {for rotary intaglio printing presses [B41F 9/061](#)} ; applying liquids or other fluent materials to surfaces in general [B05](#); inking arrangements or devices for typewriters or selective printing mechanisms [B41J](#))
- B41F 33/00** Indicating, counting, warning, control, or safety devices (ink supply or metering devices [B41F 31/02](#); such devices in general, see the relevant subclasses, e.g. counting in general [G06M](#))
- B41F 33/02
- Arrangements of indicating devices, e.g. counters (arrangements of counting devices in platen presses [B41F 1/00](#), e.g. [B41F 1/58](#); in cylinder presses [B41F 3/84](#); in typewriters or selective printing mechanisms [B41J 29/20](#) {in manifolding apparatus or the like [B41L 39/00](#)})
- B41F 33/04
- Tripping devices or stop-motions ({tripping devices for doctor blades [B41F 9/1027](#)} ; cylinder-tripping devices of rotary presses or machines [B41F 13/24](#); arrangements for tripping inking rollers [B41F 31/30](#))

**Project: N/A (B41J)****B41J**

**TYPEWRITERS; SELECTIVE PRINTING MECHANISMS, {e.g. INK-JET PRINTERS, THERMAL PRINTERS}, i.e. MECHANISMS PRINTING OTHERWISE THAN FROM A FORME; CORRECTION OF TYPOGRAPHICAL ERRORS (composing [B41B](#); printing on special surfaces [B41F](#); laundry marking [B41K](#); erasers, rubbers or erasing devices [B43L 19/00](#); fluid media for correction of typographical errors by coating [C09D 10/00](#); recording the results of measuring [G01](#); recognition or presentation of data, marking record carriers in digital fashion, e.g. by punching, [G06K](#); franking or ticket-printing and issuing apparatus [G07B](#); electric keyboard switches, in general [H01H 13/70](#), [H03K 17/94](#); coding in connection with keyboards or like devices, in general [H03M 11/00](#); receivers or transmitters for transmission of digital information [H04L](#); transmission or reproduction of documents, or the like, e.g. facsimile transmission, [H04N 1/00](#); printing mechanisms specially adapted for apparatus, e.g. cash registers, weighing machines, producing records of their own performance, see the relevant subclasses)**

NOTES

1. This subclass covers:
  - manually controlled power-operated apparatus or apparatus of this type with additional control by input of recorded information, e.g. on punched cards or tapes;
  - the "print-out" features of apparatus controlled by record carriers or electric signals in so far as these are of general interest, e.g. impression, inking, line-spacing mechanisms, printing heads.
2. This subclass does not cover:
  - electrical features of apparatus controlled by record carriers or electric signals and of interest apart from the "print-out" features of said apparatus;
  - apparatus controlled by record carriers or electric signals, as a whole.
3. In this subclass, the following term is used with the meaning indicated:
  - "paper" covers also similar flexible copy material;
  - "printing material" covers both paper and temporary record carriers from which records are transferred to a paper, but does not cover printing masters, e.g. formes.

**U B41J 2/00**

**Typewriters or selective printing mechanisms characterised by the printing or marking process for which they are designed (mounting, arrangement, or disposition of types or dies [B41J 1/00](#); marking methods [B41M 5/00](#); structure or manufacture of heads, e.g. inductive, for recording by magnetisation or demagnetisation of a record carrier [G11B 5/127](#); heads for reproducing capacitive information [G11B 9/07](#))**

NOTES

1. This group covers devices reproducing only a discrete number of tones, whereas group [H04N 1/00](#) covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales.
2. In this group, the following expressions are used with the meanings indicated:
  - "ink jet" involves the projection of ink on to the printing material, e.g. paper, through a nozzle as a stream of droplets or particles of colouring matter
  - "continuous ink jet" means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle
  - "ink spray" means a spray of ink transported by a stream of charged particles or air on to the printing material

- U B41J 2/005
  - characterised by bringing liquid or particles selectively into contact with a printing material (printing by selective application of impact or pressure on a printing or impression-transfer material [B41J 2/22](#))
- U B41J 2/01
  - • Ink jet
- U B41J 2/135
  - • • Nozzles
- U B41J 2/16
  - • • • Production of nozzles
- B41J 2/1607
  - • • • {Production of print heads with piezoelectric elements ([B41J 2/1606](#), [B41J 2/162](#) take precedence)}
- U B41J 2/435
  - characterised by selective application of radiation to a printing material or impression-transfer material (optical elements, systems, or apparatus [G02B](#); modulation or deflection of light [G02F](#); electrophotography [G03G](#))
- U B41J 2/447
  - • using arrays of radiation sources ([B41J 2/475](#) takes precedence)
- B41J 2/455
  - • • using laser arrays, {-the laser array being smaller than the medium to be recorded}
- B41J 2/485
  - characterised by the process of building-up characters {-or image elements} applicable to two or more kinds of printing or marking processes
- U B41J 3/00**

**Typewriters or selective printing or marking mechanisms, {e.g. ink-jet printers, thermal printers} characterised by the purpose for which they are constructed (cryptographic typewriters [G09C 3/00](#))**
- B41J 3/28
  - for printing downwardly on flat surfaces, e.g. of books, drawings, boxes, {-envelopes, e.g. flat-bed ink-jet printers ([B41J 3/36](#), [B41J 3/407](#), [B41J 3/4071](#), [B41J 3/4073](#), [B41J 3/4075](#), [B41J 3/4076](#), [B41J 3/4078](#) take precedence; flat page-size platens [B41J 11/06](#); conveyor belts [B41J 13/12](#); drawing instruments [B43L 13/00](#), automatic draughting machines [B43L 13/022](#))}
- B41J 3/36
  - for portability, {-i.e. hand-held printers or laptop printers ([B41J 3/4075](#) takes precedence; printers with reduced dimensions [B41J 29/023](#); stackable printers [B41J 29/026](#))}
- B41J 3/407
  - for marking on special material (printing on special surfaces [B41F 7/00](#); {-apparatus or processes for manufacturing printed circuits by printing or dispensing a conductive paste or ink [H05K 3/1241](#))}
- U B41J 3/44
  - Typewriters or selective printing mechanisms having dual functions or combined with, or coupled to, apparatus performing other functions (printing mechanisms coupled to typographical composing machines [B41B 27/41](#))
- B41J 3/50
  - • Mechanisms producing characters by printing and also producing a record by other means {-, e.g. printer combined with RFID writer}(punching mechanisms [G06K](#))
- B41J 3/62
  - for printing on two or more separate sheets or strips of printing material {being conveyed simultaneously to or through the printing zone} ([B41J 3/54](#) takes precedence {; [B41J 15/18](#), [B41J 15/20](#), [B41J 15/22](#) and [B41J 15/24](#) take precedence})
- U B41J 11/00**

**Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers, thermal printers,} for supporting or handling copy material in sheet or web form ({printing on both faces [B41J 3/60](#);} specially adapted for supporting or handling copy material in short lengths [B41J 13/00](#); in continuous form [B41J 15/00](#); holders for text to be copied [B41J 29/00](#) {; handling sheets or webs in general [B65H](#); apparatus for electrographic processes using a charge pattern, e.g. copying machines, [G03G 15/00](#))}**
- B41J 11/20
  - Platen adjustments for varying the strength of impression, for a varying number of papers, for wear or for alignment, {-or for print gap adjustment (adjustments by moving the print head [B41J 25/308](#), [B41J 25/312](#))}
- U B41J 25/00**

**Actions or mechanisms not otherwise provided for**

B41J 25/304 · Bodily-movable mechanisms for print heads or carriages movable towards or from paper surface (type carriers {-rotatable for selection and} sliding for impression [B41J 1/36](#); type carriers {-rotatable for selection and} swinging for impression [B41J 1/40](#); {-line print heads movable towards a cleaning unit [B41J 2/16588](#)})

**U B41J 29/00 Details of, or accessories for, typewriters or selective printing mechanisms not otherwise provided for**

U B41J 29/38 · Drives, motors, controls or automatic cut-off devices for the entire printing mechanism

B41J 29/393 · · Devices for controlling or analysing the entire machine; {-Controlling or analysing mechanical parameters involving printing of test patterns}

### Project: N/A (B41L)

**U B41L 5/00 Autographic registers or like manifolding apparatus using movable strips or webs (movable strip writing or reading apparatus [B42D 19/00](#))**

U B41L 5/04 · with mechanisms for feeding webs or for arranging web feed; with web storage arrangements {(in general [B65H](#))}

B41L 5/06 · · by means of rollers, wheels, or chains, {-e.g. with pins} transversely

**B41L 21/00 Devices for conveying sheets or webs of copy material through the apparatus or machines for manifolding, duplicating, or printing (mechanisms for conveying copy material through addressographs or like series-printing machines [B41L 47/24](#); {-feeding sheets or webs to or from printing apparatus or machines [B65H](#); in printing presses in general [B41F 21/00](#)})**

### Project: N/A (B41M)

**B41M PRINTING, DUPLICATING, MARKING, OR COPYING PROCESSES; COLOUR PRINTING, (correction of typographical errors [B41J](#); processes for applying transfer pictures or the like [B44C 1/16](#); fluid media for correction of typographical errors by coating [C09D 10/00](#); printing textiles [D06P](#))**

**U B41M 1/00 Inking and printing with a printer's forme**

U B41M 1/26 · Printing on other surfaces than ordinary paper ([B41M 1/40](#) takes precedence)

B41M 1/30 · · on organic plastics, horn or similar materials {(recording sheets having a coating to improve ink, dye or pigment receptivity [B41M 5/50](#); marking or recording on plastic by irradiation with electromagnetic beams, e.g. laser, [B41M 5/267](#))}

**B41M 3/00 Printing processes to produce particular kinds of printed work, e.g. patterns (special designs or pictures per se [B44F](#); {-printing apparatus or machines of special type or for particular purposes [B41F 17/00](#); manufacturing organic semiconductor devices using printing techniques [H01L 51/0004](#)}; manufacturing printed circuits using printing techniques [H05K 3/12](#))**

B41M 3/12 · Transfer pictures or the like, e.g. decalcomanias {(processes for producing decorative surface effects [B44C 1/00](#); [B41M 5/0256](#) takes precedence)}

**B41M 5/00 Duplicating or marking methods; Sheet materials for use therein (by using light-sensitive materials [G03](#); electrography, magnetography [G03G](#); {-repeatedly usable boards or tablets for writing or drawing [B43L 1/00](#)})**

B41M 5/0011 · {Pre-treatment or treatment during printing of the recording material, e.g. heating, irradiating (after-treatment of prints [B41M 7/00](#); printers for treating or overcoating copy materials before, during or after printing [B41J 11/0015](#))}

- B41M 5/20
- using electric current ([B41M 5/24](#) takes precedence; {processes in which the current is transformed into a heat pattern for obtaining transfer to a receptor sheet [B41M 5/382](#); electro-coagulable or electro-adhesive printing or recording [B41C 1/105](#)})
- B41M 5/24
- Ablative recording, e.g. by burning marks; Spark recording {(marking by high energetic means, e.g. by laser otherwise than burning or ablative removal [B41M 5/26](#); materials or methods for recording or reproduction by optical means [G11B 7/00](#))}
- B41M 5/26
- Thermography ([B41M 5/20](#)-, [B41M 5/24](#) take precedence); {Marking by high energetic means, e.g. laser otherwise than by burning, and characterised by the material used ([B23K](#) takes precedence; thermographic or photothermographic systems using noble metal compounds [G03C 1/494](#))}
- U B41M 5/28
- • using thermochromic compounds or layers containing liquid crystals, microcapsules, bleachable dyes or heat- decomposable compounds, e.g. gas- liberating {([B41M 5/38271](#) takes precedence)}
- B41M 5/288
- • • {using gas liberating compounds, e.g. to obtain vesicular or blow-up images ([B41M 3/16](#)-, [B41M 9/04](#) take precedence; thermogravure printing [B41M 7/02](#))}
- B41M 5/382
- • Contact thermal transfer or sublimation processes (sublistatic printing using a pre-formed image [B41M 5/035](#);- ink-, dye- or pigment-receptive coatings [B41M 5/52](#))
- U B41M 5/40
- • characterised by the base {backcoat}, intermediate, or covering layers, {e.g. for thermal transfer dye-donor or dye-receiver sheets}; Heat, radiation filtering or absorbing means or layers; combined with other image registration layers or compositions; Special originals for reproduction by thermography {(macromolecular ink- or dye-receptive coatings [B41M 5/52](#))}
- B41M 5/42
- • • Intermediate, {backcoat}, or covering layers {([B41M 5/405](#) takes precedence; multilayer thermal transfer systems in general [B41M 5/38214](#))}
- NOTE
- When the invention information lies in the combination of features covered by more than one of the subgroups of [B41M 5/42](#)-, classification is made in [B41M 5/42](#)-, using the corresponding indexing codes of its subgroups to identify the individual features
- B41M 5/50
- Recording sheets characterised by the coating used to improve ink, dye or pigment receptivity, e.g. for ink-jet or thermal dye transfer recording {(printing on organic plastics using a printer's form [B41M 1/30](#);- printing on pre-treated paper with a printer's form [B41M 1/36](#))}
- B41M 5/502
- • {characterised by structural details, e.g. multilayer materials (supports, backcoats or intermediate layers for thermal dye transfer donor and receiver sheets [B41M 5/41](#)-, [B41M 5/42](#))}
- B41M 5/52
- • Macromolecular coatings
- NOTE
- { In this group, when the invention information lies in a combination of features covered by more than one of its subgroups, classification is made in [B41M 5/52](#)-, using the corresponding indexing codes of its subgroups to identify the individual features }
- B41M 7/00**
- After-treatment of prints, e.g. heating, irradiating, {setting of the ink, protection of the printed stock (pre-treatment or treatment during printing [B41M 5/0011](#);- printers for treating or overcoating copy materials before, during or after printing [B41J 11/0015](#))}**

- B41M 7/02
- Dusting {e.g. with an anti-offset powder for obtaining raised printing such as by thermogravure ([B41M 7/0027](#)-, [B41M 7/0036](#)-, [B41M 7/0045](#)-, [B41M 7/0054](#)-, [B41M 7/0072](#)-, [B41M 7/0081](#)-, [B41M 7/009](#) take precedence); Varnishing (devices for treating the surfaces of sheets, webs, or other articles in connection with printing [B41F 23/00](#)-, [B41L 23/00](#))}

**Project: N/A (B41N)**

**B41N**                    **PRINTING PLATES OR FOILS (photosensitive material [G03](#)); MATERIALS FOR SURFACES USED IN PRINTING MACHINES FOR PRINTING, INKING, DAMPING, OR THE LIKE; PREPARING SUCH SURFACES FOR USE AND CONSERVING THEM** {-In this subclass the COPES System is used}

- U**    **B41N 3/00**                    **Preparing for use and conserving printing surfaces**
- B41N 3/08
- Damping; Neutralising or similar differentiation treatments for lithographic printing formes; {-Gumming or finishing solutions, fountain solutions, correction or deletion fluids, or on-press development (treatment of materials containing silver salts [G03F 7/063](#); developers per se for processing photosensitive materials [G03F 7/32](#))}
- B41N 6/00                    **Mounting boards; {-Sleeves} Make-ready devices, e.g. underlays, overlays; Attaching by chemical means, e.g. vulcanising**

**Project: N/A (B42D)**

- U**    **B42D 5/00**                    **Sheets united without binding to form pads or blocks (processes therefor [B42B](#))**
- B42D 5/04
- Calendar blocks (special apparatus for printing calendars [B41F 17/04](#)) {(perpetual calendars [G09D 3/00](#))}

**Project: N/A (B42F)**

- U**    **B42F 13/00**                    **Filing appliances with means for engaging perforations or slots ([B42F 17/00](#) takes precedence; indexing features [B42F 21/00](#))**
- B42F 13/38
- Expansible cover splines {-or spines}

**Project: N/A (B44B)**

- U**    **B44B 3/00**                    **Artist`s machines or apparatus equipped with tools or work holders moving or able to be controlled substantially two- dimensionally for carving, engraving, or guilloching shallow ornamenting or markings (marking or engraving metal by the action of a high concentration of electric current [B23H 9/06](#); forme engraving [B41C](#), [B41D](#); engraving by photo-mechanical reproduction [G03F](#))**
- U    B44B 3/06
- Accessories, e.g. tool or work holders
- B44B 3/068
- {-Tracer heads ([B44B 3/004](#) takes precedence [B44B 3/004](#) takes precedence)}

**Project: N/A (B44F)**

- U**    **B44F 1/00**                    **Designs or pictures characterised by special or unusual light effects**
- U    B44F 1/06
- produced by transmitted light, e.g. transparencies, imitations of glass paintings
- B44F 1/066
- {-comprising at least two transparent elements, e.g. sheets, layers (layered products of glass and synthetic resin containing decorations or patterns [B32B 17/10247](#)-, window units comprising two or more parallel glass panes [E06B 3/66](#))}
- B44F 5/00                    **Designs characterised by irregular areas, e.g. mottled patterns (imitating natural patterns or artistic work [B44F 9/00](#)-, [B44F 11/00](#))**

**Project: N/A (B60B)**

- U B60B 3/00** **Disc wheels, i.e. wheels with load-supporting disc body (non-metallic [B60B 5/00](#); wheel cover discs [B60B 7/00](#) {; disc wheels comprising rail-engaging elements [B60B 17/0006](#)})**
- B60B 3/04 · with a single disc body not integral with rim, {i.e. disc body and rim being manufactured independently and then permanently attached to each other in a second step, e.g. by welding}
- B60B 3/14 · Attaching disc body to hub (resiliently [B60B 9/00](#); attaching rim to wheel body [B60B 23/00](#)){Wheel adapters}
- U B60B 21/00** **Rims (non-metallic [B60B 5/00](#); of high resiliency [B60B 9/00](#); capable of carrying more than one tyre [B60B 11/04](#); multiple rims on a single wheel body [B60B 11/06](#); of multi-part type [B60B 25/00](#); metal tyres [B60C](#))**
- U B60B 21/02 · characterised by transverse section
- B60B 21/04 · · with substantially radial flanges (with rail-engaging flanges [B60B 17/00](#) )  
{([B60B 21/021](#) takes precedence)}
- B60B 23/00** **Attaching rim to wheel body (attaching spokes to rim [B60B 1/04](#), [B60B 1/14](#); attaching rims resiliently to wheel body [B60B 9/00](#); {devices for fastening or securing constructional elements or machine parts together [F16B](#)})**
- NOTE  
Group [B60B 23/12](#) takes precedence over groups [B60B 23/02](#) to [B60B 23/10](#)
- U B60B 33/00** **Castors in general; {Anti-clogging castors}(castors for large containers [B65D 90/18](#))**
- B60B 33/02 · with disengageable swivel action, {i.e. comprising a swivel locking mechanism}
- B60B 35/00** **Axle units; Parts thereof (steerable vehicle stub axles [B62D](#) )  
{Arrangements for lubrication of axles}**

**Project: N/A (B60C)**

- B60C 1/00** **Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition**
- NOTE  
Tyres characterised by compositions only, i.e. having no significant tyre structure, are classified only with the compositions, e.g. [C08K](#), [C08L](#)
- U B60C 3/00** **Tyres characterised by the transverse section (characterised by rail-engaging elements [B60B 17/00](#))**
- B60C 3/06 · Asymmetric {(asymmetric bead seats [B60C 15/0236](#); asymmetric bead reinforcement [B60C 2015/0696](#))}
- B60C 5/00** **Inflatable pneumatic tyres or inner tubes ([B60C 1/00](#), [B60C 9/00](#) to [B60C 17/00](#) take precedence)**
- U B60C 5/12 · without separate inflatable inserts, e.g. tubeless tyres with transverse section open to the rim ([B60C 5/20](#) takes precedence)
- B60C 5/14 · · with impervious liner or coating on the inner wall of the tyre ([B60C21/04](#), [B60C21/08](#) take precedence)

B60C 9/00	<p><b>Reinforcements or ply arrangement of pneumatic tyres (inserts having reinforcing means <a href="#">B60C 5/08</a>; bead structure, e.g. turnup or overlap construction, <a href="#">B60C 15/00</a>; tyre cords per se <a href="#">D02G 3/48</a>; fabrics per se <a href="#">D03D</a>, <a href="#">D04H</a>; metal ropes or cables per se <a href="#">D07B 1/06</a> )</b>{B}</p> <p><u>NOTE</u></p> <p>When classifying in this group, classification is also made in subclass <a href="#">B32B</a> insofar as any layered product is concerned</p>
U B60C 9/02	<ul style="list-style-type: none"> <li>• Carcasses</li> </ul>
U B60C 9/04	<ul style="list-style-type: none"> <li>• • the reinforcing cords of each carcass ply arranged in a substantially parallel relationship</li> </ul>
B60C 9/06	<ul style="list-style-type: none"> <li>• • • the cords extend diagonally from bead to bead and run in opposite directions in each successive carcass ply, i.e. bias angle ply (<a href="#">B60C 9/07</a>, <a href="#">B60C 9/09</a> take precedence)</li> </ul>
<b>U B60C 11/00</b>	<b>Tyre tread bands; Tread patterns; Anti-skid inserts</b>
U B60C 11/03	<ul style="list-style-type: none"> <li>• Tread patterns</li> </ul>
B60C 11/04	<ul style="list-style-type: none"> <li>• • in which the raised area of the pattern consists only of continuous circumferential ribs, e.g. zig-zag (<a href="#">B60C 11/12</a>, <a href="#">B60C 11/13</a> take precedence)</li> </ul>
B60C 11/11	<ul style="list-style-type: none"> <li>• • in which the raised area of the pattern consists only of isolated elements, e.g. blocks (<a href="#">B60C 11/12</a>, <a href="#">B60C 11/13</a> take precedence)</li> </ul>
<b>U B60C 15/00</b>	<b>Tyre beads, e.g. ply turn-up or overlap</b>
B60C 15/02	<ul style="list-style-type: none"> <li>• Seating or securing beads on rims (sealing means between beads and rims of tubeless tyres <a href="#">B60C 5/16</a>; means for securing solid tyres on rims <a href="#">B60C 7/24</a>; rims <a href="#">B60B 21/00</a>)</li> </ul>
B60C 15/0236	<ul style="list-style-type: none"> <li>• • {Asymmetric bead seats, e.g. different bead diameter or inclination angle (asymmetric transverse section <a href="#">B60C 3/06</a>; asymmetric bead reinforcement <a href="#">B60C 2015/0696</a>)}</li> </ul>
<b>B60C 17/00</b>	<b>Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor (having multiple separate inflatable chambers <a href="#">B60C 5/20</a>; {additional shear belt layers <a href="#">B60C 9/18</a>})</b>
<b>U B60C 19/00</b>	<b>Tyre parts or constructions not otherwise provided for</b>
B60C 19/12	<ul style="list-style-type: none"> <li>• Puncture preventing arrangements (<a href="#">B60C 9/00</a> takes precedence; inflatable inserts having reinforcing means <a href="#">B60C 5/08</a>); {sealing compositions per se <a href="#">B29C 73/163</a>; devices for introducing sealing compositions into the tyre <a href="#">B29C 73/166</a>}</li> </ul>
<b>B60C 23/00</b>	<b>Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles (measuring in general <a href="#">G01</a>, e.g. <a href="#">G01L 17/00</a>; remote signalling in general <a href="#">G08</a>); Arrangement of tyre inflating devices on vehicles, e.g. of pumps, of tanks {(supplying air for tyre inflation <a href="#">B60S 5/04</a>)}; Tyre cooling arrangements</b>
B60C 23/005	<ul style="list-style-type: none"> <li>• {Devices specially adapted for special wheel arrangements}</li> </ul> <p><u>NOTE</u></p> <p><a href="#">B60C 23/001</a>, <a href="#">B60C 23/02</a>, <a href="#">B60C 23/04</a>, <a href="#">B60C 23/06</a> or <a href="#">B60C 23/08</a></p>
U B60C 23/02	<ul style="list-style-type: none"> <li>• Signalling devices actuated by tyre pressure {(hand-held tyre pressure gauges <a href="#">G01L 17/00</a>)}</li> </ul>
U B60C 23/04	<ul style="list-style-type: none"> <li>• • mounted on the wheel or tyre</li> </ul>
U B60C 23/0401	<ul style="list-style-type: none"> <li>• • • {characterised by the type of alarm}</li> </ul>

- B60C 23/0406 . . . {Alarms noticeable from outside the vehicle, e.g. indication in side mirror, front light or audible alarms ([B60C 23/0403](#)-, [B60C 23/0405](#) take precedence)}
- U B60C 23/0491 . . . {Constructional details of means for attaching the control device}
- B60C 23/0498 . . . {for rim attachments ([B60C 23/0494](#)-, [B60C 23/0496](#) take precedence)}
- B60C 25/00 Apparatus or tools adapted for mounting, removing, repairing or inspecting pneumatic or solid tyres (apparatus or tools for mounting or dismounting wheels [B60B 29/00](#)-, apparatus or tools characterised by the means for holding wheels or parts thereof [B60B 30/00](#))**
- U B60C 25/01 . for manually removing tyres from or mounting tyres on wheels
- U B60C 25/05 . . Machines, {i.e. motorized devices, e.g. for mounting, demounting (matching of tyres with rims, i.e. conjoint balancing [G01M](#))}
- B60C 25/12 . . . for only seating the beads
- WARNING  
Not complete pending reclassification; see also groups [B60C 25/05](#)-, [B60C 25/145](#)
- B60C 25/122 . . . acting on the tyre tread
- WARNING  
Not complete pending reclassification; see also groups [B60C 25/05](#)-, [B60C 25/145](#)
- B60C 25/132 . . . for removing and mounting tyres (for only seating the beads [B60C 25/12](#)-, for only breaking the beads [B60C 25/125](#)-, {for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims [B60C 25/145](#)})
- B60C 29/00 Arrangements of tyre-inflating valves to tyres or rims; Accessories for tyre-inflating valves, not otherwise provided for (tools for mounting or demounting valves [B60C 25/18](#)-, valves per se, valve dust caps [F16K](#))**
- B60C 29/06 . Accessories for tyre-inflating valves, e.g. housings, guards, covers for valve caps, locks, not otherwise provided for {([B60C 23/0496](#) takes precedence; tools for screwing and unscrewing valve caps [B25B 27/0057](#)-, pump connectors [F04B 33/005](#))}
- B60C 29/062 . {for filling a tyre with particular materials, e.g. liquids ([B60C 5/004](#)-, [B60C 5/005](#) take precedence)}

**Project: N/A (B60D)**

- U B60D 1/00 **Traction couplings; Hitches; Draw-gear; Towing devices (devices specially adapted for connection between tractors and agricultural machines or implements [A01B 59/00](#); fifth-wheel couplings [B62D](#))**
- U B60D 1/24 . characterised by arrangements for particular functions
- B60D 1/30 . . for sway control, {e.g. stabilising or anti-fishtail devices; Sway alarm means}

**Project: N/A (B60G)**

**B60G VEHICLE SUSPENSION ARRANGEMENTS (air-cushion vehicles [B60V](#); {-cycle suspensions [B62K 25/00](#)})**

NOTES

- Attention is drawn to the explanatory note following the class title [B60](#)
- Indexing codes [B60G 2200/00](#) to [B60G 2800/00](#) are dedicated to particular aspects of suspension arrangements:
  - [B60G 2200/00](#) refers to the type of suspension arrangement;

- [B60G 2202/00](#) refers to the suspension elements used (springs, dampers and actuators);
- [B60G 2204/00](#) refers to mounting features of suspension elements;
- [B60G 2206/00](#) refers to constructional and manufacturing details of suspension elements;
- [B60G 2300/00](#) refers to the type of vehicle;
- [B60G 2400/00](#) to [B60G 2800/00](#) refer to the electronic control of suspension arrangements, whereby:
  - [B60G 2400/00](#) refers to input parameters of the control;
  - [B60G 2401/00](#) refers to types of sensors used;
  - [B60G 2500/00](#) refers to the controlled action or device;
  - [B60G 2600/00](#) refers to particular details of the control system;
  - [B60G 2800/00](#) refers to the result to be achieved by the control action.

3. Groups [B60G 2200/00](#) to [B60G 2800/00](#) are to be used in multi-aspect classification, so that subject matter characterised by aspects covered by more than one of these groups, which is considered to represent information of interest for search, should be classified in a combination of at least one relevant "invention information" symbol in association with indexing codes from each of these groups.

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [B60G 23/00](#) covered by [B60G 17/0165](#)

#### Project: N/A (B60H)

##### U B60H 3/00

B60H 3/0085

B60H 3/02

##### Other air-treating devices

- {Smell or pollution preventing arrangements} ([B60H 3/0007](#), [B60H 3/0071](#), [B60H 3/02](#), [B60H 3/06](#) take precedence)}
- Moistening; {-Devices influencing humidity levels, i.e. humidity control ([B60H 1/3202](#), [B60H 1/3207](#) take precedence)}

#### Project: N/A (B60J)

B60J 1/00

B60J 1/20

B60J 5/00

B60J 5/10

B60J 7/00

**Windows; Windscreens; Accessories therefor ([B60J 10/00](#) takes precedence; air curtains instead of windows [B60J 9/04](#); {-sealing strips for windshields [B60J 10/02](#); sealing sash guides for sliding window panes [B60J 10/04](#); glass partitions inside vehicles to protect occupants against personal attack [B60R 21/12](#))}**

- Accessories, e.g. wind deflectors, blinds (antiglare provisions [B60J 3/00](#); wind deflectors associated with roof openings [B60J 7/22](#); removable external protective coverings for windows or windscreens [B60J 11/08](#); {-aerodynamical spoiler for vehicles [B62D 35/00](#);} heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#))

**Doors ([B60J 10/00](#) takes precedence; window aspects [B60J 1/00](#); {-side board or tailgate structures for open load compartments [B62D 33/023](#))}**

- arranged at the vehicle rear ([B60J 5/04](#) takes precedence {-; bonnets or lids [B62D 25/10](#); tail gates for pick-up trucks [B62D 33/0273](#); counterbalancing [E05F](#); springs, e.g. pneumatic [F16F](#))}

**Non-fixed roofs; Roofs with movable panels {e.g. rotary sunroofs} ([B60J 10/00](#) takes precedence; window aspects [B60J 1/00](#); fixed roofs [B62D 25/06](#); mechanisms for operating wings [E05F 11/00](#), [E05F 15/00](#))}**

- U B60J 7/08
- of non-sliding type, i.e. movable or removable roofs or panels, e.g. let-down tops or roofs capable of being easily detached or of assuming a collapsed or inoperative position
- U B60J 7/12
- • foldable; Tensioning mechanisms therefor, e.g. struts ([B60J 7/10](#), [B60J 7/20](#)) take precedence)
- B60J 7/14
- • • with a plurality of {-rigid} plate-like elements{ }or rigid non plate-like elements, e.g. with non-slidable, but pivotable or foldable movement}
- B60J 7/16
- • non-foldable {-and rigid, e.g. a one-piece hard-top or a single rigid roof panel} ([B60J 7/10](#) takes precedence)
- B60J 9/00**
- Devices not provided for in one of main groups [B60J 1/00](#) to [B60J 7/00](#) ([B60J 10/00](#) takes precedence)**
- U **B60J 10/00**
- Sealing arrangements ({sealing arrangements for other vehicle parts [B60R 13/06](#)}; sealings in general [F16J 15/00](#))**
- U B60J 10/02
- for windows or windscreens ({[B60J 10/0002](#) to [B60J 10/0091](#) take precedence})
- U B60J 10/04
- • for sliding window panes, e.g. sash guides
- B60J 10/06
- • • for flush-glass windows {-i.e. flush with body or window frame ([B60J 10/041](#) takes precedence)}

**Project: N/A (B60K)****B60K 6/00**

**Arrangement or mounting of plural diverse prime-movers for mutual or common propulsion, e.g. hybrid propulsion systems comprising electric motors and internal combustion engines {-; Control systems therefor, i.e. systems controlling two or more prime movers, or controlling one of these prime movers and any of the transmission, drive or drive units (arrangement or mounting in vehicles of electrical gearing, in which an electrical machine serves only as reduction gearing and not as the prime mover and in which no electrical storing means are used [B60K 17/12](#); control and regulation of purely electrical prime movers [B60L](#); prime-movers comprising electrical and internal combustion motors in a common engine block or housing per se [F02B 65/00](#); electric motors or motor-generators used for starting the combustion engine [F02N 11/04](#); electric motors for synchronising gearing [F16H 3/12](#) )}{-Informative references: mechanical gearings with secondary electric drive [F16H 3/72](#); arrangements for handling mechanical energy structurally associated with the dynamo-electric machine [H02K 7/00](#); machines comprising structurally interrelated motor and generator parts [H02K 51/00](#); dynamo-electric machines not otherwise provided for in [H02K](#) see [H02K 57/00](#)}**

NOTE

In this subgroup, the following expressions are used, with the meanings indicated :

- "energy storing means" means apparatus for storing propulsive energy and providing stored energy to drive the prime mover or the ultimate propulsive elements
- "hybrid electric vehicle" (HEV) means a vehicle with an electrical prime mover and a combustion engine, in which the electrical prime mover and the combustion engine either singly or in combination, drive the ultimate propulsive elements, e.g. wheels
- "motor-generator" means an electric motor, or an electric generator, or an electrical machine which can be used for both functions, as a motor or a generator
- "prime mover" means a propulsion unit or source of motive power providing a mechanical output, e.g. via a rotating shaft

- U B60K 15/00** Arrangement in connection with fuel supply of combustion engines {or other fuel consuming energy converters, e.g. fuel cells}; Mounting or construction of fuel tanks (tanks in general [B65D](#), [F17C](#); supplying combustion engines with combustible mixtures or constituents [F02M](#))
- B60K 15/03 · Fuel tanks (chassis frame comprising fluid storage compartment [B62D 21/16](#); {-Details of the fuel feeding system related to the fuel tank [F02M 37/0076](#)})
- B60K 31/00** Vehicle fittings, acting on a single sub-unit only, for automatically controlling, i.e. preventing speed from exceeding an arbitrarily established velocity or maintaining speed at a particular velocity, as selected by the vehicle operator (fittings acting on two or more sub-units [B60W 30/14](#); propulsion unit control in general, see the relevant classes or subclasses, e.g. [F02D](#); speedometers [G01P](#); systems or devices for controlling speed in general [G05D 13/00](#); {-in traffic anti-collision system for road vehicles [G08G 1/16](#)})

NOTE

In this group:

- the means ordinarily includes a device, e.g. a servomechanism, for operating a velocity-affecting element of the vehicle, e.g. the throttle;
- a means for preventing a vehicle from exceeding a particular speed is often referred to as a "governor", whereas a means for maintaining the vehicle within a relatively narrow speed range is generally designated as "speed control". Since these two functions are frequently interrelated, no attempt has been made to identify such means as being particularly adapted to perform only one, or the other of the functions.

**Project: N/A (B60L)**

- U B60L 3/00** Electric devices on electrically-propelled vehicles for safety purposes; Monitoring operating variables, e.g. speed, deceleration, power consumption (measuring in general [G01](#))
- B60L 3/10 · Indicating wheel slip; {-Correction of wheel slip}
- B60L 3/12 · Recording operating variables; {-Monitoring of operating variables}
- B60L 11/00** Electric propulsion with power supplied within the vehicle ([B60L 8/00](#)-,[B60L 13/00](#) take precedence; arrangements or mounting of plural diverse prime-movers for mutual or common propulsion [B60K 6/20](#)-, control systems specially adapted for hybrid vehicles [B60W 20/00](#))

**Project: N/A (B60N)**

- B60N 2/00** Seats specially adapted for vehicles (for facilitating access of invalids to, or exit of invalids from, vehicles [A61G 3/02](#)-, railway seats [B61D 33/00](#)-, cycle seats [B62J 1/00](#)-, aircraft seats [B64D 11/06](#)-, [B64D 25/04](#)-, [B64D 25/10](#))
- B60N 2/005 · Arrangement or mounting of seats in vehicles {e.g. dismountable auxiliary seats} ([B60N 2/02](#) takes precedence; {-for railway vehicles [B61D 1/04](#)})
- B60N 2/02 · the seat or part thereof being movable, e.g. adjustable ({[B60N 2/427](#) takes precedence } ; adjustable arm-rests [B60N 2/46](#)-, adjustable head-rests [B60N 2/48](#))
- B60N 2/20 · · the back-rest being tiltable, e.g. to permit easy access ({[B60N 2/0224](#)}, [B60N 2/04](#)-, [B60N 2/22](#)-, {[B60N 2/3002](#)} take precedence)
- U B60N 2/22** · · the back-rest being adjustable ({[B60N 2/2878](#) takes precedence})
- B60N 2/2213 · · · {Gear wheel driven mechanism ([B60N 2/2231](#)-, [B60N 2/225](#) take precedence)}

- B60N 2/225
  - • • by cycloidal or planetary mechanisms {(transmissions with orbital motion in general [F16H 1/28](#)-, [F16H 1/32](#))}
- U B60N 2/24
  - for particular purposes or particular vehicles
- U B60N 2/30
  - • Non-dismountable {or dismountable} seats storable in a non-use position, e.g. foldable spare seats (convertible for other use [B60N 2/32](#))
- B60N 2/3097
  - • • {Dismountable seats storable in a non-use position ([B60N 2/015](#)-, [B60N 2/28](#) take precedence)}
- B60N 2/42
  - • the seat constructed to protect the occupant from the effect of abnormal g-forces, e.g. crash or safety seats ([B60N 2/26](#)-, [B60N 2/46](#)-, [B60N 2/48](#) take precedence {; built-in air bags [B60R 21/207](#))}
- B60N 2/44
  - Details or parts not otherwise provided for {(seats in general [A47C 7/00](#)-, storage compartments mounted on or under a seat [B60R 7/043](#))}
- B60N 2/442
  - • {Positioning and locking mechanisms ([B60N 2/16](#)-, [B60N 2/18](#)-, [B60N 2/22](#)-, [B60N 2/225](#) take precedence)}
- B60N 2/449
  - • {Side-rests ([B60N 2/2872](#)-, [B60N 2/4882](#) take precedence)}
- U B60N 2/48
  - • Head-rests {([B60N 2/2851](#) takes precedence)}
- U B60N 2/4805
  - • • {movable or adjustable ([B60N 2/4876](#) takes precedence)}
- B60N 2/4808
  - • • • {slidable ([B60N 2/4864](#)-, [B60N 2/4867](#) take precedence)}
- B60N 2/487
  - • • {movable to an inoperative position ([B60N 2/4832](#)-, [B60N 2/4855](#) take precedence)}
- B60N 2/4873
  - • • • {for rear seats ([B60N 2/4835](#)-, [B60N 2/4858](#) take precedence)}
- B60N 2/56
  - • Heating or ventilating devices {(heating, cooling, ventilating or other air-treating in vehicles in general [B60H 1/00](#)-, control of temperature in general [G05D 23/00](#)-, ventilation, heating or cooling of chairs in general [A47C 7/74](#))}
- U B60N 2/70
  - • {Upholstery, e.g.} upholstery springs
- B60N 2/7017
  - • • {Manufacturing methods specially adapted therefor (manufacturing of seat upholstery in general [A47C 7/00](#)-, shaping of substances in a plastic state in general [B29C](#))}
- U B60N 3/00**

**Arrangements or adaptations of other passenger fittings, not otherwise provided for (of radio sets, television sets, telephones, {stowing or holding appliances} , safety belts or the like [B60R](#))**
- U B60N 3/04
  - of floor mats {or carpets}
- B60N 3/042
  - • {of carpets ([B60N 3/046](#)-, [B60N 3/048](#) take precedence)}
- B60N 3/044
  - • {of removable mats ([B60N 3/046](#)-, [B60N 3/048](#) take precedence)}
- B60N 3/10
  - of receptacles for food or beverages, e.g. refrigerated (picnic sets [A45F](#){ {cup holders in general [A47G 23/02](#))}
- B60N 3/14
  - of electrically-heated lighters {(arrangements of lighting devices for vehicle interiors for lighting passenger or driving compartment [B60Q 3/02](#)-, igniters using electrically-produced heat [F23Q 7/00](#))}
- B60N 3/16
  - of cooking or boiling devices (cooking of boiling devices per se [A47](#)-, [F24C](#))

**Project: N/A (B60P)**

- U B60P 3/00**

**Vehicles adapted to transport, to carry or to comprise special loads or objects (ambulance aspects, vehicles with special provisions for invalids [A61G 3/00](#); hearses [A61G 21/00](#); fire-fighting land vehicles [A62C 27/00](#); refuse-collecting vehicles [B65F 3/00](#), [B65F 7/00](#); snow-removing vehicles [E01H](#); armoured or armed vehicles [F41H 7/00](#); self-propelled mine-clearing vehicles [F41H 11/16](#))**

- B60P 3/30
- Spraying vehicles (sprinkling-wagons for fertilising liquid [A01C 23/00](#); for destruction of noxious animals, vermin, or unwanted vegetation [A01M](#); {-vehicle-mounted spraying installations for de-icing aircraft [B64F 5/0063](#);} for spraying asphalt, bitumen, tar, or the like [E01C](#); for cleaning streets [E01H](#))

**Project: N/A (B60Q)****B60Q 1/00**

**Arrangements or adaptations of optical signalling or lighting devices (for lighting vehicle interior [B60Q 3/00](#); {-circuit arrangements for electric light sources in general [H05B 37/00](#)})**

- B60Q 1/0011
- {with light guides for distributing the light between several lighting or signalling devices (using light guides inside a single device [F21S 8/00](#)-, light guides per se [G02B 6/0001](#))}
- B60Q 1/0064
- {with provision for maintenance, e.g. changing the light bulb (swivel arrangements [B60Q 1/0425](#)-, fastening of covers [F21S 48/15](#)-, changing light sources in general [F21V 19/04](#)-, fastening of light sources or lamp holders [F21S 48/1104](#)-, [F21S 48/211](#))}
- B60Q 1/007
- • {via a removable cap (fastening of the light source by a cap holding the light source [F21S 48/1104](#)-, [F21S 48/211](#))}
- B60Q 1/0076
- {Switches therefor ([B60Q 1/1446](#)-, [B60Q 1/343](#)-, [B60Q 1/40](#) take precedence, arrangements or fitting of control knobs on dashboard [B60K 37/06](#))}
- B60Q 1/0088
- {Details of electrical connections ([B60Q 1/305](#) takes precedence; electrical connectors in general [H01R](#); electrical connection of the light source itself [F21S 48/1109](#)-, [F21S 48/212](#))}
- B60Q 1/0094
- • {Arrangement of electronic circuits separated from the light source (e.g. mounting of housings for starter circuits for discharge lamps, circuits per se [H05B](#), arrangements being part of the light source holder [F21V 17/06](#)-, [F21S 48/1109](#)-, [F21S 48/212](#))}
- U B60Q 1/02
- the devices being primarily intended to illuminate the way ahead or to illuminate other areas of way or environments
- U B60Q 1/04
- • the devices being headlights
- B60Q 1/0408
- • • {built into the vehicle body, e.g. details concerning the mounting of the headlamps on the vehicle body ([B60Q 1/0491](#)-, [B60Q 1/05](#) take precedence, integrated front ends [B62D 25/00](#))}
- B60Q 1/0491
- • • {Shock absorbing devices therefor (resilient mounting of lighting devices in general [F21V 15/04](#)-, shock absorbing devices in general [F16F 15/04](#))}
- B60Q 1/06
- • • adjustable, e.g. remotely controlled from inside vehicle ([B60Q 1/05](#) takes precedence; {-changing the characteristics or distribution of the light by adjustment of parts, e.g. reflectors, light sources, lenses, screens [F21V 14/00](#))}
- U B60Q 1/08
- • • • automatically
- B60Q 1/085
- • • • • {due to special conditions, e.g. adverse weather, type of road, badly illuminated road signs or potential dangers ([B60Q 1/10](#)-, [B60Q 1/12](#)-, [B60Q 1/1423](#) take precedence)}
- B60Q 1/26
- the devices being primarily intended to indicate the vehicle, or parts thereof, or to give signals, to other traffic {(such devices mounted on the vehicle rear part [F21S 48/20](#)-, means for the lighting or illuminating of aerials, e.g. for purpose of warning [H01Q 1/06](#))}
- U B60Q 1/2661
- • {mounted on parts having other functions (on wheels [B60Q 1/323](#))}
- B60Q 1/2665
- • • {on rear-view mirrors (lighting devices for vehicle interior on or for rear-view mirrors [B60Q 3/023](#)-, adaptations or arrangements of mirrors for use on cycles [B62J 29/00](#)-, rear-view mirror arrangements [B60R 1/02](#)-, mirror assemblies combined with lamps [B60R 1/1207](#))}

- B60Q 1/2669
  - • • {on door or boot handles (lighting devices for vehicle interior on door handles [B60Q 3/0233](#); vehicle doors [B60J 5/00](#) illuminating devices on or for locks or keys [E05B 17/10](#); Keyhole finders [E05B 15/08](#))}
- U B60Q 1/2673
  - • • {on parts worn by the driver, e.g. clothes (professional or sporting clothes with reflecting or luminous means [A41D 13/01](#)), gloves (protective gloves with reflecting or luminous means [A41D 19/0157](#)), or bags, specially adapted to provide auxiliary vehicle signalling}
- B60Q 1/2676
  - • • • {Helmets (helmets in general [A42B 3/00](#); helmets with signalling or lighting devices [A42B 3/0433](#))}
- B60Q 1/268
  - • • {on windscreens or windows ([B60Q 1/302](#) takes precedence; windows or windscreens in general [B60J 1/00](#); lighting devices for vehicle interior on or for windows [B60Q 3/0213](#))}
- B60Q 1/2684
  - • • {on wipers or windscreen washers (vehicle wipers [B60S 1/04](#); windscreen washers [B60S 1/46](#))}
- U B60Q 1/34
  - • for indicating change of drive direction ([B60Q 1/22](#) takes precedence)
- B60Q 1/343
  - • • {Manually actuated switching arrangements therefor (Hand actuated multifunction switches [B60Q 1/1461](#); [B60Q 1/40](#) takes precedence)}
- U B60Q 1/44
  - • for indicating braking action or preparation for braking, {e.g. by detection of the foot approaching the brake pedal}
- B60Q 1/444
  - • • {with indication of the braking strength or speed changes, e.g. by changing shape or intensity of the indication ([B60Q 1/1407](#), [B60Q 1/442](#), [B60Q 1/447](#) take precedence)}
- U B60Q 1/50
  - • for indicating other intentions or conditions, e.g. request for waiting or overtaking
- B60Q 1/52
  - • • for indicating emergencies {(braking indicating devices [B60Q 1/44](#), portable emergency signal devices [B60Q 7/00](#))}
- B60Q 1/525
  - • • • {indicating risk of collision between vehicles or with pedestrians (using video cameras [B62D 1/00](#); Radars designed for anti-collision purposes between land vehicles or between land vehicle and fixed obstacles [G01S 13/931](#); Control of position or course in two dimensions for land vehicles [G05D 1/021](#); Anti-collision systems for road vehicles [G08G 1/16](#))}
- U B60Q 3/00**      **Arrangements or adaptations of lighting devices for vehicle interior**
- U B60Q 3/02
  - for lighting passenger or driving compartment
- B60Q 3/0203
  - • {Details of mounting onto vehicle interior, e.g. onto ceiling, floor (mounting of lighting devices [F21V 21/04](#), vehicle liners [B60R 13/02](#), connectors [H01R 33/00](#))}
- U B60Q 3/0209
  - • {mounted onto or for lighting specific vehicle fittings}
- B60Q 3/0213
  - • • {on or for sun roofs, or windows (windows per se [B60J 1/00](#), sun roofs per se [B60J 7/00](#))}
- B60Q 3/0236
  - • • {on or for smoking related tools, e.g. cigarette lighters, ashtrays (cigarette lighters [B60N 3/14](#), ashtrays [B60N 3/083](#))}
- B60Q 3/024
  - • • {on or for steering wheel or gear shift (steering wheels [B62D 1/04](#), gear shifts [B60K 20/00](#))}
- B60Q 3/0243
  - • • {others, e.g. cup holders, ignition locks (lighting for door locks [E05B 15/08](#), [E05B 17/10](#))}
- B60Q 3/0246
  - • {for mass transit vehicles ([B60Q 3/0209](#), [B60Q 3/04](#) take precedence, illumination of sides, boards or panels in general [G09F 13/00](#))}

- B60Q 3/0279
- {overall lighting alone or in combination with specific lighting, e.g. arrangement of room lamps, combination of room lamps with reading lamps (fastening of components within lighting devices [F21V 17/00](#)-, [F21V 19/00](#) and [F21V 23/00](#))}
- B60Q 3/0286
- {Specific lighting, e.g. reading lamps, directional or focussed lighting towards small surfaces, e.g. using blends (fastening of components within lighting devices [F21V 17/00](#)-, [F21V 19/00](#) and [F21V 23/00](#))}
- B60Q 3/0293
- {circuits or control for interior lights (circuits for light sources in general [H05B 37/00](#) and [H05B 39/00](#)-, for electric vehicles [B60L 1/14](#)-, electronic switching [H03K 17/00](#)-, remote control [H04Q 9/00](#))}
- B60Q 3/0296
- {Switches specifically designed for interior lights, e.g. switching by tilting the lens (mechanical switches in general [H01H](#)-, electronic switches in general [H03K 17/00](#)-, arrangement of instruments in vehicles in general [B60K 35/00](#) and [B60K 37/00](#))}
- U B60Q 3/04
- • for dashboard {(lighting of individual instruments [G01D](#), association of lighting devices with LCDs [G02F 1/1335](#))}
- B60Q 3/046
- • {Circuits or control therefore (for electric vehicles [B60L 1/14](#)-, electronic switching [H03K 17/00](#)-, remote control [H04Q 9/00](#)-, circuits for light sources in general [H05B 37/00](#)-, [H05B 39/00](#))}
- U B60Q 5/00**
- Arrangements or adaptations of acoustic signal devices {(sound producing devices in general [G10K](#))}**
- U B60Q 5/005
- {automatically actuated}
- B60Q 5/006
- {indicating risk of collision between vehicles or with pedestrians (using video cameras [B62D 1/00](#)-, Radars designed for anti-collision purposes between land vehicles or between land vehicle and fixed obstacles [G01S 13/931](#)-, Control of position or course in two dimensions for land vehicles [G05D 1/021](#)-, Anti-collision systems for road vehicles [G08G 1/16](#))}
- B60Q 7/00**
- Arrangement or adaptation of portable emergency signal devices on {board} vehicles {to be placed on roadways or vehicles, e.g. warning triangles}, (arrangements for enforcing caution on roads, e.g. marker posts, [E01F 9/00](#)-, signs [G09F](#)-, e.g. reflecting warning triangles [G09F 13/16](#))**

**Project: N/A (B60R)**

- B60R 1/00**
- Optical viewing arrangements ({house mirrors and spies [A47G 1/00](#)-, } ant glare equipment, e.g. polarising, for windscreens or windows [B60J 3/00](#)-, {visual aids for tractors [B62D 49/0614](#)-, } devices per se [G02B](#))**
- B60R 1/002
- {specially adapted for covering the peripheral part of the vehicle, e.g. for viewing tyres, bumpers or the like (integrated in the windows [B60R 1/001](#)-, combined with rear-view mirrors [B60R 1/08](#))}
- B60R 1/006
- {Side-view mirrors, e.g. V-shaped mirrors located at the front or rear part of the vehicle (combined with rear-view mirrors [B60R 1/08](#)-, side-view periscopes [B60R 1/10](#))}
- U B60R 1/02
- Rear-view mirror arrangements (periscope arrangements [B60R 1/10](#))
- B60R 1/04
- • mounted inside vehicle {([B60R 1/025](#)-, [B60R 1/08](#) take precedence)}
- B60R 1/06
- • mounted on vehicle exterior {([B60R 1/025](#)-, [B60R 1/08](#) take precedence)}
- B60R 1/076
- • • yieldable to excessive external force and provided with an indexed use position {([B60R 1/0617](#)-, [B60R 1/074](#) take precedence)}
- B60R 1/08
- • involving special optical features, e.g. avoiding blind spots {e.g. convex mirrors; Side-by-side associations of rear-view and other mirrors ([B60R 1/025](#)-, [B60R 1/10](#) take precedence)}

- B60R 1/10
- Front-view mirror arrangements; {(specially adapted for covering the peripheral part of the vehicle [B60R 1/002](#)); periscope arrangements {,i.e. optical devices using combinations of mirrors, lenses, prisms or the like (specially adapted for covering the peripheral part of the vehicle [B60R 1/002](#); for viewing traffic-lights [B60R 1/005](#)); Other mirror arrangements giving a view from above or under the vehicle}
- B60R 5/00**
- Compartments within vehicle body primarily intended or sufficiently spacious for trunks, suit-cases, or the like (primarily intended for stowing loads in load-transporting vehicles [B60P](#); arrangements for stowing spare wheels [B62D 43/00](#))**
- B60R 5/003
- {Luggage racks, e.g. for busses (primarily intended for passengers` property smaller than suitcases [B60R 7/04](#); [B60R 7/08](#); luggage racks for rail vehicles [B61D 37/003](#))}
- B60R 5/04
- arranged at rear of vehicle {([B60R 5/003](#); [B60R 5/006](#) take precedence; external trunks arranged at rear of vehicle [B60R 9/065](#))}
- B60R 7/00**
- Stowing or holding appliances inside vehicle primarily intended for personal property smaller than suit-cases, e.g. travelling articles, or maps (for radio sets, television sets, telephones or the like, mounting of cameras operative during drive, tools, or spare parts [B60R 11/00](#); for receptacles for refuse, food, beverages, cigarettes [B60N](#))**
- B60R 7/04
- in driver or passenger space, {e.g. using racks ([B60R 7/005](#); [B60R 7/08](#) take precedence)}
- U B60R 9/00**
- Supplementary fittings on vehicle exterior for carrying loads, e.g. luggage, sports gear or the like**
- U B60R 9/04
- Carriers associated with vehicle roof ([B60R 9/08](#) takes precedence)
- B60R 9/045
- - Carriers being adjustable or transformable, e.g. expansible, collapsible {(transformable into tents [B60P 3/36](#); into beds [B60P 3/38](#))}
- U B60R 11/00**
- Arrangements for holding or mounting articles, not otherwise provided for**
- B60R 11/02
- for radio sets, television sets, telephones, or the like; Arrangements of control thereof {(stowing of tape cartridges, compact discs or the like [B60R 7/088](#); } of aerials [H01Q](#))}
- B60R 11/06
- for tools or spare parts (for vehicle roof parts [B60J 7/20](#); for spare wheels [B62D](#))
- U B60R 13/00**
- Elements for body-finishing, identifying, or decorating; Arrangements or adaptations for advertising purposes**
- B60R 13/02
- {Internal} Trim mouldings; {Internal} Ledges; Wall liners {for passenger compartments}; Roof liners ([B60R 13/01](#) takes precedence; {-padded linings for the vehicle interior [B60R 21/04](#); arrangements or adaptations of floor mats or carpets in vehicles [B60N 3/04](#); internal lining for trains [B61D 17/18](#))}
- B60R 13/0275
- - {comprising removable or hinged parts (for accessing storage compartments [B60R 7/04](#); for airbag deployment [B60R 21/215](#))}
- B60R 13/07
- Water drainage or guide means not integral with roof structure ([B60R 13/06](#); [B60J 10/0045](#) take precedence; {integral with roof structure [B62D 25/07](#); drainage openings having movable or removable closures [B62D 25/24](#))}
- B60R 13/08
- Insulating elements, e.g. for sound insulation {(sound insulating linings for trains [B61D 17/185](#); drivers` cabs for load-carrying vehicles insulated against vibrations or noise [B62D 33/0604](#); thermal or acoustic insulation of engines [F02B 77/11](#); damping of sounds using compensation by electro-acoustic methods [G10K 11/178](#))}

- B60R 13/0815
- · {Acoustic or thermal insulation of passenger compartments (wall or roof liners integrating the insulating function [B60R 13/02](#); insulating floor mats or carpets [B60N 3/04](#))}
- B60R 16/00**
- Electric or fluid circuits specially adapted for vehicles and not otherwise provided for; Arrangement of elements of electric or fluid circuits specially adapted for vehicles and not otherwise provided for {(devices for protecting vehicle occupants in case of accidents [B60R 21/00](#); safety belts [B60R 22/00](#); central door locking [E05B 49/00](#), [E05B 77/50](#))}**
- U B60R 16/02
- electric {constitutive elements}
- U B60R 16/023
- · for transmission of signals between vehicle parts or subsystems
- B60R 16/0231
- · · {Circuits relating to the driving or the functioning of the vehicle (for dash boards [B60K 37/00](#), [B60Q 3/04](#); for indicating emergencies [B60Q 1/52](#); registering or indicating the working of vehicles [G07C 5/00](#); measuring distance [G01C](#), e.g. combinations of speed and distance [G01C 23/00](#); engine indicators [G01L](#); measuring speed or acceleration [G01P](#); brake control systems [B60T](#); monitoring tyres [B60C 23/00](#); indicating overspeed [B60K 31/00](#))}
- U B60R 16/03
- · for supply of electrical power to vehicle subsystems {or for (circuit arrangements for charging batteries [H02J 7/00](#))}
- B60R 16/0315
- · · {using multiplexing techniques (multiplexing for transmission of signals [G08C 15/00](#); multiplexing for electrical communication in general [H04J](#))}
- B60R 16/033
- · · characterised by the use of electrical cells or batteries (for propulsion purposes [B60K 1/04](#); supplying batteries to, or removing batteries from, vehicles [B60S 5/06](#); testing of charge state [G01R 31/36](#))}
- B60R 19/00**
- Wheel guards; Radiator guards, {e.g. grilles}; Obstruction removers; Fittings damping bouncing force in collisions {(reinforcement elements for side doors [B60J 5/0412](#); } mudguards [B62D](#))}**
- B60R 19/02
- Bumpers, i.e. impact receiving or absorbing members for protecting vehicles or fending off blows from other vehicles or objects ({[B60R 19/56](#) takes precedence; } initiating brake action by contact of bumper with an external object [B60T 7/22](#); for rail vehicles [B61F 19/04](#); safety equipment for cycles [B62J 27/00](#);] integral with waterborne vessels or specially adapted therefor [B63B 59/02](#))}
- U B60R 19/24
- · Arrangements for mounting bumpers on vehicles
- B60R 19/38
- · · adjustably or movably mounted, e.g. horizontally displaceable for securing a space between parked vehicles {(adjustably mounted for compensating manufacturing tolerances [B60R 19/24](#), [B60R 19/26](#))}
- B60R 19/54
- Obstruction removers or deflectors ([B60R 19/16](#), [B60R 21/34](#) take precedence)
- B60R 21/00**
- Arrangements or fittings on vehicles for protecting or preventing injuries to occupants or pedestrians in case of accidents or other traffic risks (safety belts or body harnesses in vehicles [B60R 22/00](#); devices, apparatus or methods for life-saving in general [A62B](#); safety devices for propulsion unit control specially adapted for, or arranged in, vehicles [B60K 28/00](#); seats constructed to protect the occupant from the effect of abnormal g-forces, e.g. crash or safety seats, [B60N 2/42](#); energy-absorbing arrangements for hand wheels for steering vehicles [B62D 1/11](#); energy-absorbing arrangements for vehicle steering columns [B62D 1/19](#); harnessing in aircraft [B64D 25/00](#))}**
- B60R 21/02
- Occupant safety arrangements or fittings, {e.g. crash pads (seat belts with crash pads [B60R 22/14](#); removable children's seats having a front guard or barrier [B60N 2/2839](#))}

- B60R 21/055
- Padded {or energy-absorbing} fittings, {e.g. seat belt anchors (sun visors [B60J 3/00](#); head rests [B60N 2/48](#))}
- B60R 21/06
- Safety nets, transparent sheets, curtains, or the like, e.g. between occupants and glass ({[B60R 21/026](#)}, [B60R 21/11](#), [B60R 21/12](#), [B60R 21/16](#) take precedence)
- B60R 21/16
- Inflatable occupant restraints or confinements designed to inflate upon impact or impending impact, e.g. air bags ({protective garments with automatically inflatable shock-absorbing means [A41D 13/018](#); } connection of valves to inflatable elastic bodies [B60C 29/00](#))
- U B60R 21/20
- Arrangements for storing inflatable members in their non-use or deflated condition; Arrangement or mounting of air bag modules or components
- U B60R 21/203
- in steering wheels or steering columns
- B60R 21/2035
- {using modules containing inflator, bag and cover attachable to the steering wheel as a complete sub-unit (steering wheel covers with tear lines [B60R 21/21656](#); assembling of modules [B60R 21/217](#))}
- U B60R 21/215
- characterised by the covers for the inflatable member ({[B60R 21/2176](#) takes precedence)}
- B60R 2021/21512
- {the lid being displaced towards the occupant during deployment ([B60R 2021/2161](#), [B60R 2021/21525](#) take precedence)}
- U B60R 21/23
- Inflatable members ([B60R 21/18](#) takes precedence; connection to inflation fluid source retainers [B60R 21/217](#))
- U B60R 21/231
- characterised by their shape, construction or spatial configuration
- WARNING**  
Groups [B60R 21/2334](#) - [B60R 21/2346](#) are not complete, pending a reorganisation; see provisionally also group [B60R 21/233](#)
- B60R 21/23138
- {specially adapted for side protection ([B60R 21/23184](#), [B60R 21/232](#) take precedence)}
- B60R 21/26
- characterised by the inflation fluid source or means to control inflation fluid flow {(arrangement or mounting thereof to the vehicle [B60R 21/20](#); blasting cartridges for producing gas under pressure in general [F42B 3/04](#); Initiators or igniters therefor [F42B 3/10](#))}
- WARNING**  
Groups [B60R 21/261](#) - [B60R 21/264](#) are not complete, pending a reorganisation; see provisionally also this group
- U B60R 22/00**      **Safety belts or body harnesses in vehicles (safety belts or body harnesses in general [A62B 35/00](#))**
- B60R 22/02
- Semi-passive restraint systems, e.g. systems applied or removed automatically but not both; {Manual restraint systems (knee, leg or head belts [B60R 22/001](#); devices for releasing in an emergency, remote or automatic unbuckling devices [B60R 22/32](#))}
- B60R 22/023
- {Three-point seat belt systems comprising two side lower and one side upper anchoring devices ([B60R 22/022](#), [B60R 22/03](#) take precedence)}
- B60R 22/10
- specially adapted for children or animals (children`s seats [B60N 2/24](#))
- NOTE**  
Groups [B60R 22/02](#) {[B60R 22/022](#)} to [B60R 22/08](#), [B60R 22/18](#) to [B60R 22/48](#) take precedence over group [B60R 22/10](#)
- B60R 22/105
- {for children (adaptation of children`s seats for seat belts [B60N 2/265](#), [B60N 2/2803](#))}

- B60R 22/12 • Construction of belts or harnesses ([B60R 21/18](#) takes precedence; {-woven fabrics for safety belts [D03D 1/0005](#)})
- B60R 22/28 • incorporating energy-absorbing devices {(belt anchors provided with energy-absorbing means for protecting the occupants in case of physical contact therewith [B60R 21/055](#); belt retractors comprising energy-absorbing means [B60R 22/341](#); [B60R 22/4676](#))}
- B60R 22/30 • Coupling devices other than buckles, including length-adjusting fittings {or anti-slip devices (adaptations of manual three-point seat belt systems for use by small passengers using other means than belt anti-slip devices [B60R 22/024](#); buckles [A44B 11/00](#); releasable fastenings in general [F16B](#))}
- U B60R 22/32 • Devices for releasing in an emergency, e.g. after an accident; {Remote or automatic unbuckling devices (unlocking devices for retractors [B60R 22/3416](#))}
- B60R 22/325 • • {using remote control means ([B60R 22/321](#); [B60R 22/322](#) take precedence)}
- U B60R 22/34 • Belt retractors, e.g. reels (anchoring devices {e.g. guide loops} , with means to tension the belt in an emergency [B60R 22/195](#))
- B60R 22/347 • • with means for permanently locking the retractor during the wearing of the belt ({[B60R 22/3405](#)}, [B60R 22/343](#); [B60R 22/415](#) take precedence)
- B60R 22/44 • • with means for reducing belt tension during use under normal conditions {(not included in the retractor [B60R 22/19](#); [B60R 22/3405](#) takes precedence)}
- B60R 2022/4473 • • • {using an electric retraction device (combined with a spring [B60R 2022/444](#); [B60R 2022/4466](#))}
- B60R 22/46 • • {Reels} with means to tension the belt in an emergency {by forced winding up} (electrical circuits for triggering safety arrangements [B60R 21/01](#){[tensioners using reels only guiding the belt during normal use, e.g. splitted reels \[B60R 22/195\]\(#\)](#)})

**Project: N/A (B60S)**

- B60S 3/00 **Vehicle cleaning apparatus not integral with vehicles (cleaning in general [B08B](#); cleaning peculiar to waterborne vessels [B63B 57/00](#), [B63B 59/00](#); ground equipment for cleaning aircraft [B64F 5/00](#); {-multistage treatment applied to waste water from vehicle wash installations [C02F 9/00](#))}**
- U B60S 5/00 **Servicing, maintaining, repairing or refitting of vehicles ({collecting or removing exhaust gases in workshops [B08B 15/002](#); straightening vehicle body parts [B21D 1/12](#), [B21D 1/14](#)}; vehicles adapted to carry a workshop for servicing or maintenance [B60P 3/14](#); servicing rail locomotives [B61K](#)}; {registering or indicating the working of vehicles [G07C 5/00](#): testing of vehicles [G01M 17/00](#); arrangements for electrical testing [G01R 31/00](#); devices for monitoring or checking brake systems [B60T 17/22](#); filling or draining lubricant [F01M 11/04](#); means for collecting, retaining, or draining-off lubricant [F16N 31/00](#); draining of lubricant from gearing [F16H 57/0406](#); assembly or repair of springs or dampers [F16F 9/3271](#); tool, instrument or work supports or storage means used in association with vehicles [B25H 5/00](#)}**
- B60S 5/04 • Supplying air for tyre inflation (arrangement of tyre inflating devices on vehicles [B60C 23/00](#); tyre pressure gauges [G01L 17/00](#); {-pumps actuated by muscle power [F04B 33/00](#)})
- B60S 9/00 **Ground-engaging vehicle fittings for supporting, lifting, or manoeuvring the vehicle, wholly or in part, e.g. built-in jacks {-props for vehicle draw bars [B60D 1/66](#); anti-theft devices acting on vehicle jacking means [B60R 25/001](#)}; (lifting devices in general [B66F](#), supports in general [F16M](#))**

## Project: N/A (B60T)

## B60T

**VEHICLE BRAKE CONTROL SYSTEMS OR PARTS THEREOF; BRAKE CONTROL SYSTEMS OR PARTS THEREOF, IN GENERAL (electrodynamic brake systems for vehicle, in general [B60L](#); brakes per se, i.e. devices where braking effect occurs, including ultimate brake actuators, [F16D](#)); ARRANGEMENT OF BRAKING ELEMENTS ON VEHICLES IN GENERAL; PORTABLE DEVICES FOR PREVENTING UNWANTED MOVEMENT OF VEHICLES; VEHICLE MODIFICATIONS TO FACILITATE COOLING OF BRAKES**

NOTE

In this subclass, the term "brake control systems" includes brake control systems for vehicles or of general applicability

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B60T 8/20](#) covered by [B60T 8/18](#)

[B60T 8/22](#) covered by [B60T 8/18](#)

[B60T 8/60](#) - [B60T 8/70](#) covered by [B60T 8/17](#)

[B60T 8/78](#) - [B60T 8/84](#) covered by [B60T 8/17](#)

[B60T 13/122](#) covered by [B60T 13/147](#)-, [B60T 13/167](#)

[B60T 13/125](#) covered by [B60T 13/141](#)

[B60T 13/128](#) covered by [B60T 13/145](#)-, [B60T 13/165](#)

[B60T 13/13](#) covered by [B60T 13/146](#)-, [B60T 13/166](#)

[B60T 13/132](#) covered by [B60T 13/143](#)-, [B60T 13/162](#)

[B60T 13/135](#) covered by [B60T 13/144](#)-, [B60T 13/163](#)

[B60T 13/138](#) covered by [B60T 13/148](#)-, [B60T 13/168](#)

[B60T 13/60](#) covered by [B60T 13/58](#)

[B60T 15/06](#) covered by [B60T 15/04](#)

[B60T 15/08](#) covered by [B60T 15/04](#)

## U B60T 8/00

**Arrangements for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions, e.g. limiting or varying distribution of braking force (by changing number of effective brake cylinders in power brake systems [B60T 17/10](#))**

## B60T 8/18

- responsive to vehicle weight or load, e.g. load distribution ({using electrical circuitry on regulation means [B60T 8/17](#);-; } [B60T 8/30](#) takes precedence; responsive to weight and speed condition [B60T 8/58](#))

NOTE

[B60T 8/1887](#) and [B60T 8/1893](#) take precedence over [B60T 8/1806](#) to [B60T 8/1881](#)

## U B60T 8/26

- characterised by producing differential braking between front and rear wheels {(using electrical circuitry or regulation means [B60T 8/17](#))}

## B60T 8/262

- {using valves with stepped characteristics ([B60T 8/261](#)-, [B60T 8/266](#) take precedence)}

## B60T 8/28

- responsive to deceleration {([B60T 8/261](#)-, [B60T 8/262](#)-, [B60T 8/266](#) take precedence)}

## B60T 8/30

- responsive to load {([B60T 8/261](#)-, [B60T 8/262](#)-, [B60T 8/266](#) take precedence)}

## B60T 8/32

- responsive to a speed condition, e.g. acceleration or deceleration ({using electrical circuitry or regulation means [B60T 8/17](#)}; [B60T 8/28](#) takes precedence; electric devices on electrically propelled vehicles indicating the wheel slip [B60L 3/10](#);-; measuring linear or angular speed per se [G01P 3/00](#))

- B60T 8/3205
  - • {acceleration ([B60T 8/34](#)-, [B60T 8/52](#)-, [B60T 8/54](#)-, [B60T 8/56](#)-, [B60T 8/58](#)-, [B60T 8/72](#)-, [B60T 8/86](#)-, [B60T 8/88](#) take precedence)}
- B60T 8/321
  - • {deceleration ([B60T 8/34](#)-, [B60T 8/52](#)-, [B60T 8/54](#)-, [B60T 8/56](#)-, [B60T 8/58](#)-, [B60T 8/72](#)-, [B60T 8/86](#)-, [B60T 8/88](#) take precedence)}
- U B60T 8/34
  - • having a fluid pressure regulator responsive to a speed condition
- B60T 8/341
  - • • {Systems characterised by their valves ([B60T 8/36](#)-, [B60T 8/38](#) take precedence)}
- U B60T 8/36
  - • • including a pilot valve responding to an electromagnetic force
- U B60T 8/3615
  - • • • {Electromagnetic valves specially adapted for anti-lock brake and traction control systems (electromagnetic valves in general [F16K 31/06](#))}
- B60T 8/362
  - • • • • {in pneumatic systems ([B60T 8/3655](#)-, [B60T 8/3675](#) and [B60T 8/369](#) take precedence)}
- B60T 8/363
  - • • • • {in hydraulic systems ([B60T 8/3655](#)-, [B60T 8/3675](#) and [B60T 8/369](#) take precedence)}
- B60T 8/3635
  - • • • • • {switching between more than two connections, e.g. 3/2-valves ([B60T 8/364](#)-, [B60T 8/3645](#) and [B60T 8/365](#) take precedence)}
- B60T 8/3695
  - • • • • {wherein the pilot valve is mounted separately from its power section ([B60T 8/3605](#)-, [B60T 8/361](#) and [B60T 8/3615](#) take precedence)}
- U B60T 8/44
  - • • co-operating with a power-assist booster means associated with a master cylinder for controlling the release and reapplication of brake pressure through an interaction with the power assist device {i.e. open systems}
- B60T 8/441
  - • • • {using hydraulic boosters ([B60T 8/445](#)-, [B60T 8/446](#)-, [B60T 8/447](#) take precedence)}
- B60T 8/443
  - • • • {using compressed air ([B60T 8/445](#)-, [B60T 8/446](#)-, [B60T 8/448](#) take precedence)}
- B60T 8/444
  - • • • • {using vacuum ([B60T 8/445](#)-, [B60T 8/446](#)-, [B60T 8/448](#) take precedence)}
- U B60T 8/48
  - • • connecting the brake actuator to an alternative or additional source of fluid pressure {e.g. traction control systems}
- U B60T 8/4809
  - • • • {Traction control, stability control, using both the wheel brakes and other automatic braking systems}
- U B60T 8/4827
  - • • • • {in hydraulic brake systems}
- B60T 8/4836
  - • • • • • {wherein a booster output pressure is used for normal or anti lock braking ([B60T 8/4845](#)-, [B60T 8/4863](#)-, [B60T 8/489](#) take precedence)}
- B60T 8/4863
  - • • • • • • {closed systems ([B60T 8/4845](#)-, [B60T 8/489](#) take precedence)}
- U B60T 8/50
  - • • having means for controlling the rate at which pressure is reapplied to {or released from} the brake
- B60T 8/5006
  - • • • {Pressure reapplication by pulsing of valves ([B60T 8/5012](#)-, [B60T 8/5018](#)-, [B60T 8/505](#)-, [B60T 8/5056](#) take precedence)}
- B60T 8/5018
  - • • • • {Pressure reapplication using restrictions ([B60T 8/5012](#)-, [B60T 8/505](#) take precedence)}
- B60T 13/00**

**Transmitting braking action from initiating means to ultimate brake actuator with power assistance or drive; Brake systems incorporating such transmitting means, e.g. air-pressure brake systems (arrangements for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions [B60T 8/00](#);- valves incorporated in such systems [B60T 15/00](#))**
- B60T 15/00**

**Construction arrangement, or operation of valves incorporated in power brake systems and not covered by groups [B60T 11/00](#) or [B60T 13/00](#) (valve structures responsive to a speed condition [B60T 8/34](#);- valves in general [F16K](#))**
- U B60T 15/02
  - Application and release valves

- B60T 15/36
- • Other control devices or valves characterised by definite functions  
{(electrically controlled valves in fluid-pressure brake systems [B60T 15/027](#)-,  
[B60T 15/028](#))}
- B60T 17/00** **Component parts, details, or accessories of power brake systems not covered by groups [B60T 8/00](#)-, [B60T 13/00](#) or [B60T 15/00](#)-, or presenting other characteristic features (air compressors per se [F04](#))**
- B60T 17/04
- Arrangements of piping, valves in the piping, e.g. cut-off valves, couplings or air hoses (traction couplings involving joints for supply lines, electric circuits, or the like [B60D 1/62](#);-; couplings peculiar to railway vehicles for, or combined with, couplings or connectors for fluid conduits or electric cables [B61G 5/06](#);-; pipes, cut-off valves, couplings, air hoses per se [F16C](#)-, [F16K](#)-, [F16L](#))
- U B60T 17/18
- Safety devices; Monitoring
- U B60T 17/22
- • Devices for monitoring or checking brake systems; Signal devices
- B60T 17/221
- • • {Procedure or apparatus for checking or keeping in a correct functioning condition of brake systems (hydraulic pressure systems in general [F15B 19/00](#)-, [F15B 21/04](#);-; testing structures or apparatus [G01M](#))}
- B60T 17/225
- • • {brake fluid level indicators (level indication in general [G01F](#);-; [H01H](#))}

**Project: N/A (B60W)**

- B60W 30/00** **Purposes of road vehicle drive control systems not related to the control of a particular sub-unit, e.g. of systems using conjoint control of vehicle sub-units, {-or advanced driver assistance systems for ensuring comfort, stability and safety or drive control systems for propelling or retarding the vehicle (anti-lock brake systems [ABS] [B60T 8/00](#))}**
- B60W 30/08
- {Active safety systems} predicting or avoiding probable or impending collision{  
{or attempting to minimise its consequences}
- B60W 40/00** **Estimation or calculation of {-non-directly measurable} driving parameters for road vehicle drive control systems not related to the control of a particular sub unit,{ e.g. by using mathematical models}**
- B60W 40/12
- related to parameters of the vehicle itself, {-e.g. tyre models}
- B60W 50/00** **Details of control systems for road vehicle drive control not related to the control of a particular sub-unit, {-e.g. process diagnostic or vehicle driver interfaces}**

WARNING

New subgroups of IPC8 are not yet complete. Documents from [B60K](#), in particular [B60K 41/00](#) and subgroups, are in the process of being reclassified to the new groups

**Project: N/A (B61B)**

- B61B 12/00** **Component parts, details or accessories not provided for in groups [B61B 7/00](#) to [B61B 11/00](#) (railway brakes [B61H](#); turntables [B61J 1/06](#))**

**Project: N/A (B61C)**

- B61C 1/00** **Steam locomotives or railcars (engines [F01](#); characterised by power transmissions [B61C 9/00](#);-; boilers [F22B](#))**
- B61C 3/00** **Electric locomotives or railcars (characterised by power transmission [B61C 9/00](#);-; electrical features [B60L](#);-; [H02](#))**
- B61C 5/00** **Locomotives or motor railcars with IC engines or gas turbines (characterised by power transmission [B61C 9/00](#);-; engines [F02](#))**

- U B61C 11/00** Locomotives or motor railcars characterised by the type of means applying the tractive effort; Arrangement or disposition of running gear other than normal driving wheel (constructions wheels [B60B](#))
- B61C 11/005 · {tractive effort applied by a transported road vehicle (railway wagons or vans adapted for carrying vehicles in general [B61D 3/18](#); vehicles for use both on rail and road, e.g. with rail and road wheels on the same axle [B60F](#))}
- B61C 13/00** Locomotives or motor railcars characterised by their application to special systems or purposes ([B61C 11/00](#) takes precedence; self-propelled scaffold cars, break-down cranes, inspection trolleys [B61D 15/00](#); general design of track recording vehicles [B61K 9/00](#))
- B61C 15/00** Maintaining or augmenting the starting or braking power by auxiliary devices and measures; Preventing wheel slippage; Controlling distribution of tractive effort between driving wheels (propelling locomotives or motor railcars by special means [B61C 11/00](#); driving wheels with non-slipping devices [B60B](#); brakes [B61H](#); wetting or lubricating rails [B61K](#))
- B61C 15/08 · Preventing wheel slippage (adjusting wheel-braking force to prevent wheel slippage [B60T 8/00](#); {-removing undesirable matter from the permanent way of railways [E01H 8/00](#)})
- B61C 15/10 · · by depositing sand or like friction increasing materials (for vehicles in general [B60B](#); combined control of sanding apparatus and brakes [B61H](#))
- U B61C 17/00** Arrangement or disposition of parts; Details or accessories not otherwise provided for; Use of control gear and control systems
- B61C 17/10 · Connecting-rods for driving wheels; Arrangements of their bearings (connection-rods or bearings, in general [F16C 7/00](#), [B61C 9/04](#))
- B61C 17/12 · Control gear; Arrangements for controlling locomotives from remote points in the train or when operating in multiple units (control from points outside the train [B61L 3/00](#); fluid-actuated telemotors, servomotors [F15B](#); control devices in general [G05](#))

**Project: N/A (B61D)**

- U B61D 19/00** Door arrangements specially adapted for rail vehicles (locks for vehicles [E05B 77/00](#) - [E05B 85/00](#); door-operating mechanisms [E05F](#))
- U B61D 19/003 · {characterised by the movements of the door}
- U B61D 19/005 · · {sliding ([B61D 19/008](#), [B61D 19/009](#) take precedence)}
- B61D 19/006 · · · {vertically (~~[B61D 19/006](#) takes precedence~~ [B61D 19/006](#) takes precedence)}

**Project: N/A (B61L)**

- B61L 1/00** Devices along the route controlled by interaction with the vehicle or vehicle train, {-e.g. pedals}(detonators [B61L 5/20](#); operation of points or signals by passage of the vehicle [B61L 11/00](#), [B61L 13/00](#); central traffic control systems controlled by train [B61L 27/04](#); operation of gates, or gates and signals, by approaching vehicle [B61L 29/18](#))
- B61L 15/00** Indicators provided on the vehicle or vehicle train for signalling purposes; {-On-board control or communication systems}
- B61L 19/00** Arrangements for interlocking between points and signals by means of a single interlocking device, {-e.g. central control (remote control [B61L 7/00](#); station block arrangements [B61L 21/00](#))}
- B61L 27/00** Central traffic control systems; {-Track-side control or specific communication systems}

**Project: N/A (B62B)**

- U B62B 3/00** **Hand carts having more than one axis carrying transport wheels; Steering devices therefor; Equipment therefor {(convertible from one-axled to two-axled vehicle [B62B 1/002](#))}**
- U B62B 3/02 · involving parts being adjustable, collapsible, attachable, detachable or convertible
- B62B 3/022 · · {folding down the body to the wheel carriage or by retracting projecting parts (collapsible containers [B65D](#), e.g. [B65D 7/24](#)-, [B65D 9/12](#)-, [B65D 11/18](#))}
- U B62B 5/00** **Accessories or details specially adapted for hand carts ({[B62B 3/1404](#)}, [B62B 9/00](#) take precedence; wheels, axles, or axle bearing for vehicles [B60B](#); castors for vehicles, castors in general [B60B 33/00](#))**
- B62B 5/06 · Hand moving equipment, e.g. handle bars (for cycles [B62K 11/14](#)-, [B62K 21/12](#))
- U B62B 7/00** **Carriages for children; Perambulators, e.g. dolls` perambulators**
- U B62B 7/04 · having more than one wheel axis; Steering devices therefor
- U B62B 7/12 · · convertible, e.g. into children`s furniture or toy (children`s chairs convertible to pushchairs [A47D 1/06](#))
- B62B 7/123 · · · {from seat to bed ([B62B 7/147](#)-, [B62B 9/104](#) take precedence)}
- U B62B 9/00** **Accessories or details specially adapted for children`s carriages or perambulators (providing for travelling on snow [B62B 19/00](#))**
- B62B 9/10 · Perambulator bodies; Equipment therefor (collapsible or foldable [B62B 7/06](#)-, convertible [B62B 7/12](#))
- B62B 9/12 · · involving parts that are adjustable, attachable or detachable {([B62B 9/102](#)-, [B62B 9/14](#) take precedence)}
- B62B 9/24 · Safety guards for children, e.g. harness (cat nets [B62B 9/14](#)-, devices for use in guiding or supporting children, e.g. safety harness [A47D 13/08](#))
- B62B 13/00 - B62B 19/00** **Sledges (characterised by animal propulsion [B62C](#)-, propulsion of sledges by driver or engine [B62M](#))**
- B62B 17/00** **Accessories or details of sledges {(propulsion devices for sledges [B62M 27/00](#)-, [B62M 29/00](#))}**

**B62B 2203/00 -  
B62B 2501/00** Sledges (characterised by animal propulsion [B62C](#); propulsion of sledges by driver or engine [B62M](#))

**Project: N/A (B62D)**

**B62D**

**MOTOR VEHICLES; TRAILERS** (steering, or guiding on a desired track, of agricultural machines or implements [A01B 69/00](#); wheels, castors, axles, increasing wheel adhesion [B60B](#); vehicle tyres, tyre inflation or tyre changing [B60C](#); connections between vehicles of a train or the like [B60D](#); vehicles for use on rail and road, amphibious or convertible vehicles [B60F](#); suspension arrangements [B60G](#); heating, cooling, ventilating or other air treating devices [B60H](#); windows, windscreens, non-fixed roofs, doors or similar devices, protective coverings for vehicles not in use [B60J](#); propulsion plant arrangements, auxiliary drives, transmissions, controls, instrumentation or dashboards [B60K](#); electric equipment or propulsion of electrically-propelled vehicles [B60L](#); power supply for electrically-propelled vehicles [B60M](#); passenger accommodation not otherwise provided for [B60N](#); adaptations for load transportation or to carry special loads or objects [B60P](#); arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general [B60Q](#); vehicles, vehicle fittings or vehicle parts not otherwise provided for [B60R](#); servicing, cleaning, repairing, supporting, lifting, or manoeuvring, not otherwise provided for, [B60S](#); brake arrangements, brake control systems or parts thereof [B60T](#); air-cushion vehicles [B60V](#); motor-cycles, accessories therefor [B62J](#), [B62K](#); testing of vehicles [G01M](#))

#### NOTE

In this subclass, the following terms are used with the meanings indicated:

- "vehicles" include motor vehicles and trailers;
- "trailers" include forecars or sidecars.

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">B62D 25/13</a>	covered by	<a href="#">B60J 1/20</a> <del>_____</del> , <a href="#">B60R 13/07</a>
<a href="#">B62D 25/22</a>	covered by	<a href="#">B60R 3/00</a>
<a href="#">B62D 65/08</a>	covered by	<a href="#">B60J 10/0088</a>

**B62D 1/00 -  
B62D 19/00**

#### Steering of motor vehicles or trailers

#### NOTE

Steering devices acting on ground-engaging wheels, endless tracks or the like and also applicable to aircraft are classified in [B62D 1/00](#) and relevant subsequent groups; these groups take precedence over [B64C](#); These elaborations also embrace steering of vehicles in general but applicable to land vehicles

- |   |                           |   |
|---|---------------------------|---|
| U | <a href="#">B62D 1/02</a> | • vehicle-mounted   |
| U | <a href="#">B62D 1/04</a> | • • Hand wheels   |
|   | <a href="#">B62D 1/11</a> | • • • incorporating energy-absorbing arrangements, e.g. by being yieldable or collapsible (padded linings associated with the steering wheel <a href="#">B60R 21/05</a> ; shock absorbers using plastic deformation of members in general <a href="#">F16F 7/12</a> ) |
| U | <a href="#">B62D 1/16</a> | • • Steering columns  |

- B62D 1/166
- • • {Means changing the transfer ratio between steering wheel and steering gear (by continuous supply of energy, e.g. from electric motor [B62D 5/008](#); controlling steering depending on driving conditions sensed and responded to [B62D 6/00](#))}
- B62D 1/18
- • • yieldable or adjustable, e.g. tiltable (padded linings associated with the steering column [B60R 21/05](#))
- NOTE  
Group [B62D 1/181](#) takes precedence over groups [B62D 1/183](#) - [B62D 1/187](#).
- B62D 1/185
- • • • adjustable by axial displacement, e.g. telescopically ([B62D 1/183](#)-, [B62D 1/187](#)-, [B62D 1/19](#) take precedence)
- B62D 1/187
- • • • with tilt adjustment; with tilt and axial adjustment ([B62D 1/183](#)-, [B62D 1/19](#) takes precedence)
- B62D 1/24
- not vehicle-mounted {(special adaptations of automatic tractor steering [A01B 69/008](#); devices for lifting, movable on wheels, automatically guided [B66F 9/063](#))}
- B62D 1/28
- • non-mechanical {e.g. following a line or other known markers (steering position indicators [B62D 15/02](#); steering aids [B62D 15/025](#); parking aids [B62D 15/027](#); steering assistants [B62D 15/029](#); determination or calculation of trajectory of land vehicles [G05D 1/021](#))}
- B62D 3/00**      **Steering gears (power assisted or power driven [B62D 5/00](#); steering linkages [B62D 7/00](#); for non-deflectable wheels [B62D 11/00](#); gearing in general [F16H](#))**
- B62D 5/00**      **Power-assisted or power-driven steering ({controlling steering depending on driving conditions sensed and responded to [B62D 6/00](#); } for non-deflectable wheels [B62D 11/00](#); fluid pressure servomotors in general [F15B](#))**
- B62D 5/001
- {Mechanical aspects of steer-by-wire systems, not otherwise provided in [B62D 5/00](#) (hydraulic steer-by-wire systems [B62D 5/091](#))}
- U B62D 5/04
- electrical, e.g. using an electric servo-motor connected to, or forming part of, the steering gear
- B62D 5/0457
- • {characterised by control features of the drive means as such (controlling steering depending on driving conditions sensed and responded to [B62D 6/00](#); determination of steering angle [B62D 15/021](#); measuring torque applied to steering wheels [G01L 5/221](#); control of electric motor as such [H02P](#))}
- U B62D 5/06
- fluid, i.e. using a pressurised fluid for most or all the force required for steering a vehicle
- B62D 5/20
- • specially adapted for particular type of steering gear or particular application (steering gears per se [B62D 3/00](#); steering linkages not characterised by being power-assisted or power-driven [B62D 7/00](#))
- B62D 6/00**      **Arrangements for automatically controlling steering depending on driving conditions sensed and responded to, e.g. control circuits (means for initiating a change in direction [B62D 1/00](#); steering valves [B62D 5/06](#); combined with means for inclining the vehicle body or wheels on bends [B62D 9/00](#))**
- NOTE  
When classifying in this group, classification is also made in the appropriate one of groups [B62D 1/00](#) to [B62D 5/00](#) or [B62D 7/00](#) to [B62D 19/00](#) if other aspects of the steering system are of interest

- U B62D 7/00** **Steering linkage; Stub axles or their mountings (B62D 13/00 takes precedence; power-assisted or power-driven steering B62D 5/00)**  
 B62D 7/16 · Arrangement of linkage connections (pivots per se [F16C](#); {e.g. ball joints [F16C 11/06](#)})
- U B62D 11/00** **Steering non-deflectable wheels; Steering endless tracks or the like**  
**NOTE**  
 Gearings of interest apart from this application are also classified in the relevant group of subclass [F16H](#) covering gearings per se
- U B62D 11/02** · by differentially driving ground-engaging elements on opposite vehicle sides
- U B62D 11/06** · · by means of a single main power source
- B62D 11/10** · · · using gearings with differential power outputs on opposite sides, e.g. with twin-differential or epicyclic gears {(arrangements or mounting of transmissions in vehicles [B60K 17/00](#); gearing in general [F16H](#))}
- B62D 11/105** · · · {using variable ratio belt and pulley gearings (gearing for conveying rotary motion by endless flexible members [F16H 7/00](#), [F16H 9/00](#))}
- B62D 12/00** **Steering specially adapted for vehicles operating in tandem or having pivotally connected frames (steering endless tracks or the like [B62D 11/00](#); steering specially adapted for trailers [B62D 13/00](#))**
- U B62D 15/00** **Steering not otherwise provided for**
- U B62D 15/02** · Steering position indicators; {Steering position determination; Steering aids}
- B62D 15/029** · · {Steering assistants using warnings or proposing actions to the driver without influencing the steering system (parking aids [B62D 15/027](#), determination or calculation of trajectory of land vehicles [G05D 1/021](#), image processing [G06T](#))}
- B62D 21/00** **Understructures, i.e. chassis frame on which a vehicle body may be mounted (combined frame and vehicle body [B62D 23/00](#); {-characterised by the material thereof [B62D 29/00](#)})**
- B62D 21/15** · having impact absorbing means, e.g. a frame designed to permanently or temporarily change shape or dimension upon impact with another body (bumpers [B60R 19/02](#); shock absorbers in general [F16F](#))
- U B62D 21/18** · characterised by the vehicle type and not provided for in groups [B62D 21/02](#) to [B62D 21/17](#)
- B62D 21/186** · · {for building site vehicles or multi-purpose tractors (tracked vehicles [B62D 55/10](#); tractors in general [B62D 49/00](#); building site vehicles in general [E02F](#); lift-trucks [B66F](#))}
- B62D 23/00** **Combined superstructure and frame, i.e. monocoque constructions ({having impact absorbing means [B62D 21/15](#); } superstructure {or monocoque structure} sub-units {or parts or details thereof} [B62D 25/00](#); {-characterised by the material thereof [B62D 29/00](#)})**
- B62D 24/00** **Connections between vehicle body and vehicle frame ([B62D 23/00](#), [B62D 33/077](#) take precedence)**  
**WARNING**  
 Group [B62D 24/00](#) and subgroups are not complete. See also other groups of [B62D](#)
- B62D 25/00** **Superstructure {or monocoque structure} sub-units; Parts or details thereof not otherwise provided for ({having impact absorbing means [B62D 21/15](#); running-boards, steps, or the like as superstructure sub-unit [B60R 3/00](#)})**

- B62D 25/06
- Fixed roofs (non-fixed roofs or like shelters [B60J 7/00](#); roof liners [B60R 13/02](#); insulating elements [B60R 13/08](#))
- U B62D 25/08
- Front or rear portions {(sub-frames for mounting engine or suspensions [B62D 21/11](#))}
- B62D 25/10
- • Bonnets or lids, {e.g. for trucks, tractors, busses, work vehicles (for truck beds [B60J 7/1607](#); for boats [B63B 19/12](#); doors arranged at the vehicle rear [B60J 5/10](#); inlet covers for vehicle fuel tanks [B60K 15/05](#); for protecting non-occupants of a vehicle [B60R 21/38](#))}
- B62D 25/12
- • • Parts or details thereof (locks [E05B](#), {[E05B 83/16](#); devices for holding open [E05C 17/00](#), e.g. while carrying oversize objects [E05C 17/042](#); hinges [E05D](#); counterbalancing means [E05E](#); {checks, stops, buffers [E05F 5/00](#); } springs, {e.g. pneumatic springs} [F16F](#))
- B62D 25/20
- Floors or bottom sub-units {(sub-frames for mounting engine or suspensions [B62D 21/11](#); drip trays [F16N 31/006](#))}
- B62D 25/2072
- • {Floor protection, e.g. from corrosion or scratching (floor mats [B60N 3/04](#), armour [F41H 7/042](#), insulation [B60R 13/08](#), streamlining [B62D 35/02](#))}
- B62D 27/00**
- Connections between superstructure {or understructure} sub-units {([B62D 33/0207](#), [B62D 33/044](#) take precedence; between sub-units predominantly made of synthetic material [B62D 29/048](#))}**
- U B62D 27/02
- rigid
- B62D 27/026
- • {Connections by glue bonding (in general [F16B 11/00](#); processes [C09J 5/00](#))}
- U B62D 27/06
- readily releasable
- B62D 27/065
- • {using screwthread (Connection of crossbeam to A- pillars [B62D 25/147](#); mounting load bearing surfaces [B62D 21/09](#); securing mudguards [B62D 25/163](#); connections for synthetic parts [B62D 29/048](#))}
- B62D 29/00**
- Superstructures, {understructures, or sub-units thereof,} characterised by the material thereof {([B62D 33/044](#), [B62D 33/048](#) take precedence)}**
- B62D 33/00**
- Superstructures for load-carrying vehicles ({having impact absorbing means [B62D 21/15](#); } in which a load-carrying element is movable [B60P](#); liners [B60R 13/00](#); {joining sheets or plates to one another or to strips or bars parallel to them [F16B 5/00](#))}**
- U B62D 33/02
- Platforms; Open load compartments {(Flat wagons including posts or standards [B61D 3/08](#))}
- B62D 33/0222
- • {Connecting elements between stanchions, e.g. roof supporting elements, stiffeners (non-fixed roofs [B60J 7/00](#); securing and covering of load [B60P 7/00](#))}
- B62D 33/04
- Enclosed load compartments {Frameworks for movable panels, tarpaulins or side curtains (tarpaulins per se [B60J 7/00](#), [B60P 7/04](#); side curtains per se [B60J 5/065](#))}
- B62D 33/042
- • {divided into compartments (movable bulk heads [B60P 7/14](#); cattle transport [B60P 3/04](#); bottled liquids [B60P 3/22](#))}
- B62D 33/046
- • {built up with flat self-supporting panels; Fixed connections between panels ([B62D 29/045](#), [B62D 33/048](#) take precedence)}
- B62D 33/06
- Drivers` cabs {(overhead guards, e.g. against loads falling down [B60R 21/11](#); roll-over protection [B60R 21/13](#))}
- U B62D 33/0604
- • {Cabs insulated against vibrations or noise, e.g. with elastic suspension (resilient connections between superstructure sub-units [B62D 27/04](#); damping noise in general [G10K 11/00](#); for vehicles in general [B60R 13/08](#))}

- B62D 33/0612
- {Cabins with living accommodation, especially for long distance road vehicles, i.e. sleeping, cooking, or other facilities (beds in general adapted to be used in vehicles [A47C 17/80](#); sanitation devices in vehicles in general [B60R 15/00](#); living accommodation in vehicles in general [B60P 3/32](#); passenger fittings in general [B60N 3/00](#))}
- U B62D 35/00**      **Vehicle bodies characterised by streamlining**
- B62D 35/02
- Streamlining the undersurfaces {([B62D 35/005](#), [B62D 35/007](#), [B62D 35/008](#) take precedence)}
- U B62D 47/00**      **Motor vehicles or trailers predominantly for carrying passengers (superstructures [B62D 31/00](#))**
- B62D 47/003
- {convertible in order to modify the number of seats (foldable compact cars [B62D 31/006](#); convertible from one use to a different one [B60P 3/42](#))}
- B62D 49/00**      **Tractors (of walk type [B62D 51/04](#); endless-track features [B62D 55/00](#) {tractors for handling aircraft [B64F 1/22](#); transport specially adapted for underground galleries [E21F 13/02](#))}**
- U B62D 49/06**
- adapted for multi-purpose use
- B62D 49/0621
- {comprising traction increasing arrangements e.g. all-wheel traction devices, multiple-axle traction arrangements, auxiliary traction increasing devices (anti-skid or anti-slip devices fitted onto the wheels [B60B 15/02](#), [B60B 39/12](#); arrangements of transmission for driving both front and rear wheels or tandem wheels of vehicles [B60K 17/34](#), [B60K 17/36](#))}
- B62D 49/0628
- · {using detachable weights (counterweights against overturning [B62D 49/085](#); movable stabilisation masses [B62D 37/04](#))}
- B62D 49/0635
- · {using additional ground engaging means, e.g. endless tracks (vehicles with endless tracks and either additional or alternative ground wheels [B62D 55/02](#), [B62D 55/04](#))}
- B62D 49/065
- {Coupling of multi-purpose tractors with equipment (towing bars [B60D](#); with load transfer [B62D 53/08](#); power take-off [B60K](#); with lifting devices [B62D 49/02](#); pushing gear [B62D 49/04](#))}
- U B62D 51/00**      **Motor vehicles characterised by the driver not being seated {(wheeled carriers for golf bags [A63B 55/08](#))}**
- B62D 51/001
- {characterised by the vehicle control device (mechanical features of control devices in general [G05G](#); arrangements of vehicle control devices in general [B60K 20/00](#), [B60K 23/00](#), [B60K 26/00](#))}
- B62D 51/004
- {characterised by the transmission (arrangements or mounting of transmissions in vehicles [B60K 17/00](#); gearing in general [F16H](#))}
- B62D 53/00**      **Tractor-trailer combinations; Road trains (traction couplings other than fifth wheel coupling [B60D](#) {tracked vehicles comprising at least two articulated parts [B62D 55/0655](#))}**
- U B62D 53/04**
- comprising a vehicle carrying an essential part of the other vehicle's load by having supporting means for the front or rear part of the other vehicle
- U B62D 53/06**
- · Semi-trailers
- B62D 53/061
- · {of flat bed or low loader type or fitted with swan necks (detachable swan necks [B62D 53/065](#); swan neck-fifth wheel couplings [B62D 53/08](#))}
- B62D 53/062
- · · {having inclinable, lowerable platforms; Lift bed trailers; Straddle trailers (lifting coupling saddles [B62D 53/0821](#); crane vehicles [B60P 3/28](#))}
- B62D 53/067
- · {Multi-purpose, convertible or extendable load surface semi-trailers (for container transport [B60P 1/6418](#); convertible road transport vehicles in general [B60P 3/42](#))}

- B62D 53/068
- • • {having devices to equalise or modify the load between the fifth wheel and the rear wheels (adjustable coupling saddles per se [B62D 53/0807](#); load transfer devices to permit coupling or uncoupling [B62D 53/0857](#); anti jack-knifing devices [B62D 53/0871](#))}
- U B62D 53/08
- • Fifth wheel traction couplings {(Tractors for handling trailers in terminals [B62D 49/007](#))}
- B62D 53/0871
- • • {with stabilising means, e.g. to prevent jack-knifing, pitching, rolling, buck jumping (stabilising in general [B62D 37/00](#); tractors [B62D 49/08](#))}
- B62D 55/00**      **Endless track vehicles (steering aspects [B62D 11/00](#); {-characterised by the driver not being seated [B62D 51/007](#)})**
- U B62D 55/06
- with tracks without ground wheels
- B62D 55/065
- • Multi-track vehicles, i.e. more than two tracks {(soil-shifting machines [E02F](#); mining machines [E21C](#))}
- B62D 55/0655
- • • {Articulated endless track vehicles (steering specially adapted for trailers [B62D 13/00](#); articulated buses [B62D 47/025](#); tractor-trailer combinations or road trains comprising a uni-axle unit and a uni-axle trailer [B62D 53/02](#))}
- B62D 55/075
- • Tracked vehicles for ascending or descending stairs, {steep slopes or vertical surfaces} (magnetic or pneumatic ground-engaging parts [B62D 55/265](#); chairs or multi-track cycles specially adapted for invalids [A61G 5/00](#))
- U B62D 55/08
- Endless track units; Parts thereof
- U B62D 55/088
- • with means to exclude or remove foreign matter, e.g. sealing means, self-cleaning track links or sprockets, deflector plates or scrapers
- B62D 55/0887
- • • {Track-articulation sealings against dust, water, mud or the like (sealing of bearings in general [F16C 33/72](#); chain bushings in general [F16G 15/00](#))}
- B62D 57/00**      **Vehicles characterised by having other propulsion or other ground-engaging means than wheels or endless track, alone or in addition to wheels or endless track (sledges [B62B](#); motor sledges [B62M](#))**
- U B62D 57/02
- with ground-engaging propulsion means, e.g. walking members
- B62D 57/024
- • specially adapted for moving on inclined or vertical surfaces (endless-track vehicles for ascending or descending stairs [B62D 55/075](#); hand-carts with provision for travelling up or down stairs [B62B 5/02](#))
- U B62D 63/00**      **Motor vehicles or trailers not otherwise provided for**
- U B62D 63/06
- Trailers (vehicles comprising living accommodation for people, e.g. caravans, camping or like vehicles [B60P 3/32](#))
- B62D 63/061
- • {Foldable, extensible or yielding trailers (foldable caravans [B60P 3/34](#); adjustable chassis frames [B62D 21/14](#))}
- B62D 67/00**      **Systematic disassembly of vehicles for recovery of salvageable components, e.g. for recycling (for disposal of vehicles by destroying or transformation [B09B 3/00](#), [B09B 5/00](#); General arrangement of separating plants [B03B 9/00](#); Recovery of plastics [B29B 17/00](#))}**

**Project: N/A (B62J)**

- B62J 6/00
- Arrangement of optical signalling or lighting devices on cycles, the mounting or supporting thereof or circuits therefor (optical signalling or lighting devices per se [F21](#), {-with built-in power supply [F21S 9/00](#), [G08](#), [H05](#)})
- B62J 35/00
- Fuel tanks specially adapted for motor-cycles or engine-assisted cycles; Arrangements thereof (fuel tanks forming part of cycle frames [B62K 11/00](#); tanks in general [B60K](#)){(closure caps for fuel tanks [B60K 15/0406](#))}

**Project: N/A (B62K)**

B62K 27/00

Sidecars; Forecars; {-Trailers or the like specially adapted to be attached to cycles}(trailers [B60P](#); [B62D](#); characterised by carrying propulsion engine {[B62M 7/14](#)})

**Project: N/A (B62L)**

U B62L 5/00

Brakes, or actuating mechanisms therefor, controlled by back-peddalling (free-wheel devices specially adapted for cycles [F16D 41/00](#))

B62L 5/02

- the brakes being actuated through coaxing coaxial cones {-located in the rear wheel hub}

**Project: N/A (B62M)**

B62M

**RIDER PROPULSION OF WHEELED VEHICLES OR SLEDGES; POWERED PROPULSION OF SLEDGES OR {-SINGLE-TRACK} CYCLES; TRANSMISSIONS SPECIALLY ADAPTED FOR SUCH VEHICLES (arrangements or mounting of transmissions in vehicles in general [B60K](#); transmission elements per se [F16](#))**

NOTE

In this subclass, the term "transmission" means all parts between the prime mover or the part to which a rider immediately applies propulsive effort, e.g. pedal cranks, and a driven ground wheel.>

**Project: N/A (B63B)**

B63B

**SHIPS OR OTHER WATERBORNE VESSELS; EQUIPMENT FOR SHIPPING ( {amphibious vehicles [B60F 3/00](#); } air-cushion vehicles [B60V](#); arrangements of vessel ventilation, heating, cooling or air conditioning [B63J 2/00](#))**

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) to [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

B63B 1/00

**Hydrodynamic or hydrostatic features of hulls or of hydrofoils (keels [B63B 3/38](#); determining hydrodynamic or hydrostatic features [B63B 9/00](#); hulls peculiar to submarines [B63B 3/13](#); decreasing pitch, roll or like unwanted vessel movements by using foils or acting on ambient water [B63B 39/06](#))**

U B63B 1/16

- deriving additional lift from hydrodynamic forces

U B63B 1/24

- of hydrofoil type {(controlling attitude or depth of underwater vessels by hydrofoils or the like [B63G 8/18](#))}

WARNING

This group is pending a reorganisation, also documents covered by group [B63B 1/26](#) are within this group

B63B 1/246

- {Arrangements of propulsion elements (propulsion elements in general [B63H 5/00](#); propulsion by jets in general [B63H 11/00](#))}

B63B 3/00

**Constructions of hulls (non-metallic hulls [B63B 5/00](#); designing, building, maintaining or repairing methods [B63B 9/00](#))**

U B63B 9/00

**Methods of designing, building, maintaining, converting, refitting, repairing, or determining properties of vessels, not otherwise provided for (shuttering for building concrete vessels [E04G](#))**

- U B63B 9/06  
B63B 9/065
- Methods of building hulls
  - {for floating offshore platforms (grounded platforms [E02B 17/00](#))}
- WARNING  
Not complete, see [B63B 21/50](#), [B63B 35/003](#), [B63B 35/44](#)
- U **B63B 11/00**  
B63B 11/04
- Interior subdivision of hulls (bulkhead space construction [B63B 3/56](#))**
- Constructional features of bunkers, {e.g. structural fuel tanks,} or ballast tanks, e.g. with elastic walls ({tanks for fuel or the like not forming subdivisions of the hull [B63B 17/0027](#); } cleaning of tanks [B63B 57/00](#))
- WARNING  
Not complete pending reclassification; see also [B63B 25/08](#) and subgroups
- B63B 13/00**
- Conduits for emptying or ballasting; Self-bailing equipment; Scuppers (draining means for hatches [B63B 19/26](#); centrifugal bilge-water separators [B04](#); {arrangements of installations for treating ballast water [B63J 4/002](#); } pipes in general [F16L](#))**
- B63B 15/00**
- Superstructures {,deckhouses, wheelhouses or the like}; Arrangements or adaptations of masts {or spars, e.g. bowsprits} (loading or unloading equipment [B63B 27/00](#); masts and staying in general [E04H](#); sails, running rigging [B63H](#); {mounting ladders or the like on masts [B63B 29/205](#))}**
- B63B 17/00**
- Vessel parts, details, or accessories, not otherwise provided for {(vehicle fittings for preventing or indicating unauthorised use or theft of vehicles in general [B60R 25/00](#); propeller guards, line cutters or other means for protecting propellers or rudders [B63H 5/165](#); protection of power legs of outboard propulsion units [B63H 20/36](#); locking devices for boats, surfboards or parts or accessories thereof [E05B 73/007](#))}**
- WARNING  
Not complete pending a reorganisation; for documents concerning protective caps, or anti-theft devices other than using keys, see [B63J 99/00](#)
- B63B 17/0018
- {Arrangements or devices specially adapted for facilitating access to underwater elements, e.g. to propellers (retractable propellers [B63H 5/125](#); tilting outboard propulsion units [B63H 20/08](#)); Externally attached cofferdams or the like (caissons adapted to laying foundations [E02D 23/00](#) to [E02D 27/00](#))}
- WARNING  
Documents concerning "externally attached cofferdams or the like" are not complete, pending a reorganisation; see also [B63B 9/00](#)
- B63B 17/0027
- {Tanks for fuel or the like (constructional features of bunkers [B63B 11/04](#)); Accessories therefor, e.g. tank filler caps (fuel tanks for vehicles in general [B60K 15/03](#); cargo tanks [B63B 25/08](#); cleaning of tanks [B63B 57/00](#); handling of liquids for use in power plants [B63H 21/38](#))}
- WARNING  
Not complete pending reclassification; see also [B63B 25/08](#) and subgroups
- B63B 17/0081
- {Vibration isolation or damping elements or arrangements, e.g. elastic support of deck-houses (mounting of propulsion plant or unit [B63H 21/30](#); vibration dampers, suppression of vibration in systems [F16F](#))}
- B63B 17/06
- Refuse discharge, e.g. for ash ({arrangements of installations for treating refuse or sludge, e.g. tank washing sludge [B63J 4/00](#); } removal of domestic or like refuse [B65F](#))

- B63B 19/00** Arrangements or adaptations of ports, doors, windows, port-holes, or other openings or covers (scuppers [B63B 13/00](#); arrangements of watertight doors in bulkheads [B63B 43/24](#))
- B63B 21/00** Tying-up; Shifting, towing, or pushing equipment; Anchoring ({of buoys [B63B 22/04](#)} ; dynamic anchoring [B63H 25/00](#); equipment for shipping on coasts, in harbours or on other fixed marine structures, e.g. for landing purposes, [E02B](#))
- WARNING  
Group [B63H 21/00](#) is no longer used for classification of adaptations of ropes, hawsers, or the like, or parts thereof. Documents are in the process of being reorganised to [B63B 21/20](#)
- U **B63B 21/04** • Fastening or guiding equipment for chains, ropes, hawsers, or the like {(means for fastening cables or ropes in general [F16G 11/00](#))}
- B63B 21/08** • • Clamping devices (in general [F16B](#); {-means for fastening cables or ropes to one another or to other objects in general [F16G 11/00](#))}
- B63B 21/56** • Towing or pushing equipment (tugs [B63B 35/66](#); {-towing devices for waterskis or watersledges [B63B 35/815](#))}
- B63B 21/64** • • Equipment for towing or pushing vessels by vehicles or beings moving forward on ground-based paths along water way (boat-hooks or the like [B63B 21/54](#); shore- or ground-based equipment per se, e.g. vehicles, rails, see the relevant classes)
- B63B 21/66** • • Equipment specially adapted for towing underwater objects or vessels, e.g. fairings for tow-cables ({paravanes for dragging fishing nets [A01K 73/02](#); } salvaging underwater vessels or objects [B63C 7/00](#); towed underwater vessels [B63G 8/42](#))
- B63B 22/00** **Buoys** ({floating decoys, e.g. for waterfowl [A01M 31/06](#);} means for indicating the location of underwater objects [B63C 7/26](#); life-buoys, e.g. rings [B63C 9/08](#); {-mountings of acoustic transducer in underwater equipment, e.g. sonobuoys [G10K 11/006](#); electric cables supported on or from floats [H02G 9/12](#))}
- U **B63B 22/02** • specially adapted for mooring a vessel
- B63B 22/021** • • {and for transferring fluids, e.g. liquids (container type buoys having means to selectively release contents, not adapted for mooring a vessel [B63B 22/26](#))}
- WARNINGS
1. Documents concerning container type buoys having means to selectively release contents and not being adapted for mooring a vessel are in the process of being reorganised to [B63B 22/26](#).
2. This group and its subgroups are pending a reorganisation, also documents covered by groups [B63B 27/30](#) and [B63B 27/34](#) are within this group and its subgroups.
- B63B 22/023** • • • {submerged when not in use (container type buoys submerged when not in use, not adapted for mooring a vessel [B63B 22/28](#); connected to turret [B63B 21/508](#))}
- WARNING  
Documents concerning container type buoys submerged when not in use and not being adapted for mooring a vessel are in the process of being reorganised to [B63B 22/28](#)
- U **B63B 22/24** • container type, i.e. having provision for the storage of material

- B63B 22/26
- • having means to selectively release contents, e.g. swivel couplings ({[B63B 22/021](#) takes precedence; } arrangements between ships and off-shore structures for loading or unloading, using pipe lines [B63B 27/34](#); pipe joints or couplings, in general [F16L](#))
- WARNING  
Not complete, pending a reorganisation; see [B63B 22/021](#) and [B63B 22/24](#)
- B63B 25/00**      **Load-accomodating arrangements, e.g. stowing, trimming; Vessels characterised thereby (trimming otherwise than by cargo division, e.g. by use of ballast [B63B 43/06](#), [B63B 43/08](#); constructive aspects of cargo spaces [B63B 11/00](#); hatches, hatchways [B63B 19/12](#))**
- B63B 25/002
- {for goods other than bulk goods (detachable decks [B63B 25/18](#); palletised articles [B63B 25/22](#); frozen goods [B63B 25/26](#); deck loads [B63B 25/28](#))}
- U B63B 25/02
- for bulk goods
- B63B 25/08
- • fluid {(constructional features of bunkers [B63B 11/04](#); tanks for fuel or the like not forming bunkers [B63B 17/0027](#))}
- WARNING  
Documents in [B63B 25/08](#) and subgroups concerning bunkers and other tanks for fuel or the like are in the process of being reclassified to [B63B 11/04](#) and [B63B 17/0027](#)
- U B63B 25/12
- • • closed
- B63B 25/16
- • • heat-insulated (insulating panelling [B63B 3/68](#); heating or cooling [B63J](#))
- B63B 27/00**      **Loading or unloading cargo or passengers (self-discharging barges or lighters [B63B 35/30](#); shore-based [B65G](#) {elevators, escalators or moving walkways per se [B66B](#); floating cranes [B66C 23/52](#); loading or unloading devices per se, see the relevant subclasses, e.g. [B65G](#), [B66C](#), [B67D](#))}**
- WARNING  
The scope of this group is broader than the scope of the corresponding IPC group, and includes the scope of the IPC2 subgroups [B63B 27/02](#), [B63B 27/06](#), and [B63B 27/20](#)
- U B63B 27/02
- with intermittent action
- B63B 27/14
- • Ramps; Gangways or other outboard ladders (inboard ladders [B63B 29/20](#) { }; land-based bridges giving access to ships [E01D 15/24](#)); {Pilot lifts}
- B63B 27/16
- • using lifts or hoists (elevators per se [B66B](#) { {Pilot lifts [B63B 27/14](#)})
- U B63B 27/20
- with continuous action
- B63B 27/22
- • of conveyers, e.g. of endless-belt or screw-type (arrangements of devices with throwing action [B63B 27/26](#); arrangements of chutes [B63B 27/28](#); conveyers per se [B65G](#))
- B63B 27/30
- {Arrangement of ship-based loading or unloading equipment} for transfer at sea between ships or between ships and off-shore structures
- WARNING  
Not complete, pending a reorganisation, see [B63B 22/021](#), [B63B 35/44](#), and subgroups

- B63B 27/34
- using pipe-lines {{Anchoring arrangements for special vessels with mooring turrets [B63B 21/507](#)-; Buoys specially adapted for mooring a vessel and for transferring fluids , e.g. liquids [B63B 22/021](#)}}
- WARNING  
Not complete, pending a reorganisation, see [B63B 21/507](#), [B63B 22/021](#), [B63B 35/44](#) and subgroups
- B63B 35/00**      **Vessels or like floating structures adapted for special purposes (vessels characterised by load-accommodating arrangements [B63B 25/00](#)-; fire-fighting vessels [A62C 29/00](#)-; submarines, mine-layers or mine-sweepers [B63G](#); large containers for use in or under water [B65D 88/78](#)-; {-Advertising on ships or other floating means [G09F 21/18](#)})**
- B63B 35/003
- {for transporting very large loads, e.g. offshore structure modules (construction methods for artificial islands mounted on piles [E02B 17/00](#)-; for transporting marine vessels [B63B 35/40](#)-; docks [B63C 1/00](#))}
- B63B 35/08
- Ice-breakers, or other vessels or floating structures for operation in ice-infested waters; Ice-breakers, or other vessels or floating structures having equipment specially adapted therefor
- NOTE  
Documents concerning vessels, or floating structures adapted at the same time for an other particular purpose are also classified in the respective other particular groups of [B63B 35/00](#)-, e.g. floating buildings, stores, drilling platforms or workshops for operation in ice infested waters are also classified in [B63B 35/44](#) ]
- WARNINGS  
1. Not complete, pending a reclassification, see also [B63B 35/00](#) and subgroups, e.g. [B63B 35/44](#)-.  
2. This group is pending a reorganisation, also documents covered by group [B63B 35/083](#) are within this group
- B63B 35/083
- {Ice-breakers ([B63B 35/10](#)-, [B63B 35/12](#) take precedence)}
- WARNING  
Not complete, pending a reorganisation, see [B63B 35/08](#)
- B63B 35/28
- Barges or lighters {{(underwater-towed barges [B63G 8/42](#)-; for transporting logs [B63B 35/62](#))}}
- B63B 35/44
- Floating buildings, stores, drilling platforms, or workshops, e.g. carrying water-oil separating devices {{(construction methods for floating offshore platforms [B63B 9/065](#))}}
- WARNING  
This group and its subgroups are pending a reorganisation, also documents covered by groups [B63B 27/30](#)-, [B63B 27/32](#) and [B63B 27/34](#) are within this group and its subgroups.
- B63B 35/50
- Vessels or floating structures for aircraft (aircraft carriers [B63G 11/00](#)-; flying-boat hulls, other flotation means for aircraft [B64](#))
- WARNINGS  
1. not complete pending a reorganisation, see for self-levelling landing platforms also [B63B 29/12](#)-;  
2. this group and its subgroup [B63B 35/52](#) are pending a reorganisation, also documents covered by group [B63B 35/53](#) are in this group and its subgroups
- U    B63B 35/73
- Other vessels or like floating structures for pleasure or sport

- U B63B 35/79      · · Surf-boards, e.g. sailboards
- U B63B 35/7953    · · · {Winddriven boards}
- U B63B 35/7973    · · · · {Sail arrangements}
- U B63B 35/7976    · · · · · {Sails pivotally mounted at a mast-tip; Kite-sails (kites per se  
[B64C 31/06](#))}
- B63B 35/7979    · · · · · · {Control means for kite-sails; Harnesses for connecting kite-sails to a  
user, e.g. of quick release type}
- WARNING
- Not complete, see [B63B 35/7976](#); [B64C 31/06](#)
- B63B 38/00      Vessels or like floating structures not otherwise provided for (vessels  
characterised by load-accomodating arrangements [B63B 25/00](#); fire-  
extinguishing vessels [A62C 29/00](#); submarines, mine-layers or mine-  
sweepers [B63G](#); large containers for use in or under water [B65D 88/78](#))**
- U B63B 39/00      **Equipment to decrease pitch, roll, or like unwanted vessel movements;  
Apparatus for indicating vessel attitude {(for amphibious vehicles  
[B60F 3/0038](#))}**
- B63B 39/005      · {Equipment to decrease ship`s vibrations produced externally to the ship, e.g.  
wave-induced vibrations (propulsion mountings for anti-vibration purposes  
[B63H 21/30](#); vibration dampers, suppression of vibration in systems [F16F](#))}
- B63B 39/06      · to decrease vessel movements by using foils acting on ambient water  
(constructional aspects of bilge keels [B63B 3/44](#); {foils mounted on the  
housing of outboard motors [B63H 20/34](#)})
- B63B 39/062      · · {the foils being mounted on outriggers or the like, e.g. antidrift hydrofoils for  
sail boats (hydrofoils [B63B 1/24](#); drop keels [B63B 41/00](#))}
- B63B 45/00      Arrangement or adaptation of signalling or lighting devices (arrangement  
of signalling or lighting devices, the mounting or supporting thereof or  
circuits therefor, for vehicles in general [B60Q](#); life-buoys, -belts, -jackets,  
-suits or the like, characterised by signalling means [B63C 9/20](#); lighting  
devices or systems therefor [F21L](#), [F21S](#))**
- WARNING
- Not complete, pending a reorganisation; see [B63C 9/21](#)
- B63B 59/00      Hull protection peculiar to vessels; Cleaning devices peculiar to vessels  
and integral therewith (cleaning of vehicles in general [B60S](#); other cleaning  
in general [B08B](#); inhibiting corrosion of metals by anodic or cathodic  
protection [C23F 13/00](#))**
- U B63B 2702/00    **Submarines**
- B63B 2702/14    · Arrangements for detecting and localising submarines (Acoustic detection  
[G01S](#); electromagnetic detection [G01N](#))
- Project: N/A (B63C)**
- B63C 1/00      Dry-docking of vessels or flying-boats (storing of vessels on land otherwise  
than by dry-docking [B63C 15/00](#); mooring of vessels [B63B 21/00](#);  
hydraulic-engineering aspects [E02B](#))**
- B63C 1/02      · Floating docks ({externally attached cofferdams and the like [B63B 17/0018](#); }  
ship transporters with adjustable draught [B63B 35/42](#))

- B63C 3/00**      **Launching or hauling-out by land-borne slipways; Slipways (ship-borne guides for handling lifeboats or the like [B63B 23/30](#); cranes winches, or the like [B66](#); ship lifting for adapting to different water levels [E02C](#))**
- B63C 7/00**      **Salvaging of disabled, stranded, or sunken vessels; Salvaging of vessel parts or furnishings, e.g. of safes; salvaging of other underwater objects (means for searching for underwater objects [B63C 11/48](#))**
- NOTE  
in this group the following indexing codes are used:
- [B63B 2702/02](#), [B63B 2738/00](#), [B63B 2738/04](#)
- WARNING  
this group is pending a reorganisation; also documents covered by groups [B63C 7/006](#) are within this group
- B63C 7/26**      • Means for indicating the location of underwater objects, e.g. sunken vessels (means for searching for underwater objects [B63C 11/48](#); buoys in general [B63B 22/00](#))
- B63C 9/00**      **Life-saving in water (life-saving in general [A62B](#); arrangement or adaptation of signalling or lighting devices for ships, other waterborne vessels or for equipment for shipping [B63B 45/00](#); rescue equipment specially adapted for submarine personnel [B63G 8/40](#))**
- NOTE  
- in this group the following indexing code is used: [B63B 2729/00](#)
- WARNING  
this group is pending a reorganisation; also documents covered by group [B63C 9/065](#) are within this group
- B63C 9/01**      • Air-sea rescue devices, i.e. equipment carried by, and capable of being dropped from, an aircraft (inflatable vessels [B63B 7/00](#); inflatable buoys [B63B 22/22](#))
- WARNING  
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63C 9/00](#)
- B63C 9/02**      • Lifeboats, life-rafts or the like, specially adapted for life-saving (floatable furniture [B63C 9/30](#); boats in general [B63B](#); inflatable vessels [B63B 7/00](#); equipment for handling lifeboats or the like [B63B 23/00](#); rafts [B63B 35/58](#))
- NOTE  
- in this group the following indexing code is used: [B63B 2728/00](#)
- WARNING  
this group is pending a reorganisation; also documents covered by group [B63C 9/065](#) are within this group
- U    **B63C 9/06**      • Floatable closed containers with accommodation for one or more persons inside ([B63C 9/01](#) takes precedence)
- WARNING  
this group is pending a reorganisation; also documents covered by group [B63C 9/065](#) are within this group

- B63C 9/065
- {for one person}
- WARNING  
[B63C 9/065](#) is not complete pending a reorganisation; see also groups [B63C 9/00](#)-, [B63C 9/02](#)-, [B63C 9/04](#) and [B63C 9/06](#)
- B63C 9/08
- Life-buoys, e.g. rings; Life-belts, jackets, suits, or the like ({non-sinkable swimsuits, drawers or trunks [A41D 7/001](#)} ; equipment for swimming [A63B](#)-, e.g. swimming aids {other than life-buoys or life-belts} [A63B 31/00](#)-, {-teaching frames for swimming, swimming boards [A63B 69/14](#)})
- B63C 9/087
- • Body suits, i.e. substantially covering the user's body {Immersion suits, i.e. substantially completely covering the user} ({Professional, industrial, or sporting protective garments [A41D 13/00](#) for aquatic activities e.g. with buoyancy aids [A41D 13/012](#)} diving suits [B63C 11/04](#)-, [B63C 11/10](#) {[B63C 9/081](#) takes precedence })
- B63C 9/18
- • Inflatable equipment characterised by the gas-generating {or inflation} device
- WARNING  
 This group is not complete pending a reorganisation; see also group [B63C 9/24](#)-, this group is pending a reorganisation; also documents covered by group [B63C 9/19](#) are within this group]
- B63C 9/24
- Arrangements of inflating valves or of controls thereof (connecting inflating valves to elastic bodies [B60C 29/00](#))
- WARNING  
 this group is pending a reorganisation; also documents covered by group [B63C 9/18](#)-, and subgroups are within this group
- B63C 9/26
- Cast or life lines; Attachments thereto; Containers therefor; {Rescue nets or the like} (adaptations of aerial cableways to shipboard use [B63B 27/18](#)-, guns for line throwing [F41F](#); line-carrying missiles [F42B 12/68](#))
- B63C 11/00**
- Equipment for dwelling or working underwater; Means for searching for underwater objects (composition of chemical substances for use in breathing apparatus [A62D 9/00](#)-, swimming aids or equipment [A63B 31/00](#) to [A63B 35/00](#)-, submarines [B63G 8/00](#))**
- U B63C 11/02
- Divers` equipment
- B63C 2011/027
- • {Shells for diving equipment, i.e. substantially rigid housings or covers, e.g. streamlined shells (diving computer with shells [B63C 2011/021](#)-, shells for containers for goods or personal belongings of the diver [B63C 11/02](#)})
- B63C 11/18
- • Air supply (for diving masks [B63C 11/14](#)-, [B63C 11/16](#)-, respiratory apparatus in general [A62B](#))
- B63C 11/34
- Diving chambers {or underwater vessels, e.g. unmanned,} with mechanical link, e.g. cable, to a base (manipulators [B25J](#);-; {externally attached cofferdams and the like [B63B 17/0018](#);-; } diving chambers without mechanical link to a base [B63G 8/00](#)-, caissons adapted to laying foundations [E02D 23/00](#) to [E02D 27/00](#))
- B63C 11/48
- Means for searching for underwater objects (means for indicating the location of sunken objects [B63C 7/26](#)-, locating by use of the reflection or reradiation of radio or other waves [G01S](#);-; {-mountings of acoustic transducers in underwater equipment [G10K 11/006](#)})
- B63C 13/00**
- Equipment forming part of or attachable to vessels facilitating transport over land (amphibious craft, land vehicles convertible for use on water [B60F](#)-, land vehicles for carrying boats [B60P](#)-, {-hand carts for transporting boats [B62B](#)-, } harnesses attachable to vessels for personal carrying [A45F](#))**

**Project: N/A (B63G)**

B63G 8/00

Underwater vessels, e.g. submarines; {Equipment specially adapted therefor}(submarine hulls [B63B 3/13](#); diving chambers with mechanical link, e.g. cable, to a base [B63C 11/34](#); divers' sleds [B63C 11/46](#); torpedoes [F42B 19/00](#))

**Project: N/A (B63H)**

B63H

**MARINE PROPULSION OR STEERING** ({arrangement of propulsion or steering means on amphibious vehicles [B60F 3/0007](#); } propulsion of air-cushion vehicles [B60V 1/14](#); peculiar to submarines, other than nuclear propulsion, [B63G](#); peculiar to torpedoes [F42B 19/00](#))

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) to [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means

B63H 1/00

**Propulsive elements directly acting on water (jet propulsion [B63H 11/00](#); attachment of propellers on shafts [B63H 23/34](#))**

U B63H 1/02

- of rotary type (endless-track type [B63H 1/34](#))

U B63H 1/12

- • with rotation axis substantially in propulsive direction

U B63H 1/14

- • • Propellers (pitch changing [B63H 3/00](#))

WARNING

this group is pending a reorganisation; also documents covered by group [B63H 1/15](#) are within this group]

B63H 1/15

- • • having vibration damping means (anti-vibration mounting of propulsion plant [B63H 21/30](#); means for damping vibration in general [F16F](#))

WARNING

This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63H 1/14](#)

B63H 3/00

**Propeller-blade pitch changing** {(Aircraft propellers [B64C 11/30](#); Rotors of turbines [F01D 7/00](#); Axial wind motors [F03D 7/022](#); Axial-flow pumps [F04D 29/00](#))}

U B63H 5/00

**Arrangements on vessels of propulsion elements directly acting on water**

U B63H 5/07

- of propellers (forming part of outboard units {or Z-drives} [B63H 20/00](#))

B63H 5/125

- • movably mounted with respect to hull, e.g. adjustable in direction {e.g. podded azimuthing thrusters} ({outboard units or Z-drives [B63H 20/00](#); } movably mounted for steering purposes only, {rudders carrying propellers} [B63H 25/42](#))

WARNING

- [B63H 5/125](#) and subgroups are not complete pending a reorganisation; see also groups [B63H 21/26](#) and [B63H 25/42](#) - this group is pending a reorganisation; also documents covered by groups [B63H 20/00](#), and subgroups, and by [B63H 25/42](#) are within this group]

B63H 5/14

- • characterised by being mounted in non-rotating ducts or rings, e.g. adjustable for steering purpose (shrouding ring attached to blades [B63H 1/16](#); jet propulsion [B63H 11/00](#))

- U B63H 5/18
- • of emergency propellers, e.g. arranged at the side of the vessel
- WARNING  
this group is pending a reorganisation; also documents covered by group [B63H 5/20](#) are within this group
- B63H 5/20
- • • movable from a working position to a non-working position {(movable arrangements of propellers in general [B63H 5/125](#); outboard propulsion units in general [B63H 20/00](#); steering or dynamic anchoring by propellers used therefore only, or by rudders carrying propellers [B63H 25/42](#))}
- WARNING  
This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63H 5/18](#)
- U B63H 9/00**      **Propulsive devices directly acted on by wind; Arrangements thereof (air driven propellers driving underwater propulsive elements [B63H 13/00](#))**
- B63H 9/04
- using sails or like wind-catching surfaces (sailing sledges or ice boats [B62B 15/00](#); {masts for sailing boats [B63B 15/0083](#); sail arrangements for wind-driven boards [B63B 35/7973](#))}
- B63H 11/00**      **Effecting propulsion by jets, i.e. reaction principle (steering by {auxiliary} jet action, {rudders carrying jets} [B63H 25/46](#); power plant per se, see the relevant classes)**
- B63H 16/00**      **Effecting propulsion by muscle power (swimming frameworks, {i.e. apparatus fixed to or held by the swimmer or diver} with swimmer-operated driving mechanism [A63B 35/00](#); land-based training equipment for rowing or sculling [A63B 69/06](#))**
- B63H 16/06
- Rowlocks; Mountings therefor
- WARNING  
this group is pending a reorganisation; also documents covered by groups [B63H 16/067](#), and [B63H 16/073](#) are within this group
- U B63H 19/00**      **Effecting propulsion of vessels, not otherwise provided for**
- B63H 19/06
- by discharging gas into ambient water (with jet action [B63H 11/12](#); for reducing surface friction [B63B 1/38](#))
- U B63H 20/00**      **Outboard propulsion units, i.e. propulsion units having a substantially vertical power leg mounted outboard of a hull and terminating in a propulsion element, e.g. "outboard motors", Z-drives {with level bridging shaft arranged substantially outboard}(power plants per se, see the relevant classes); Arrangements thereof on vessels {(transom panels for outboard motors on inflatable boats [B63B 7/087](#); tug-type floating propeller units [B63B 35/665](#); rudders carrying propellers [B63H 25/42](#); rudders carrying jets [B63H 25/46](#); engines of outboard propulsion units [F02B 61/045](#))}**
- WARNING  
Not complete pending a reclassification; see also [B63H 5/1252](#), as well as [B63H 21/26](#) and subgroups

- B63H 20/001
- {Arrangements, apparatus and methods for handling fluids used in outboard drives (for handling exhaust gas [B63H 20/24](#); for handling cooling-water [B63H 20/28](#); cooling outboard marine engines [F01P 3/202](#); air intakes for outboard marine engines [F02M 35/167](#))}
- WARNING  
This group and its subgroups are not complete, pending a reorganisation; see [B63H 21/38](#) and [B63B 2770/00](#)
- B63H 20/007
- {Trolling propulsion units (trolling plates for slowing down [B63H 25/50](#); dynamo-electric machines of trolling units [H02K](#))}
- B63H 20/24
- {Arrangements, apparatus and methods for handling exhaust gas in outboard drives, e.g.} exhaust gas outlets {(in engines, e.g. outboard marine engines, [F01N](#))}
- WARNING  
This group and its subgroups are not complete, pending a reorganisation; see [B63H 21/32](#), [B63H 21/38](#) and [B63B 2770/00](#)
- U B63H 20/32
- Housings {(air intakes for outboard engines [F02M 35/167](#))}
- B63H 20/34
- comprising stabilising fins, {foils, anticavitation plates, splash plates, or rudders (rudders carrying propellers [B63H 25/42](#); rudders carrying jets [B63H 25/46](#))}
- B63H 20/36
- Transporting or testing stands {(hand carts for transporting outboard units [B62B](#); measuring torque [G01L 3/00](#); measuring thrust of propellers [G01L 5/133](#); testing in general [G01M](#)); Use of outboard propulsion units as pumps}; Protection of power legs {e.g. when not in use}
- B63H 21/00**
- Use of propulsion power plant or units on vessels (use of outboard propulsion units [B63H 20/00](#); hull reinforcements for carrying propulsion power plant or units [B63B 3/70](#); {propulsion of submarines [B63G 8/08](#); } propulsion power plant or units per se, see the relevant classes)**
- NOTE  
This group comprises arrangements of propulsion power plant or units on vessels and to some extent it includes adaptations of such plant or units to facilitate such arrangements
- WARNING  
this group is pending a reorganisation; also documents covered by group [B63H 21/36](#) are within this group
- B63H 21/12
- the vessel being motor-driven ([B63H 21/175](#), [B63H 21/18](#) take precedence; {cooling circuits with liquid-to-liquid heat-exchange relative to marine vessels [F01P 3/207](#))}
- WARNING  
Group [B63H 21/12](#) is no longer used for classification of vessels being motor-driven by electric motor, powered by land vehicle supported by vessel, and powered by nuclear energy. These documents are in the process of being reorganised to groups [B63H 21/17](#), [B63H 21/175](#), and [B63H 21/18](#) respectively
- B63H 21/17
- by electric motor (electrically-propelled vehicles [B60L](#); {Transmitting power from propulsion power plant to propulsive elements with electric gearing [B63H 23/24](#))}
- WARNING  
Not complete. See [B63H 21/12](#), [B63H 23/24](#)

- U B63H 21/24  
B63H 21/26
- the vessels being small craft, e.g. racing boats
  - • of outboard type; Outboard propulsion power units movably installed for steering, reversing, tilting, or the like {{transom panels for outboard motors for inflatable boats [B63B 7/087](#); floating propeller units [B63B 35/665](#)}}
- WARNING  
Group [B63H 21/26](#) and subgroups are no longer used for classification. Documents are in the process of being reorganised to [B63H 5/125](#), and subgroups, to [B63H 20/00](#), and subgroups, and to [B63H 25/42](#)
- B63H 21/265
- • • {Steering or control devices for outboards (steering by rudders [B63H 25/06](#); control handles for boats [B63H 21/213](#))}
- B63H 21/30
- Mounting of propulsion plant or unit, e.g. for anti-vibration purposes (hull reinforcements therefor [B63B 3/70](#); {-of outboard propulsion units [B63H 20/02](#); } vibration in systems [F16F](#); engine beds [F16M](#))
- B63H 21/32
- Arrangements of propulsion-unit exhaust uptakes; Funnels peculiar to vessels; {Small watercraft exhaust arrangements, e.g. under-water}, (engine exhausts in general [F01N](#); flue devices for furnaces in general [F23J](#); {-exhaust gas outlets forming part of outboard propulsion units or Z-drives [B63H 20/24](#)})
- WARNING  
Group [B63H 21/32](#) is no longer used for classification of documents dealing with gas exhaust outlets forming part of outboard propulsion units or Z-drives. Respective documents are in the process of being reorganised to groups [B63H 20/24](#) and [B63H 20/26](#)
- B63H 21/38
- Apparatus or methods specially adapted for use on marine vessels, for handling power plant or unit liquids, e.g. lubricants, coolants, fuels or the like ({in outboard drives [B63H 20/001](#); } lubricating or cooling machines or engines in general [F01](#) to [F04](#))
- WARNING  
This group and its subgroups are  
- systematically used for classification of documents published from 01.06.2010 onwards  
- not complete; for documents published before 01.06.2010, see [B63B 2770/00](#)
- B63H 21/383
- • {for handling cooling-water (in outboard drives [B63H 20/28](#); in machines or engines in general [F01P 3/00](#))}
- B63H 23/00**
- Transmitting power from propulsion power plant to propulsive elements (changing pitch or propellers [B63H 3/00](#); adaptation of transmission to allow adjustment in location or direction of propellers [B63H 5/125](#); transmission between wind motors and propulsive elements [B63H 13/00](#); in outboard propulsion units [B63H 20/14](#); adaptation of transmission to allow adjustment of location of propeller [B63H 20/08](#); {-adaptations of transmissions to allow steering or dynamic anchoring by propellers carried on rudders [B63H 25/42](#); } for vehicles in general [B60K](#); driving auxiliary machinery [B63J](#); transmission elements per se [F16](#))**
- U B63H 23/32  
B63H 23/36
- Other parts
  - • Shaft tubes (propeller-shaft tunnels [B63B 11/06](#); shaft-tube seals [F16J](#))

**B63H 25/00** **Steering; Slowing-down otherwise than by use of propulsive elements (using adjustably-mounted propeller ducts or rings for steering [B63H 5/14](#); using movably-installed outboard propulsion units [B63H 20/00](#)); Dynamic anchoring, i.e. positioning vessels by means of main or auxiliary propulsive elements (anchoring, other than dynamic [B63B 21/00](#); equipment to decrease pitch, roll or like unwanted vessel movements by auxiliary jets or propellers [B63B 39/08](#); {-systems for waterborne vessel position control [G05](#), e.g. [G05D 1/00](#)})**

**WARNING**

This group is pending a reorganisation; also documents covered by group [B63H 25/02](#), and subgroups are within this group

- U B63H 25/06
  - B63H 25/38
  - B63H 25/42
- Steering by rudders (by rudders carrying propellers [B63H 25/42](#))
  - • Rudders (stern posts [B63B 3/40](#); {-rudders mounted on housing of outboard motors [B63H 20/34](#); rudders carrying propellers [B63H 25/42](#); rudders carrying jets [B63H 25/46](#)})
  - Steering or dynamic anchoring by propulsive elements (by jets [B63H 25/46](#)); Steering or dynamic anchoring by propellers used therefor only; Steering or dynamic anchoring by rudders carrying propellers

**WARNING**

This group is not complete as to rudders carrying propellers, pending a reorganisation; see also [B63H 5/125](#), and [B63H 21/26](#) and subgroups - this group is pending a reorganisation; also documents covered by groups [B63H 5/125](#), and subgroups, and by [B63H 20/00](#), and subgroups are within this group]

**Project: N/A (B63J)**

**B63J 4/00** **Arrangements of installations for treating {-ballast water,} waste water, sewage, {-sludge, or refuse}, or for preventing environmental pollution not otherwise provided for; ({centrifugal bilge-water separators [B04](#); discharge of refuse, e.g. for ash [B63B 17/06](#); arrangements on tanks for fuel or the like for minimizing pollution by accidents [B63B 17/0036](#), associated with cargo tanks [B63B 25/082](#); vessels for collecting pollution from open water [B63B 35/30](#)}; soil-water discharges [B63B 29/16](#); {-treating waste water, sewage, or sludge, in general, [C02F](#); cleaning or keeping clear the surface of open water, in general [E02B 15/00](#)})**

**WARNING**

[B63J 4/00](#) is not complete pending a reclassification; see also groups [B63B 13/00](#), [B63B 17/00](#), [B63B 29/16](#), [B63J 99/00](#)

**Project: N/A (B64C)**

**B64C 1/00** **Fuselages; Constructional features common to fuselages, wings, stabilising surfaces and the like (aerodynamical features common to fuselages, wings, stabilising surfaces, and the like [B64C 23/00](#); flight-deck installations [B64D](#))**

B64C 1/14

- Windows; Doors; Hatch covers or access panels; Surrounding frame structures; Canopies; Windscreens {accessories therefor, e.g. pressure sensors, water deflectors, hinges, seals, handles, latches, windscreen wipers} (fairings movable in conjunction with undercarriage elements [B64C 25/16](#); bomb doors [B64D 1/06](#))

- U B64C 1/40
- Sound or heat insulation, {e.g. using insulation blankets (insulating elements for vehicles, in general [B60R 13/08](#)})

- U B64C 1/403      · · {Arrangement of fasteners specially adapted therefor, e.g. of clips (in vehicles in general [B60R 13/0206](#))}
- B64C 1/406      · · · {in combination with supports for lines, e.g. for pipes or cables (arrangement of elements of electric or fluid circuits specially adapted for vehicles, in general [B60R 16/00](#); supports for pipes, cables or protective tubing [F16L 3/00](#); installations of electric cables or lines in vehicles [H02G 3/00](#))}
- B64C 3/00      Wings (stabilising surfaces [B64C 5/00](#); ornithopter wings [B64C 33/02](#))**
- B64C 11/00      Propellers, e.g. of ducted type; Features common to propellers and rotors for rotorcraft (rotors specially adapted for rotorcraft [B64C 27/32](#))**
- NOTE  
Documents classified in [B64C 11/001](#) - [B64C 11/008](#) which also contain relevant information, covered by other subgroups of [B64C 11/00](#), are also classified in the appropriate subgroup of [B64C 11/00](#)
- B64C 11/30      · Blade pitch-changing mechanisms
- NOTE  
Groups [B64C 11/301](#); [B64C 11/303](#); [B64C 11/305](#) and [B64C 11/306](#) take precedence over [B64C 11/32](#); [B64C 11/38](#) and [B64C 11/44](#)
- U B64C 23/00      Influencing air-flow over aircraft surfaces, not otherwise provided for**
- B64C 23/005      · {by other means not covered by groups [B64C 23/02](#) to [B64C 23/08](#); e.g. by electric charges, magnetic panels, piezoelectric elements, static charges or ultrasounds}
- U B64C 25/00      Alighting gear (air-cushion alighting gear [B60V 3/08](#))**
- U B64C 25/32      · characterised by the ground or like engaging elements (arrestor hooks [B64C 25/68](#))
- U B64C 25/34      · · wheeled type, e.g. multi-wheeled bogies
- B64C 25/36      · · · Arrangements or adaptations of wheels, tyres, or axles in general (construction of wheels or axles [B60B](#); construction of tyres in general [B60C](#))
- B64C 25/58      · · Arrangements or adaptations of shock-absorbers or springs (shimmy dampers [B64C 25/50](#); vehicle suspension arrangements in general [B60G](#); shock absorber per se [F16F](#))
- U B64C 27/00      Rotorcraft; Rotors peculiar thereto (alighting gear [B64C 25/00](#))**
- U B64C 27/32      · Rotors (features common to rotors and propellers [B64C 11/00](#))
- B64C 27/37      · · having articulated joints ([B64C 27/33](#); [B64C 27/35](#) take precedence)
- B64C 29/00      Aircraft capable of landing or taking-off vertically (attitude, flight direction, or altitude control by jet reaction [B64C 15/00](#); rotorcraft [B64C 27/00](#); air-cushion vehicles [B60V](#))**
- U B64C 31/00      Aircraft intended to be sustained without power plant; Powered hang-glider-type aircraft; Microlight-type aircraft**
- B64C 31/06      · Kites (hang-gliders [B64C 31/028](#); toy aspects [A63H 27/08](#); towed targets [F41J](#); {for propelling boats [B63H 9/0685](#); for propelling wind driven boards, control means and harnesses therefor [B63B 35/7976](#))}
- U B64C 39/00      Aircraft not otherwise provided for**
- B64C 39/003      · {with wings, paddle wheels, bladed wheels, moving or rotating in relation to the fuselage (rotorcraft [B64C 27/00](#); ornithopters [B64C 33/00](#))}

- U B64C 2201/00** Unmanned aerial vehicles; Equipment therefor
- U B64C 2201/08 · characterised by the launching method
- B64C 2201/088 · · Vertical take-off using special means (for helicopters [B64C 2201/024](#); for balloons [B64C 2201/022](#))

**Project: N/A (B64D)****B64D****EQUIPMENT FOR FITTING IN OR TO AIRCRAFT; FLYING SUITS; PARACHUTES; ARRANGEMENTS OR MOUNTING OF POWER PLANTS OR PROPULSION TRANSMISSIONS IN AIRCRAFT**WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">B64D 15/18</a>	covered by	<a href="#">B64D 15/16</a>
<a href="#">B64D 25/102</a>	covered by	<a href="#">B64D 25/10</a>
<a href="#">B64D 25/105</a>	covered by	<a href="#">B64D 25/10</a>
<a href="#">B64D 25/108</a>	covered by	<a href="#">B64D 25/10</a>
<a href="#">B64D 25/11</a>	covered by	<a href="#">B64D 25/10</a>
<a href="#">B64D 25/112</a>	covered by	<a href="#">B64D 25/10</a>
<a href="#">B64D 25/115</a>	covered by	<a href="#">B64D 25/10</a>
<a href="#">B64D 25/118</a>	covered by	<a href="#">B64D 25/10</a>

- B64D 1/00** Dropping, ejecting, releasing, or receiving articles, liquids, or the like, in flight (with respect to weapon sights devices [F41G](#) takes precedence, parachutes per se [B64D 17/00](#); ejectable seats [B64D 25/10](#); ejectable capsules [B64D 25/12](#); refuelling during flight [B64D 39/00](#); launching apparatus for projecting projectiles or missiles [F41F 1/00](#), [F41F 7/00](#); rocket or torpedo launchers [F41F 3/00](#))
- B64D 3/00** Aircraft adaptations to facilitate towing or being towed ([B64D 39/00](#) takes precedence; ground installations for launching or towing aircraft [B64F](#); towing ropes per se [D07B](#))
- B64D 7/00** Arrangements of military equipment, e.g. armaments, armament accessories, or military shielding, in aircraft; Adaptations of armament mountings for aircraft (dropping bombs or the like [B64D 1/00](#); armaments or mountings therefor per se [F41](#))
- B64D 9/00** Equipment for handling freight; Equipment for facilitating passenger embarkation or the like (emergency equipment [B64D 17/00](#), [B64D 19/00](#), [B64D 25/00](#); structures integral with fuselage to facilitate loading, fuselage floors specially adapted for freight, steps mounted on and retractable within aircraft [B64C](#); ground installations [B64F](#))
- B64D 10/00** {Flying suits (helmets in general [A42B 3/00](#); breathing helmets [A62B 18/00](#))}
- B64D 13/00** Arrangements or adaptations of air-treatment apparatus for aircraft crew or passenger, or freight space; {or structural parts of the aircraft} (treatment rooms with artificial climate for medical purposes [A61G 10/02](#); respiratory apparatus in general [A62B](#); for for vehicles in general [B60H](#))
- B64D 15/00** De-icing or preventing icing on exterior surfaces of aircraft (motor vehicles specially adapted for carrying de-icing equipment [B60P](#); {Ground-installations for de-icing aircraft [B64F 5/0036](#)})
- U B64D 17/00** Parachutes (non canopied parachutes [B64D 19/00](#))
- U B64D 17/22 · Load suspension

- B64D 17/36
- incorporating friction devices or frangible connections to reduce shock loading of canopy {([B64D 17/343](#)-, [B64D 17/346](#) take precedence)}
- B64D 25/00** **Emergency apparatus or devices, not otherwise provided for (parachutes [B64D 17/00](#)-, [B64D 19/00](#)-, jettisoning of fuel tanks or fuel per se [B64D 37/00](#)-, {-specially adapted for protection against criminal attack, e.g. anti-hijacking systems [B64D 45/0015](#)} ; safety belts or body harnesses in general [A62B 35/00](#)-, safety belts or body harnesses for land vehicles [B60R 22/00](#)-, jettisonable parts of fuselage facilitating emergency escape [B64C](#))**
- U B64D 33/00** **Arrangements in aircraft of power plant parts or auxiliaries not otherwise provided for**
- B64D 33/02
- of combustion air intakes (air intakes for gas-turbine plants or jet-propulsion plants per se [F02C 7/04](#)-, air intakes for combustion engines in general [F02M 35/00](#))
- B64D 33/08
- of power plant cooling systems (cooling of internal-combustion engines per se [F01P](#)-, cooling of gas-turbine plants or jet-propulsion plants per se [F02C](#)-, [F02K](#))
- U B64D 37/00** **Arrangements in connection with fuel supply for power plant (refuelling during flight [B64D 39/00](#))**
- B64D 37/02
- Tanks (tanks constructed integrally with aircraft wings [B64C](#)-, shape or construction of tanks per se [B65D](#))

**Project: N/A (B64G)**

- U B64G 1/00** **Cosmonautic vehicles**
- U B64G 1/22
- Parts of, or equipment specially adapted for fitting in or to, cosmonautic vehicles
- B64G 1/24
- Guiding or controlling apparatus, e.g. for attitude control (jet-propulsion plants [F02K](#)-, navigation or navigational instruments, see the relevant subclass, e.g. [G01C](#)-, automatic pilots [G05D 1/00](#))

**Project: N/A (B65B)**

**B65B** **MACHINES, APPARATUS OR DEVICES FOR, OR METHODS OF, PACKAGING ARTICLES OR MATERIALS; UNPACKING (bundling and pressing devices for cigars [A24C 1/44](#); paper-bag holders as shop or office accessories [A47F 13/08](#); apparatus for coating, e.g. by dipping, [B05C](#); devices for tensioning and securing binders adapted to be supported by the article or articles to be bound [B25B](#), [B65B 13/00](#); nailing or stapling devices per se [B25C](#), [B27F](#)-, {-cutting or severing in general [B26D](#), [B26F](#);} inserting documents in envelopes and closing the latter [B43M 3/00](#), [B43M 5/00](#); wrappers, containers or other packaging elements, e.g. binders protective caps [B65D](#); stacking articles in, or removing them from, pallets [B65G](#); devices for handling sheets or webs of interest apart from their application in packaging machines [B65H](#); packaging of matches [C06F](#); wrapping sugar during manufacture [C13B 45/00](#)-, {-filling of grease guns [F16N 37/02](#); packing of shotgun cartridges for immediate use [F42B](#)-, wrapping of coins [G07D 9/00](#)}; making containers or receptacles per se, see the appropriate subclasses)**

**NOTE**

The term "packaging" should be understood as including mainly the following operations:

- filling portable containers or receptacles with materials or small articles to form packages
- inserting articles, or groups of articles, into containers or receptacles

closing filled containers or receptacles otherwise than by metal-, glass-, or wood-working operations  
enclosing, or partially enclosing, articles or quantities of material, in sheets, strips, blanks, webs, or tubes of thin flexible material, e.g. wrapping  
bundling articles, e.g. holding articles together in groups by applying string or wire  
attaching articles to cards, sheets, or webs

Operations of these types employed in the manufacture of articles other than packages are classified in other appropriate subclasses, e.g. making confectionery products by casting in moulds formed by wrappers [A23G](#), filling ammunition cartridges [F42B](#) Methods of packaging which are wholly characterised by the form of the package produced, or the form of the container or packaging-element utilised, are to be classified in [B65D](#) rather than in this subclass In the following elaborations, the term "package" is used to mean the end product of a packaging operation, e.g. a filled and closed container, an article enclosed in a wrapper, a group of articles held together by string or wire, a crate of bottles In the following elaborations, the term "materials" is to be understood as embracing matter, or masses of articles, which are to be packaged, as distinct from separate or individual articles Machines, apparatus or methods of general application for packaging articles or materials

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:  
[B65B 51/09](#) covered by [B65B 51/00](#)

**B65B 13/00** **Bundling articles (bundling particular articles presenting special problems using string, wire or narrow tape or band [B65B 27/00](#); {-straining wire in general [B21F 9/00](#); connecting wire to wire in general [B21F 15/00](#)})**

**U B65B 15/00** **Attaching articles to cards, sheets, strings, webs, or other carriers**  
B65B 15/04

- Attaching a series of articles, e.g. small electrical components, to a continuous web {(ammunition filling [F42B](#); placing of electric components on belts holding the terminals [H05K 13/003](#))}

**U B65B 31/00** **Packaging articles or materials under special atmospheric or gaseous conditions; Adding propellants to aerosol containers (auxiliary treatments during loading or unloading in a fluid medium other than air [B65G 69/20](#))**  
B65B 31/02

- Filling, closing, or filling and closing, containers {-or wrappers} in chambers maintained under vacuum or super-atmospheric pressure or containing a special atmosphere, e.g. of inert gas

**B65B 35/00** **Supplying, feeding, arranging, or orientating articles to be packaged (cigarettes [B65B 19/04](#); bottles [B65B 21/04](#); eggs [B65B 23/06](#); biscuits [B65B 23/12](#); {-adjustable conveying means [B65B 59/005](#)}) if not restricted to packaging machines [B07C](#), [B65G](#), [B65H](#))**

**Project: N/A (B65C)**

**B65C** **LABELLING OR TAGGING MACHINES, APPARATUS, OR PROCESSES (nailing or stapling in general [B25C](#), [B27F](#); applying labels for packaging purposes [B65B](#); labels, name-plates [G09F](#)){(series-printing machines [B41L](#); containers for the storage or transport of packages [B65D](#))}**

NOTE

In this subclass, the following term is used with the meaning indicated:

- "labels" covers also decalcomanias, stamps or the like

## Project: N/A (B65D)

## B65D

**CONTAINERS FOR STORAGE OR TRANSPORT OF ARTICLES OR MATERIALS, e.g. BAGS, BARRELS, BOTTLES, BOXES, CANS, CARTONS, CRATES, DRUMS, JARS, TANKS, HOPPERS, FORWARDING CONTAINERS; ACCESSORIES, CLOSURES, OR FITTINGS THEREFOR; PACKAGING ELEMENTS; PACKAGES (containers specially adapted for storing agricultural or horticultural products [A01F 25/14](#); containers specially adapted for use in dairies [A01J](#); travelling bags or baskets, suitcases [A45C](#); travelling or camp equipment [A45E](#); {-linkable display containers [A47B87/00C](#)}; household or table equipment [A47G](#); letter-boxes for home use [A47G 29/12](#); kitchen equipment [A47J](#); associated with vehicles, see the appropriate subclass of [B60](#) to [B64](#); machines, apparatus, or devices for, or methods of, packaging articles or materials [B65B](#); sack holders [B65B 67/00](#); refuse receptacles [B65F 1/00](#); handling sheets, webs or filamentary material [B65H](#); load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith for transmitting lifting forces [B66C](#); liquid handling [B67](#); storing gases [F17](#); {-packaging for photosensitive or like materials [G03](#), e.g. [G03C 3/00](#)}; making containers, see subclasses dealing with the working of the material concerned)**

NOTES

1. In this subclass, the indexing codes of [B65D 2519/00004](#) - [B65D 2519/00995](#) should be added, if applicable
2. This subclass covers:
  - containers, packaging elements or packages with auxiliary means or provisions for displaying articles or materials;
  - methods of packaging which are wholly characterised by the form of the package produced or the form of the container or packaging element used, as distinct from the operations performed or the apparatus employed, which are covered by subclass [B65B](#)
3. This subclass, which is intended to be as comprehensive as possible, only excludes containers or packages of a nature clearly confined to a single other subclass, which are classified in that subclass
4. In this subclass, groups [B65D 5/00](#)-, [B65D 27/00](#)-, [B65D30/00](#) or [B65D 65/00](#) include constructional features of foldable or erectable container or wrapper blanks as well as the containers or wrappers formed by folding or erecting such blanks
5. Containers, packaging elements or packages classified in group [B65D 85/00](#)-, are also classified according to the constructional or functional features, if such features are of interest [6]
6. In this subclass, the following terms or expressions are used with the meanings indicated:
  - "rigid or semi-rigid containers" includes:
    - a. containers not deformed by, or not taking-up the shape of, their contents;
    - b. containers adapted to be temporarily deformed to expel their contents;
    - c. pallets;
    - d. trays;
  - "flexible containers" includes:
    - a. containers deformed by, or taking-up the shape of, their contents;
    - b. containers adapted to be permanently deformed to expel their contents;
  - "packaging elements" includes:
    - a. elements, other than containers, for covering, protecting, stiffening, or holding together articles or materials to be stored or transported;

- b. packaging materials of special type or form not provided for in other subclasses;
- "packages" includes:
  - a. combination of containers or packaging elements with articles or materials to be stored or transported:
  - b. articles joined together for convenience of storage or transport;
- "paper" includes materials, e.g. cardboard, plastic sheet materials, laminated materials, or metal foils, worked in a manner analogous to paper;
- "large containers", in groups [B65D 88/00](#) or [B65D 90/00](#), means containers having about the size of containers used in container traffic, sometimes referred to as freight, forwarding or "ISO" (International Standardization) containers, or larger containers [3]

7. Tamper-indicating means for containers or closures are classified in the group appropriate to the type of container or closure, e.g. [B65D 5/54](#), [B65D 17/00](#), [B65D 27/30](#), [B65D 27/30](#), [B65D 27/34](#), [B65D 33/34](#), [B65D 41/32](#), [B65D 47/36](#), [B65D 49/12](#), [B65D 51/20](#), [B65D 55/06](#) [5]

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">B65D 5/34</a>	covered by	<a href="#">B65D 5/325</a>	
<a href="#">B65D 5/35</a>	covered by	<a href="#">B65D 5/32</a>	
<a href="#">B65D 5/355</a>	covered by	<a href="#">B65D 5/0005</a>	
<a href="#">B65D 5/43</a>	covered by	<a href="#">B65D 5/42</a>	
<a href="#">B65D 5/462</a>	covered by	<a href="#">B65D 5/46008</a>	to
<a href="#">B65D 5/46032</a>			
<a href="#">B65D 5/465</a>	covered by	<a href="#">B65D 5/46008</a>	to
<a href="#">B65D 5/46032</a>			
<a href="#">B65D 5/468</a>	covered by	<a href="#">B65D 5/4608</a>	
<a href="#">B65D 5/472</a>	covered by	<a href="#">B65D 5/46048</a>	
<a href="#">B65D 5/475</a>	covered by	<a href="#">B65D 5/46008</a>	
<a href="#">B65D 5/478</a>	covered by	<a href="#">B65D 5/46056</a>	
<a href="#">B65D 5/4805</a>	-	<a href="#">B65D 5/489</a>	covered by
<a href="#">B65D 5/48002</a>			
<a href="#">B65D 5/49</a>	-	<a href="#">B65D 5/499</a>	covered by
<a href="#">B65D 5/48024</a>			
<a href="#">B65D 5/63</a>	covered by	<a href="#">B65D 5/72</a>	
<a href="#">B65D 6/00</a>	-	<a href="#">B65D 6/40</a>	covered by
<a href="#">B65D 7/00</a>	,	<a href="#">B65D 9/00</a>	,
<a href="#">B65D 15/00</a>		<a href="#">B65D 11/00</a>	,
<a href="#">B65D 8/00</a>	-	<a href="#">B65D 8/22</a>	covered by
<a href="#">B65D 7/00</a>	,	<a href="#">B65D 9/00</a>	,
<a href="#">B65D 15/00</a>		<a href="#">B65D 11/00</a>	,
<a href="#">B65D 19/22</a>	covered by	<a href="#">B65D 19/0004</a>	&
subgroups			
<a href="#">B65D 19/24</a>	covered by	<a href="#">B65D 19/0004</a>	&
subgroups			
<a href="#">B65D 19/26</a>	covered by	<a href="#">B65D 19/0004</a>	&
subgroups			
<a href="#">B65D 19/28</a>	covered by	<a href="#">B65D 19/0004</a>	&
subgroups			
<a href="#">B65D 19/30</a>	covered by	<a href="#">B65D 19/0004</a>	&
subgroups			
<a href="#">B65D 19/31</a>	covered by	<a href="#">B65D 19/0004</a>	&
subgroups			
<a href="#">B65D 19/34</a>	covered by	<a href="#">B65D 19/0004</a>	&
subgroups			

B65D 17/28 covered by - ~~B65D 17/48~~, B65D 17/52  
[B65D 17/16](#) to [B65D 17/26](#)

B65D 19/32 covered by ~~B65D 19/0002~~,  
[B65D 19/0004](#)

B65D 21/024 covered by [B65D 21/0201](#)

B65D 21/028 covered by [B65D 21/0204](#)

B65D 21/032 covered by [B65D 21/0211](#)

B65D 21/036 covered by [B65D 21/0217](#)

B65D 25/26 covered by [B65D 81/02](#)

B65D 30/00 covered by - ~~B65D 29/00~~, B65D 30/28  
[B65D 31/00](#)

B65D 33/17 covered by [B65D 33/1633](#)

B65D 33/36 covered by [B65D 75/58](#)

B65D 33/38 covered by [B65D 75/5861](#)

B65D 35/48 covered by - ~~B65D 47/2018~~ B65D 35/54

B65D 39/18 covered by [B65D 39/00](#)  
+s.gr.

B65D 41/01 covered by [B65D 41/00](#)

B65D 43/03 covered by [B65D 43/00](#) +  
[B65D 2543/00027](#)

B65D 47/22 covered by [B65D 47/20](#)

B65D 47/34 covered by [B05B 11/00](#)

[B65D 50/06](#) covered by

B65D 50/08 covered by [B65D 55/02](#)

B65D 50/10 covered by [B65D 55/02](#)

B65D 50/12 covered by [B65D 55/02](#)

B65D 50/14 covered by [B65D 55/02](#)

B65D 65/26 covered by - ~~B65D 75/58~~ B65D 65/32

B65D 65/34 covered by [B65D 75/66](#)

B65D 65/36 covered by [B65D 75/58](#)

B65D 71/52 covered by - ~~B65D 71/0003~~ B65D 71/68  
to [B65D 71/0077](#)

<a href="#">B65D 75/60</a> <a href="#">B65D 75/58</a>	-	<a href="#">B65D 75/64</a>	covered by
<a href="#">B65D 81/15</a>	covered by	<a href="#">B65D 81/05</a>	
<a href="#">B65D 81/17</a>	covered by	<a href="#">B65D 81/02</a>	
<a href="#">B65D 83/18</a> <a href="#">B65D 83/14</a>	-	<a href="#">B65D 83/74</a> <a href="#">B65D 83/16</a>	covered by
<a href="#">B65D 83/18</a>	covered by	<a href="#">B65D 83/201</a>	
<a href="#">B65D 83/58</a>	covered by	<a href="#">B65D 83/44</a>	
<a href="#">B65D 83/76</a>	covered by	<a href="#">B65D 83/0005</a>	
<a href="#">B65D 85/57</a>	covered by	<a href="#">G11B 23/00</a>	
<a href="#">B65D 85/575</a>	covered by	<a href="#">G11B 23/00</a>	
<a href="#">B65D 85/86</a> <a href="#">H01L 21/00</a>	-	<a href="#">B65D 85/90</a> <a href="#">H05K 13/00</a>	covered by
<a href="#">B65D 91/00</a>	covered by	<a href="#">A47G 29/12</a>	

**B65D 1/00**

Containers having bodies formed in one piece, e.g. by casting metallic material, by moulding plastics, by blowing vitreous material, by throwing ceramic material, by moulding pulped fibrous material, by deep-drawing operations performed on sheet material (by winding, bending, or folding paper [B65D 3/00](#), [B65D 5/00](#); specially constructed to be opened by cutting, piercing, or tearing of wall portions [B65D 17/00](#); pallets [B65D 19/00](#); details of bottles or of jars [B65D 23/00](#); bundles of articles held together by packaging elements for convenience of storage or transport, e. g. portable segregating carriers for plural receptacles such as beer cans, pop bottles, [B65D 71/00](#))

B65D 1/02

- Bottles or similar containers with necks or like restricted apertures, designed for pouring contents (thermally-insulated containers [B65D 81/38](#), [A47J 41/00](#); {-feeding-bottles [A61J 9/00](#)})

B65D 1/22

- Boxes or like containers with side walls of substantial depth for enclosing contents ({[B65D 43/162](#), [B65D 81/02](#), [B65D 81/3813](#) take precedence})

B65D 1/32

- Containers adapted to be temporarily deformed by external pressure to expel contents ({[B65D 47/2018](#), [B65D 83/0055](#) take precedence } ; containers for pharmaceutical purposes [A61J 1/20](#), [A61M 5/19](#); containers with disinfecting linings [A61L 2/00](#); liquid sprayers [B05B](#); oil cans [F16N 3/00](#))

B65D 1/40

- Details of walls (other container details [B65D 23/00](#), [B65D 25/00](#))

**B65D 5/00**

Containers of polygonal cross-section, e.g. boxes, cartons, trays, formed by folding or erecting one or more blanks made of paper (pallets [B65D 19/00](#); bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carriers for plural receptacles such as beer cans, pop bottles, [B65D 71/00](#); forming foldable or erectable blanks [B31B](#))

U B65D 5/02

- by folding or erecting a single blank to form a tubular body with or without subsequent folding operations, or the addition of separate elements, to close the ends of the body ([B65D 5/36](#) takes precedence)

- B65D 5/0236
  - • {with end closures formed by inward folding of flaps and securing them by adhesive tapes, labels or the like; for decoration purposes ([B65D 5/4245](#)-, [B65D 5/4262](#) take precedence)}
- U B65D 5/20
  - by folding-up portions connected to a central panel from all sides to form a container body, e.g. of tray-like form ([B65D 5/36](#) takes precedence)
- U B65D 5/24
  - • with adjacent sides interconnected by gusset folds
- B65D 5/244
  - • • {and the gussets folds connected to the outside of the container body ([B65D 5/247](#)-, [B65D 5/248](#) take precedence)}
- U B65D 5/42
  - Details of containers or of foldable or erectable container blanks
- U B65D 5/4279
  - • {Joints, seams, leakproof joints or corners, special connections between panels ([B65D 5/209](#) takes precedence)}
- B65D 5/4283
  - • • {Connections formed by separate elements, e.g. clips, bands, straps ([B65D 5/0227](#)-, [B65D 5/0236](#) take precedence)}
- U B65D 5/44
  - • Integral, inserted or attached portions forming internal or external fittings {not used, see subgroups}
- B65D 5/50
  - • • Internal supporting or protecting elements for contents (elements formed by inward-folding of a wall extending from, and continuously around, an end of a tubular body [B65D 5/06](#)-, partitions [B65D 5/48](#))
- U B65D 5/5028
  - • • • {Elements formed separately from the container body}
- U B65D 5/5035
  - • • • • {Paper elements (in combination with wooden elements [B65D 5/5095](#))}
- B65D 5/5038
  - • • • • {Tray-like elements formed by folding a blank and presenting openings or recesses (without external box [B65D 71/72](#)-, external face of container provided with opening for receiving object in display position [B65D 5/5286](#))}
- B65D 5/5059
  - • • • • {Paper panels presenting one or more openings or recesses in which at least a part of the contents are located ([B65D 5/5038](#)-, [B65D 5/5052](#)-, [B65D 5/5057](#) and [B65D 5/5286](#) take precedence)}
- U B65D 5/52
  - • • External stands or display elements for contents {(adjustable or foldable display stands made of cardboard, paper or the like, without packaging function [A47F 5/11](#))}
- B65D 5/5273
  - • • • {Containers provided with an inclined surface on which the contents are located ([B65D 5/5213](#)-, [B65D 5/5266](#) take precedence)}
- B65D 5/54
  - • Lines of weakness to facilitate opening of container or dividing it into separate parts by cutting or tearing ({[B65D 5/06](#)-, [B65D 5/5233](#)-, [B65D 5/5253](#) take precedence } ; break-in flaps, or members adapted to be torn-off, to provide pouring openings [B65D 5/70](#))
- U B65D 5/56
  - • Linings or internal coatings, (e.g. pre-formed trays provided with a blow- or thermoformed layer){to protect the articles from mechanical damage [B65D 81/127](#)}
- B65D 5/566
  - • • {Linings made of relatively rigid sheet material, e.g. carton ([B65D 5/0281](#) and [B65D 5/58](#) takes precedence; combined with a flexible lining [B65D 5/56](#)-, [B65D 5/60](#)-, for thermal insulating purposes [B65D 81/3858](#)-, for shock absorbing purposes [B65D 81/1275](#))}
- B65D 5/62
  - • External coverings or coatings ({[B65D 5/4245](#)-, [B65D 5/4262](#) take precedence)}
- U B65D 5/64
  - • Lids
- B65D 5/643
  - • • {held in closed position by application of separate elements, e.g. clips, straps ([B65D 5/6611](#)-, [B65D 5/6673](#) take precedence)}
- U B65D 5/66
  - • • Hinged lids ({[B65D 5/325](#) takes precedence)}
- U B65D 5/6626
  - • • • {formed by folding extensions of a side panel of a container body formed by erecting a "cross-like" blank}

- U B65D 5/6629 . . . . {the lid being formed by two mating halves joined to opposite edges of the container body}
- B65D 5/6632 . . . . . {the lid-halves being held in closed position by flaps or tabs provided at their side edges only ([B65D 5/6644](#), [B65D 5/6647](#) take precedence)}
- B65D 5/6635 . . . . . {the lid-halves being held in closed position by flaps or tabs provided at their edge opposite to their hinge ([B65D 5/6644](#), [B65D 5/6647](#) take precedence)}
- B65D 7/00** Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of metal (specially constructed to be opened by cutting, piercing, or tearing of wall portions [B65D 17/00](#); pallets [B65D 19/00](#); tanks for domestic water storage heaters [F24H 1/181](#))
- U B65D 7/02 . characterised by shape
- B65D 7/04 . . of curved cross-section, e.g. cans of circular or elliptical cross-section {(thermally insulated [B65D 81/3813](#), [B65D 81/3837](#))}
- U B65D 7/12 . characterised by wall construction or by connections between walls
- B65D 7/22 . . with double walls, e.g. double end walls {(for thermal insulating purposes [B65D 81/3806](#), [B65D 81/3818](#), [B65D 81/383](#))}
- B65D 7/42 . Details of metal walls {(casks, barrels or drums in their entirety [B65D 7/045](#)}; other container details [B65D 23/00](#), [B65D 25/00](#))}
- U B65D 9/00** Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of wood or substitutes therefor
- B65D 9/02 . Containers of curved cross-section, e.g. cylindrical boxes {(thermally insulated [B65D 81/3813](#), [B65D 81/3837](#))}
- B65D 9/26 . with double end walls, e.g. double bottoms {(for thermal insulating purposes [B65D 81/3806](#), [B65D 81/3818](#), [B65D 81/383](#))}
- B65D 9/32 . Details of wooden walls; Connections between walls (other container details [B65D 23/00](#), [B65D 25/00](#); connections between walls and non-removable lids or covers [B65D 43/14](#))
- B65D 11/00** Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, components made wholly or mainly of plastics material (specially constructed to be opened by cutting, piercing, or tearing of wall portions [B65D 17/00](#); pallets [B65D 19/00](#))
- U B65D 13/00** Containers having bodies formed by interconnecting two or more rigid, or substantially rigid, components made wholly or mainly of the same material, other than metal, plastics, wood, or substitutes therefor (pallets [B65D 19/00](#))
- B65D 13/04 . of paper (by winding, bending, or folding paper [B65D 3/00](#), [B65D 5/00](#))
- B65D 15/00** Containers having bodies formed by interconnecting or uniting two or more rigid, or substantially rigid, sections made of different materials (specially constructed to be opened by cutting, piercing, or tearing, of wall portions [B65D 17/00](#); pallets [B65D 19/00](#))
- B65D 17/00** Containers specially constructed to be opened by cutting or piercing, or by tearing of frangible member or portion (opening devices for containers made by winding, bending, or folding paper [B65D 3/00](#), [B65D 5/00](#); frangible inner closure members associated with caps, lids, or covers [B65D 51/20](#); opening devices added or incorporated during filling or closing of containers [B65D 77/30](#); separate devices for opening closed containers [B67B 7/00](#))

- B65D 21/00**      **Nestable, stackable, or joinable containers; Containers of variable capacity (large containers [B65D 88/00](#); {-containers for display purposes [A47B 87/0276](#)})**
- U B65D 21/02      • Containers specially shaped, or provided with fittings or attachments, to facilitate nesting, stacking, or joining together {(stackable containers of polygonal cross-section formed by folding or erecting blanks made of paper [B65D 5/001](#))}
- B65D 21/0209      • • {stackable or joined together one-upon-the-other in the upright or upside-down position ([B65D 21/0234](#)-, [B65D 21/0235](#) take precedence)}
- B65D 21/0212      • • • {Containers presenting local stacking elements protruding from the upper or lower edge of a side wall, e.g. handles, lugs, ribs, grooves ([B65D 21/0211](#)-, [B65D 21/0215](#)-, [B65D 21/023](#) take precedence)}
- B65D 21/0215      • • • {Containers with stacking feet or corner elements ([B65D 21/0211](#)-, [B65D 21/023](#) take precedence)}
- B65D 21/0228      • • • {Containers joined together by screw-, bayonet-, snap-fit or the like, ([B65D 21/0211](#)-, [B65D 21/0231](#) take precedence)}
- B65D 23/00 - B65D 25/00**      **Details of rigid or semi-rigid containers not otherwise provided for (for pallets [B65D 19/38](#)-; of large containers [B65D 90/00](#))**
- U B65D 23/08      • Coverings or external coatings (wrappers [B65D 65/00](#))
- U B65D 23/0842      • • {Sheets or tubes applied around the bottle with or without subsequent folding operations}
- B65D 23/085      • • • {and glued or otherwise sealed to the bottle ([B65D 23/0857](#)-, [B65D 23/0864](#)-, [B65D 23/0871](#) take precedence)}
- B65D 23/0857      • • • {and locked to the bottle by mechanical means, e.g. tabs snapping into recesses of the bottle ([B65D 23/0871](#)-, [B65D 23/0878](#) take precedence)}
- B65D 23/0885      • • {Rigid shells for receiving the bottle or part of it ([B65D 23/0842](#)-, [B65D 81/3876](#)-, [B65D 85/302](#) take precedence)}
- U B65D 25/00**      **Details of other kinds or types of rigid or semi-rigid containers**
- B65D 25/005      • {Side walls formed with an aperture or a movable portion arranged to allow removal or insertion of contents ([B65D 5/16](#)-, [B65D 7/40](#) take precedence)}
- U B65D 25/02      • Internal fittings (of containers made by folding or erecting blanks made of paper [B65D 5/44](#))
- U B65D 25/10      • • Devices to locate articles in containers {(for protecting articles from mechanical damage [B65D 81/02](#))}
- B65D 25/101      • • • {Springs, elastic lips, or other resilient elements to locate the articles by pressure ([B65D 25/102](#)-, [B65D 25/103](#) take precedence)}
- B65D 25/14      • Linings or internal coatings (of containers made by folding or erecting blanks made of paper [B65D 5/56](#);- {-linings for domestic water storage heaters [F24H 1/183](#)})
- B65D 25/28      • Handles (of containers made by folding or erecting blanks made of paper [B65D 5/46](#);-; of bottles or jars [B65D 23/10](#);-; {-holders for glasses, bottles, cartons, plastic bags, cans [A47G 23/02](#)})
- B65D 25/2802      • • {fixed, i.e. non-swingable, handles ([B65D 25/2867](#)-, [B65D 25/2882](#) take precedence)}
- B65D 25/34      • Coverings or external coatings (of containers made by folding or erecting blanks made of paper [B65D 5/62](#);-; for bottles or jars [B65D 23/08](#);-; wrappers [B65D 65/00](#))

- B65D 25/38
- Devices for discharging contents (containers formed by folding or erecting paper blanks [B65D 5/72](#)); incorporated in removable or non-permanently secured closure members [B65D 47/00](#); for discharging thin flat articles [B65D 83/08](#))
- B65D 27/00**      **Envelopes or like essentially-rectangular containers for postal or other purposes having no structural provision for thickness of contents (with shock-absorbing properties [B65D 81/03](#); letter-cards [B42D 15/00](#))**
- B65D 27/32
- Opening devices incorporated during envelope manufacture (incorporated during closing of envelope [B43M 5/00](#); separate devices for opening envelopes [B43M 7/00](#))
- U**    **B65D 33/00**      **Details of, or accessories for, sacks or bags**
- B65D 33/008
- {Individual filled bags or pouches connected together ([B65D 33/001](#)-, [B65D 33/002](#) take precedence)}
- B65D 33/04
- Windows or other apertures, e.g. for viewing contents {(ventilation apertures [B65D 33/01](#)-, windows for level indication [B65D 33/004](#))}
- B65D 33/16
- End- or aperture-closing arrangements or devices (valves of valve bags {[B65D 31/14](#)}; removable stoppers or caps [B65D 39/00](#)-, [B65D 41/00](#)-, closures of filled bags [B65D 77/10](#)-, closing filled bags in association with packaging [B65B 7/00](#)-, [B65B 51/00](#))
- U**    **B65D 35/00**      **Pliable tubular containers adapted to be permanently {or temporarily} deformed to expel contents, e.g. collapsible tubes for toothpaste or other plastic or semi-liquid material; Holders therefor {(packages for tubes [B65D 85/14](#))}**
- B65D 35/44
- Closures (closure members of interest apart from this application [B65D 39/00](#) to [B65D 55/00](#)-, forming bottom closures after filling [B65B 7/14](#))
- B65D 39/00 -  
B65D 55/00**      **Closure members for rigid or semi-rigid containers or for flexible containers presenting similar closing problems (closure flaps or lids attached to, or incorporated in, containers, or foldable or erectable container blanks, made of paper [B65D 3/00](#)-, [B65D 5/00](#)-, closure walls of containers specially constructed to be opened by cutting, piercing, or tearing of wall portions [B65D 17/00](#)-, applying closure members to bottles, jars, or similar containers [B67B](#)-, covers or similar closure members, for pressure vessels in general [F16J 13/00](#)); Parts of containers co-operating with closure members or characterised by the form of closure member (for large containers [B65D 90/00](#))**
- B65D 39/00**      **Closures arranged within necks or pouring openings or in discharge apertures, e.g. stoppers (lids or covers [B65D 43/00](#)-, with additional securing elements [B65D 45/00](#))**
- NOTE  
In this group, the indexing codes of [B65D 2539/00](#) are used
- B65D 39/0005
- {made in one piece ([B65D 39/02](#)-, [B65D 39/04](#)-, [B65D 39/06](#)-, [B65D 39/08](#) take precedence)}
- B65D 39/0052
- {made in more than one piece ([B65D 39/02](#)-, [B65D 39/04](#)-, [B65D 39/06](#)-, [B65D 39/08](#) take precedence)}
- B65D 41/00**      **Caps, e.g. crown caps, crown seals, i.e. members having parts arranged for engagement with the external periphery of a neck or wall defining a pouring opening or discharge aperture; Protective cap-like covers for closure members, e.g. decorative covers of metal foil or paper ([B65D 45/00](#) takes precedence; combinations of caps and protective cap-like covers [B65D 51/18](#)-, making closures by working metal sheet [B21D 51/44](#)-, affixing labels [B65C 3/06](#))**

- B65D 43/00**      **Lids or covers for rigid or semi-rigid containers (for cooking vessels [A47J 36/06](#); covers for pressure vessels in general [F16J 13/00](#))**
- U B65D 43/14      · Non-removable lids or covers
- B65D 43/16      · · hinged for upward or downward movement ({cigar or cigarette receptacles [A24F 15/00](#); suitcases, étuis [A45C](#); casings for cosmetic substances with hinged covers [A45D 40/22](#); toolboxes [B25H 3/02](#); hinges of door or similar type [E05D](#); {-boxes for switchboards with hinged covers [H02B 1/066](#))}
- B65D 43/24      · · Devices for retaining in open position {(holding lids in open position in general [E05C 17/00](#); hinges with means for holding open [E05D 11/10](#))}
- B65D 45/00**      **Clamping or other pressure-applying devices for securing or retaining closure members (screw-threaded or bayonet connections between stoppers or caps and containers [B65D 39/08](#), [B65D 41/04](#), [B65D 41/34](#); expansible stoppers [B65D 39/12](#); for pressure vessels in general [F16J 13/00](#))**
- U B65D 45/02      · for applying axial pressure to engage closure with sealing surface
- U B65D 45/30      · · Annular members, e.g. with snap-over action, screw-threaded {([B65D 45/32](#) takes precedence)}
- B65D 45/305      · · · {Screw-threaded or bayonet-type annular members cooperating with an intermediate ring ([B65D 41/08](#), [B65D 51/14](#) takes precedence)}
- U B65D 45/32      · for applying radial {or radial and axial} pressure, e.g. contractible bands encircling closure member
- B65D 45/322      · · {the clamping device being an annular member moved axially to clamp the closure by using radial pressure ([B65D 55/0863](#), [B65D 55/0872](#) take precedence)}
- B65D 45/327      · · · {the annular member applying radial pressure against the inner surface of the container wall ([B65D 55/0863](#), [B65D 55/0872](#) take precedence)}
- B65D 47/00**      **Closures with filling and discharging, or with discharging, devices (dispensers for liquid soap [A47K 5/12](#); desk equipment for applying liquid by contact with surfaces [B43M 11/00](#); fluid delivery valves in general [F16K 21/00](#))**
- U B65D 47/04      · Closures with discharging devices other than pumps
- U B65D 47/06      · · with pouring spouts or tubes; with discharge nozzles or passages (with slidable spouts [B65D 47/26](#))
- B65D 47/18      · · · for discharging drops; Droppers (droppers in general [B01L 3/00](#); {-pipettes connected to container closures [B01L 3/0282](#))}
- U B65D 47/20      · · comprising hand-operated members for controlling discharge {(closures with liquid-dispensing taps or cocks [B67D 3/04](#))}
- U B65D 47/24      · · · with poppet valves {or lift valves, i.e. valves opening or closing a passageway by a relative motion substantially perpendicular to the plane of the seat}
- B65D 47/248      · · · · {the valve being opened or closed by imparting a motion to the valve stem ([B65D 47/244](#), [B65D 47/245](#) take precedence)}
- B65D 47/36      · Closures with frangible parts adapted to be pierced, torn, or removed, to provide discharge openings ([B65D 51/18](#) takes precedence; caps with piercable membranes [B65D 41/20](#), [B65D 41/50](#))
- B65D 47/42      · with pads or like contents-applying means ({contents-applying means associated to aerosol container nozzles [B65D 83/285](#); } brushes combined or associated with containers [A46B 11/00](#); swabs for applying media to the human body from an integral supply [A61F13/40](#))

- B65D 49/00** Arrangements or devices for preventing refilling of containers (integral, or permanently secured, closures for containers specially adapted to be opened by cutting, piercing, or tearing of wall portions [B65D 17/00](#); for initial filling and for preventing subsequent refilling [B65D 47/02](#))
- B65D 50/00** Closures with means for discouraging unauthorised opening or removal thereof, with or without indicating means, e.g. child-proof closures (tamper-indicating closures without means for discouraging, see the relevant groups, e.g. [B65D 41/32](#), [B65D 51/20](#))
- U B65D 50/02 · openable or removable by the combination of plural actions
- B65D 50/04 · · requiring the combination of simultaneous actions, e.g. depress and turn, lift and turn, maintain a part and turn another one (caps or covers secured by rotation with bayonet cams [B65D 41/06](#), [B65D 41/36](#))
- B65D 50/045 · · · {where one action elastically deforms or deflects at least part of the closure, the container or an intermediate element, e.g. a ring ([B65D 50/041](#), [B65D 50/043](#) take precedence)}
- U B65D 50/06 · · requiring the combination of different actions in succession
- B65D 50/065 · · · {with separate ring having to be axially displaced to permit user to access closure ([B65D 50/062](#), [B65D 50/064](#) take precedence; radial pressure applying means [B65D 45/32](#))}
- B65D 50/067 · · · {using integral or non-integral accessories, e.g. tool, key ([B65D 50/062](#), [B65D 50/064](#), [B65D 50/065](#) take precedence)}
- U B65D 51/00** Closures not otherwise provided for (covers or similar closures as engineering elements for pressure vessels in general [F16J 13/00](#))
- U B65D 51/16 · with means for venting air or gas
- U B65D 51/1605 · · {whereby the interior of the container is maintained in permanent gaseous communication with the exterior}
- B65D 51/1611 · · · {by means of an orifice, capillary or labyrinth passage ([B65D 51/1616](#), [B65D 51/1622](#) take precedence)}
- B65D 51/18 · Arrangements of closures with protective outer cap-like covers or of two or more co-operating closures (secondary protective cap-like outer covers for caps [B65D 41/62](#); {[B65D 51/247](#) takes precedence })
- U B65D 51/24 · combined {or co-operating} with auxiliary devices for non-closing purposes
- B65D 51/248 · · {the closure being provided with transient audible or visual signaling means, e.g. for indicating dispensing, or other illuminating or acoustic devices, e.g. whistles ([B65D 55/026](#), [B65D 55/028](#) take precedence; for indicating incorrect storage [B65D 79/02](#))}
- U B65D 51/28 · · with auxiliary containers for additional articles or materials {([B65D 51/247](#) takes precedence)}
- U B65D 51/2807 · · · {the closure presenting means for placing the additional articles or materials in contact with the main contents by acting on a part of the closure without removing the closure, e.g. by pushing down, pulling up, rotating or turning a part of the closure, or upon initial opening of the container}
- U B65D 51/2814 · · · · {the additional article or materials being released by piercing, cutting or tearing an element enclosing it}
- B65D 51/2828 · · · · · {said element being a film or a foil ([B65D 51/2821](#), [B65D 51/2842](#) take precedence)}
- U B65D 51/2857 · · · · · {the additional article or materials being released by displacing or removing an element enclosing it ([B65D 51/2814](#) takes precedence)}
- B65D 51/2892 · · · · · {the element, e.g. a valve, opening an aperture of the auxiliary container ([B65D 51/2864](#), [B65D 51/2878](#) take precedence)}

- B65D 51/32      · · with brushes or rods for applying or stirring contents (droppers [B65D 47/18](#); {eating utensils or spatulas [B65D 51/246](#)})
- B65D 53/00      Sealing or packing elements (sealings in general [F16J 15/00](#)); Sealings formed by liquid or plastics material**
- NOTE  
Sealings or packing means combined with particular closures are classified with the closures, e.g. in subgroups of [B65D 39/00](#) together with indexing codes out of **[B65D339/00](#)**, or in the groups [B65D 41/005](#), [B65D 41/0435](#)
- U    B65D 55/00      Accessories for container closures not otherwise provided for**
- B65D 55/02      · Locking devices; Means for discouraging or indicating unauthorised opening or removal of closure (protective covers for bottles [B65D 23/08](#); {[B65D 41/32](#) takes precedence } ; protective cap-like outer covers for bottle or jar closures [B65D 41/28](#); pressure-applying means [B65D 45/00](#) )
- B65D 55/022      · · {with ratchet effect between relatively rotating parts ([B65D 41/3404](#), [B65D 50/04](#) take precedence)}
- B65D 55/024      · · {Closures in which a part has to be ruptured to gain access to the contents ([B65D 41/32](#), [B65D 43/0235](#), [B65D 55/022](#), [B65D 55/06](#) take precedence)}
- B65D 55/06      · · Deformable or tearable wires, strings, or strips (containers specially constructed to be opened by tear-strips, strings or the like [B65D 17/00](#); caps or cap-like closures with tear-strips [B65D 41/32](#)); Use of seals, e.g. destructible locking pins ({[B65D 55/022](#) takes precedence } ; applying labels to bottles [B65C 3/06](#), [B65C 9/00](#); seals per se [G09F 3/00](#))
- U    B65D 55/08      · · · Annular elements encircling container necks
- U    B65D 55/0818      · · · · {Destructible or permanently removable bands, e.g. adhesive}
- B65D 55/0854      · · · · · {Shrink-film bands ([B65D 41/54](#), [B65D 41/62](#) take precedence)}
- B65D 59/00      Plugs, sleeves, caps, or like rigid or semi-rigid elements for protecting parts of articles or for bundling articles, e.g. protectors for screw-threads, end caps for tubes or for bundling rod-shaped articles {(stopping flow from or in pipes or hoses by means of plugs [F16L 55/11](#), by means of caps [F16L 55/115](#); protection of pipes or objects of similar shape against external or internal damage or wear [F16L 57/00](#))}**
- B65D 61/00      External frames or supports adapted to be assembled around, or applied to, articles (collapsible containers [B65D 5/00](#), [B65D 7/24](#), [B65D 9/12](#), [B65D 11/18](#))**
- B65D 63/00      Flexible elongated elements, e.g. straps, for bundling or supporting articles (attached to or integral with bags or sacks [B65D 33/165](#); for securing load [B60P 7/0823](#); for supporting pipes, cables or protective tubing [F16L 3/137](#); {for bundling pipes [F16L 3/233](#)})**
- B65D 65/00      Wrappers or flexible covers; Packaging materials of special type or form (wrappers or envelopes with shock-absorbing properties [B65D 81/03](#); layered products per se [B32B](#); materials per se, see the relevant classes)**
- NOTE  
Attention is drawn to the definition of "packaging element" in Note (5) following the title of this subclass
- U    B65D 65/38      · Packaging materials of special type or form

- B65D 65/40
- Applications of laminates for particular packaging purposes {([B65D 1/0215](#)-, [B65D 1/28](#)-, [B65D 3/22](#)-, [B65D 5/0281](#)-, [B65D 5/563](#)-, [B65D 9/30](#)-, [B65D 29/02](#)-, [B65D 31/02](#)-, [B65D 75/26](#)-, [B65D 77/2024](#)-, [B65D 81/1275](#)-, [B65D 81/3811](#)-, [B65D 81/3823](#)-, [B65D 81/3834](#)-, [B65D 81/3846](#)-, [B65D 81/3858](#)-, [B65D 81/3874](#)-, [B65D 81/3886](#)-, [B65D 81/3897](#) take precedence; laminates per se or laminated packages characterised by the composition or)}
- NOTE  
A packaging purpose covered by another group of [B65D](#) should be classified in that group of [B65D](#) and in [B32B](#)]
- B65D 69/00**      **Articles joined together for convenience of storage or transport without the use of packaging elements** {(packages joined together [B65D 5/427](#)-, [B65D 21/02](#)} ; joining articles for convenience of packaging [B65B 17/02](#))
- B65D 71/00**      **Bundles of articles held together by packaging elements for convenience of storage or transport, e.g. portable segregating carrier for plural receptacles such as beer cans, pop bottles; Bales of material (binding of hay or straw** [A01D](#)-, [A01F 1/00](#);-; bundling or baling [B65B](#)-, e.g. [B65D 13/00](#)-, [B65D 27/00](#))
- U    B65D 71/06      • Packaging elements holding or encircling completely or almost completely the bundle of articles, e.g. wrappers
- B65D 71/063      • {Wrappers formed by one or more films or the like, e.g. nets ([B65D 71/08](#) takes precedence; wrappers formed by folding a single blank [B65D 71/12](#);-; wrappers formed by folding two or more blanks [B65D 71/38](#))}
- B65D 71/08      • Wrappers shrunk by heat {or under tension, e.g. stretch films, films tensioned by compressed articles (wrappers formed by folding a single blank [B65D 71/12](#);-; wrappers formed by folding two or more blanks [B65D 71/38](#))}
- B65D 73/00**      **Packages comprising articles attached to cards, sheets, or webs** {([B65D 85/18](#) takes precedence } ; cards for buttons, collar-studs, or sleeve-links [A44B 7/00](#);-; attaching articles to cards, sheets, or webs [B65B 15/00](#))
- U    B65D 75/00      **Packages comprising articles or materials partially or wholly enclosed in strips, sheets, blanks, tubes, or webs of flexible sheet material, e.g. in folded wrappers** ([B65D 71/00](#) takes precedence; wrapping [B65B 11/00](#))
- U    B65D 75/28      • Articles or materials wholly enclosed in composite wrappers, i.e. wrappers formed by associating or interconnecting two or more sheets or blanks
- U    B65D 75/30      • Articles or materials enclosed between two opposed sheets or blanks having their margins united, e.g. by pressure-sensitive adhesive, crimping, heat-sealing, or welding
- U    B65D 75/32      • • one or both sheets or blanks being recessed to accommodate contents
- B65D 75/34      • • • and having several recesses to accommodate a series of articles or quantities of material {(not used)}
- WARNING  
Group [B65D 75/34](#) is no longer used for the classification of new documents. Documents of this group are in the process of being reclassified to groups [B65D 75/323](#)-, [B65D 75/327](#)-, and subgroups
- B65D 75/36      • • • one sheet or blank being recessed and the other formed of relatively stiff flat sheet material, e.g. blister packages, {the recess or recesses being preformed ([B65D 73/0057](#)-, [B65D 73/0092](#) take precedence)}
- B65D 75/38      • Articles or materials enclosed in two or more wrappers disposed one inside the other {(for shock absorbing purposes [B65D 81/03](#);-; for thermal insulating purposes [B65D 81/3893](#))}
- U    B65D 75/52      • Details

- B65D 75/527
- • {Tear-lines for separating a package into individual packages ([B65D 1/30](#)-, [B65D 21/0206](#)-, [B65D 75/34](#) take precedence)}
- B65D 75/58
- • Opening or contents-removing devices added or incorporated during package manufacture {([B65D 75/36](#)-, [B65D 85/1027](#) take precedence)}
- B65D 75/5861
- • • {Spouts ([B65D 75/5811](#)-, [B65D 75/5822](#) take precedence)}
- U B65D 77/00 Packages formed by enclosing articles or materials in preformed containers, e.g. boxes, cartons, sacks, bags**
- B65D 77/006
- {Containers simulating a book (pencil cases [A45C 11/34](#)-, books, book covers [B42D](#)-, albums, filing appliances, e.g. boxes, [B42F](#)-, for videos [G11B](#))}
- B65D 77/10
- Container closures formed after filling ({for sacks or bags [B65D 33/16](#)}; closing filled containers in association with packaging [B65B 7/00](#)-, [B65B 51/00](#))
- U B65D 77/22
- Details
- U B65D 77/24
- • Inserts or accessories added or incorporated during filling of containers (opening devices [B65D 77/30](#))
- B65D 77/28
- • • Cards, coupons, or drinking straws {([B65D 5/4212](#)-, [B65D 23/14](#)-, [B65D 25/205](#)-, [B65D 33/004](#)-, [B65D 51/245](#)-, [B65D 75/54](#) take precedence)}
- U B65D 81/00 Containers, packaging elements, or packages, for contents presenting particular transport or storage problems, or adapted to be used for non-packaging purposes after removal of contents**
- B65D 81/02
- specially adapted to protect contents from mechanical damage {(containers of polygonal cross-section provided with internal protecting elements for contents [B65D 5/50](#)-, devices to locate articles in containers [B65D 25/10](#))}
- U B65D 81/025
- • {Containers made of sheet-like material and having a shape to accommodate contents}
- B65D 81/027
- • • {double-walled (for thermal insulating purposes [B65D 81/3818](#)-, [B65D 81/383](#))}
- B65D 81/05
- • maintaining contents at spaced relation from package walls, or from other contents {([B65D 81/022](#)-, [B65D 81/025](#)-, } [B65D 81/03](#) take precedence)
- U B65D 81/127
- • • using rigid or semi-rigid sheets of shock-absorbing material {([B65D 81/025](#) takes precedence)}
- B65D 81/133
- • • • of a shape specially adapted to accommodate contents, e.g. trays {([B65D 81/053](#) takes precedence; thermally insulated trays [B65D 81/3816](#)-, [B65D 81/3827](#))}
- B65D 81/18
- providing specific environment for contents, e.g. temperature above or below ambient (with thermal insulation [B65D 81/38](#)-, ice-boxes with cooling means [F25D](#))
- U B65D 81/24
- Adaptations for preventing deterioration or decay of contents; Applications to the container or packaging material of food preservatives, fungicides, pesticides or animal repellants (with thermal insulation [B65D 81/38](#))
- B65D 81/245
- • {Internal membrane, floating cover or the like isolating the contents from the ambient atmosphere (loosely-attached linings [B65D 25/16](#)-, dispensing pistons [B65D 83/0005](#)-, flexible bags for expelling the contents [B65D 83/0055](#))}
- U B65D 81/26
- • with provision for draining away, or absorbing, {or removing by ventilation,} fluids, e.g. exuded by contents; {([B65D 33/01](#) takes precedence)}; Applications of corrosion inhibitors or desiccators
- B65D 81/263
- • • {for ventilating the contents ([B65D 5/4295](#)-, [B65D 51/1605](#) take precedence)}
- B65D 81/266
- • • {for absorbing gases, e.g. oxygen absorbers or desiccants ([B65D 51/244](#)-, [B65D 51/30](#) take precedence)}

- B65D 81/32
- for packaging two or more different materials which must be maintained separate prior to use in admixture (containers with removable or destructible partitions [B65D 25/08](#); {-closures combined with auxiliary containers [B65D 51/28](#); in aerosol containers [B65D 83/682](#); amalgam capsules [A61C 5/066](#); containers for pharmaceutical purposes [A61J 1/20](#); [A61M 5/19](#); medical syringes [A61M 3/005](#); resin cartridges for grouting anchoring-bolts in mines [E21D 20/026](#)})
- U B65D 81/3233
- • {Flexible containers disposed within rigid containers}
- B65D 81/3244
- • • {arranged parallel or concentrically and permitting simultaneous dispensing of the two materials without prior mixing ([B65D 35/22](#)-, [B65D 81/325](#) take precedence)}
- B65D 81/3283
- • {Cylindrical or polygonal containers, e.g. bottles, with two or more substantially axially offset, side-by-side compartments for simultaneous dispensing ([B65D 35/22](#)-, [B65D 35/242](#)-, [B65D 81/3227](#)-, [B65D 81/325](#) take precedence)}
- U B65D 81/34
- for packaging foodstuffs {or other articles} intended to be cooked or heated within the package
- B65D 81/3415
- • {specially adapted to be heated in hot water, e.g. boil pouches (dissolvable packages [B65D 65/46](#);- packaging articles or materials intended to be mixed or infused with a liquid [B65D 85/808](#))}
- U B65D 81/36
- adapted to be used for non-packaging purposes after removal of contents
- B65D 81/361
- • {Modular elements with complementary shapes, interengageable parts or the like (toy building blocks [A63H 33/04](#);- building elements for walls [E04B 2/02](#))}
- B65D 81/365
- • {Containers, or parts thereof, simulating or being incorporated into other items, e.g. puppet, animal, vehicle, building, dumb bells ([B65D 81/363](#)-, [B65D 81/368](#) take precedence)}
- B65D 81/368
- • {Foldable carton-boxes simulating, or transformable into, a special configuration, e.g. a car, a house, an animal (cartons with spaced apart images to give a 3-D effect [B65D 5/4258](#);- toy models made by folding paper [A63H 33/16](#))}
- B65D 81/38
- with thermal insulation (vacuum bottles or the like [A47J 41/00](#);- {-thermal insulation of domestic water storage heaters [F24H 1/182](#)})
- B65D 83/00**
- Containers or packages with special means for dispensing contents (dispensing means incorporated in removable or non-permanently secured container closures [B65D 47/00](#);- for shops, stores, offices, bars, or the like [A47F 1/04](#);- showcases or cabinets with dispensing arrangements [A47F 3/02](#);- {-for surgical articles [A61B 19/026](#)}; magazines for screws or nuts in combination with spanners, wrenches or screw-drivers [B25B 23/06](#);- nail dispensers [B25C 3/00](#);- for use in connection with the handling of sheets, webs, or filamentary material [B65H](#);- coin deliverers [G07D 1/00](#);- {-coin-freed apparatus for dispensing discrete articles [G07F 11/00](#)})**
- WARNING
- Groups [B65D 83/75](#) to [B65D 83/759](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [B65D 83/75](#) to [B65D 83/759](#) : [B65D 83/14](#)
- U B65D 83/0005
- {Containers or packages provided with a piston or with a movable bottom or partition having approximately the same section as the container ([B65D 83/0072](#) takes precedence)}
- B65D 83/0038
- • {moved by a spring-like mechanism ([B65D 83/005](#)-, [B65D 83/0817](#)-, [B65D 83/0858](#) take precedence)}

- B65D 83/02
  - for dispensing rod-shaped articles, e.g. needles ({packages for cigarettes provided with dispensing means [B65D 85/1009](#)}; cigar or cigarette receptacles or boxes [A24F 15/00](#); {-dispensers for drinking straws [A47G 21/184](#)})
- B65D 83/14
  - for delivery of liquid or semi-liquid contents by internal gaseous pressure, i.e. aerosol containers {for a product delivered by a propellant (spraying devices for the destruction of noxious animals or plants [A01M 7/00](#)-, for therapeutic purposes [A61M 11/00](#)-, spraying or atomizing apparatus in general [B05B](#)-, aerosol compositions, e.g. propellants [C09K 3/30](#)-, pumping of fluid by direct contact of another fluid, e.g. siphons [F04F](#)-, fluid-delivery valves in general [F16K 21/00](#)-, discharge nozzles in general [F16K 31/58](#)-, vessels for containing or storing compressed, liquefied, or solidified gases [F17C](#))}
- B65D 83/16
  - • characterised by the actuating means {(actuation occurring by moving the aerosol container relative to an outer shell [B65D 83/386](#)-, involved in metering valve assemblies [B65D 83/546](#))}
- U B65D 83/20
  - • • {operated by manual action, e.g. button-type actuator or} actuator cap {(actuators formed as a rigid elongate spout [B65D 83/306](#))}
- U B65D 83/201
  - • • • {Lever-operated actuators ([B65D 83/206](#) takes precedence)}
- U B65D 83/202
  - • • • • {combined with a hand grip (Hand-held or body-worn self-defense devices using aerosol containers [F41H 9/10](#))}
- B65D 83/203
  - • • • • • {comprising an extension rod located between the aerosol container and the hand grip (setting-out line markings on playing courts [A63C 19/065](#)-, marking-out on finished paving by spraying from aerosol containers [E01C 23/227](#))}
- B65D 83/207
  - • • • {Actuators comprising a manually operated valve and being attachable to the aerosol container, e.g. downstream a valve fitted to the container; Actuators associated to container valves with valve seats located outside the aerosol container (portable spraying apparatus comprising pressurised supply containers [B05B 7/2402](#)-, [B05B 9/0805](#)-, manually actuated controlling means for spraying apparatus [B05B 12/002](#)-, actuators connected to the aerosol container by a flexible tube [B65D 83/756](#))}
- U B65D 83/22
  - • • with means to disable actuation ([B65D 50/00](#) takes precedence)
- B65D 83/224
  - • • • {Tamper indicating means obstructing initial actuation, e.g. removable (container closure having to be perforated [B65D 83/382](#)-, tamper indicating means located in front of outlets [B65D 83/7538](#))}
- U B65D 83/28
  - • Nozzles, nozzle fittings or accessories specially adapted therefor
- B65D 83/285
  - • • {for applying the contents, e.g. brushes, rollers, pads, spoons, razors, scrapers (closures with pads or like contents-applying means [B65D 47/42](#)-, brushes with integral pre-pressurised reservoirs [A46B 11/0017](#)-, domestic cleaning implements with liquid-feeding devices [A47L 13/00](#))}
- B65D 83/42
  - • Filling or charging means {(Filling liquids into containers [B65B 3/12](#)-, Adding propellants to aerosol containers [B65B 31/003](#))}
- B65D 83/44
  - • Valves specially adapted therefor; Regulating devices (filling or charging means [B65D 83/42](#)-, {-pressure regulators releasing propellant inside the container [B65D 83/663](#)}; pressure relief devices [B65D 83/70](#))
- B65D 83/48
  - • • Lift valves, e.g. operated by push action ([B65D 83/50](#) takes precedence; {-adapted for metering and for continuous delivery [B65D 83/543](#)})
- U B65D 83/60
  - • Product and propellant separated {(portable fire extinguishers wherein extinguishing material and pressure gas are stored in separate containers [A62C 13/66](#))}
- U B65D 83/64
  - • • by piston

- B65D 83/646
- • • {the piston being provided with a dispensing opening through which the contents are dispensed (containers with such a dispensing piston, adapted for hand-held, manually operated spray apparatus [B05B 11/0051](#)-, in general [B65D 83/0044](#))}
- U B65D 83/75
- • {Aerosol containers not provided for in groups [B65D 83/16](#) to [B65D 83/74](#)}
- B65D 83/757
- • • {Tamper-indicating means (actuators with tamper-indicating means [B65D 83/224](#)-, tamper indicating means located in front of outlets [B65D 83/7538](#))}
- B65D 85/00**
- Containers, packaging elements or packages specially adapted for particular articles or materials ([B65D 71/00](#)-, [B65D 83/00](#) take precedence; hand implements, travelling equipment [A45C](#)-, cosmetic or toilet equipment [A45D](#)-, {for surgical instruments or appliances [A61B 19/026](#)}; containers specially adapted for medical or pharmaceutical purposes [A61J 1/00](#)-, paint cans [B44D 3/12](#)-, oil cans [F16N 3/04](#)-, containers for carrying smallarms [F41C 33/06](#)-, packaging of ammunition or explosive charges [F42B 39/00](#)-, containers for record carriers, specially adapted for co-operation with the recording or reproducing apparatus [G11B 23/00](#))**
- NOTE
- Attention is drawn to Note (4) following the title of this subclass
- U B65D 85/70
- for materials not otherwise provided for
- B65D 85/804
- • Disposable containers or packages with contents which are {mixed,} infused or dissolved in situ {i.e. without having been previously removed from the package ([B65D 65/46](#) takes precedence; tea infusers [A47G 19/16](#)-, spoons or stirrers comprising beverage additives [A47G 21/04](#))}
- B65D 88/00**
- Large containers (component parts, details or accessories [B65D 90/00](#)-, construction or assembling of bulk storage containers employing civil engineering techniques in situ or off the site [E04H 7/00](#)-, gas holders of variable capacity [F17B](#)-, vessels for containing or storing compressed, liquefied or solidified gases [F17C](#))**
- B65D 88/02
- rigid ([B65D 88/34](#) to [B65D 88/78](#) take precedence; hoppers [B65D 88/26](#)-, {special vessels for collecting or storing rain-water for use in the household [E03B 3/03](#)-, cesspools [E03F 11/00](#))}
- U B65D 88/12
- • specially adapted for transport (associated with vehicles, see the relevant subclasses of [B60](#) to [B64](#))
- B65D 88/127
- • • {open-sided container, i.e. having substantially the whole side free to provide access, with or without closures ([B65D 88/129](#)-, [B65D 90/008](#) take precedence)}
- U B65D 88/16
- flexible ([B65D 88/34](#) to [B65D 88/78](#) take precedence; hoppers [B65D 88/26](#))
- B65D 88/20
- • with rigid end-walls ([B65D 88/18](#)-, [B65D 88/22](#) take precedence)
- B65D 88/54
- characterised by means facilitating filling or emptying ({filling or emptying features for flexible large containers [B65B 69/0075](#)-, } construction or shape of discharge section of hoppers [B65D 88/28](#)-, gates or closures [B65D 90/54](#)-, filling or emptying bunkers, hoppers, or like containers [B65G 65/30](#))
- B65D 88/542
- • {Ramps forming part of the container (ramps per se [B65G 69/28](#)-, for ambulances [A61G 3/061](#)-, for vehicles in general [B60P 1/43](#))}
- B65D 88/76
- for use underground (manholes, inspection openings, covers therefor [B65D 90/105](#)-, {special vessels for collecting or storing rain-water for use in the household [E03B 3/03](#)-, cesspools [E03F 11/00](#))}
- U B65D 90/00
- Component parts, details or accessories for large containers ([B65D 88/34](#) to [B65D 88/78](#) take precedence)**

- B65D 90/0033 · {Lifting means forming part of the container ([B65D 90/0006](#)-, [B65D 90/0026](#) take precedence; Loading or unloading container on or from a truck [B60P 1/6418](#)-, lifting the container using a crane [B66C 1/663](#))}
- U B65D 90/004 · {Contents retaining means}
- B65D 90/0046 · · {fixed on the top of the container ([B65D 90/0066](#)-, [B65D 90/0073](#) take precedence)}
- B65D 90/0053 · · {fixed on the side wall of the container ([B65D 90/0066](#)-, [B65D 90/0073](#) take precedence)}
- B65D 90/006 · · {fixed on the floor of the container ([B65D 90/0066](#)-, [B65D 90/0073](#) take precedence)}
- U B65D 90/02 · Wall construction
- B65D 90/022 · · {Laminated structures ([B65D 90/029](#)-, [B65D 90/505](#)-, [B65D 90/508](#) take precedence)}
- B65D 90/10 · Manholes; Inspection openings; Covers therefor (safety features [B65D 90/22](#)-, covers or similar closure members, for pressure vessels in general [F16J 13/00](#))
- U B65D 90/12 · Supports
- U B65D 90/20 · · Frames or nets, e.g. for flexible containers
- B65D 90/205 · · · {for flexible containers, i.e. the flexible container being permanently connected to the frame ([B65D 77/061](#)-, [B65D 88/1612](#)-, [B65D 90/046](#) take precedence; unpacking of Flexible Intermediate Bulk Container [FIBC] [B65B 69/0075](#)-, crane hooks for frames for FIBC [B66C 1/226](#))}
- B65D 90/22 · Safety features (floating covers [B65D 88/34](#)-, arrangements of indicating or measuring devices [B65D 90/48](#)-, fire-fighting [A62C](#))
- B65D 90/26 · · Overfill prevention (spillage retaining means [B65D 90/24](#)-, arrangements of indicating or measuring devices [B65D 90/48](#))
- U B65D 90/32 · · Arrangements for preventing, or minimising the effect of, excessive or insufficient pressure (valves per se [F16K](#))
- B65D 90/325 · · · {due to explosion, e.g. inside the container (safely destroying explosive ammunition or similar [F42B 39/14](#)-, in buildings [E04B 1/98](#))}
- B65D 90/54 · Gates or closures (for manholes [B65D 90/10](#)-, covers or similar closure members, for pressure vessels in general [F16J 13/00](#)-, valves per se [F16K](#)-, {-doors for containers [B65D 90/008](#)})
- B65D 2203/00** **Decoration means, markings, information elements, contents indicators (see also [B65D 5/4212](#)-, [B65D 33/004](#))**
- B65D 2203/04 · Level indicators (see also [B65D 25/56](#)-, [B65D 33/004](#))
- B65D 2203/12 · Audible, olfactory or visual signalling means ([B65D 51/248](#)-, [B65D 55/028](#)-, [B65D 79/02](#) and [B65D 81/24](#) take precedence)
- B65D 2255/00** **Locking devices (for actuation of aerosol containers [B65D 83/226](#)-, for lids [B65D 2251/1008](#)-, [B65D 2251/1016](#))**
- U **B65D 2585/00** **Containers, packaging elements or packages specially adapted for particular articles or materials**
- U B65D 2585/68 · for machines, engines, or vehicles in assembled or dismantled form
- B65D 2585/86 · · for electrical components (small electrical components attached to cards, sheets or webs [B65D 73/02](#)-, for articles particularly sensitive to damage by shock or pressure [B65D 2585/30](#)-, for ampoules, lamp bulbs, electronic valves or tubes [B65D 85/42](#))

**Project: N/A (B65F)**

**B65F** GATHERING OR REMOVAL OF DOMESTIC OR LIKE REFUSE (disinfecting refuse [A61L](#); refuse disintegrators [B02C](#); sorting refuse [B03B](#); [B07B](#); handcarts for transporting refuse receptacles [B62B](#); sack holders [B65B 67/00](#); converting refuse into fertilisers [C05F](#); converting refuse into solid fuels [C10L](#); sewers, cesspools [E03F](#); arrangements in buildings for the disposal of refuse [E04F 17/10](#); refuse-consuming furnaces [F23G](#); {for surgical articles [A61B 19/0287](#)})

**Project: N/A (B65G)**

**B65G** TRANSPORT OR STORAGE DEVICES, e.g. CONVEYERS FOR LOADING OR TIPPING; SHOP CONVEYER SYSTEMS; PNEUMATIC TUBE CONVEYERS ({preventing fire in special objects or places [A62C 3/00](#)} ; transport or storage devices used in a particular handling or treatment of articles or materials, see the relevant subclass, e.g. in metal-working [B21D 43/00](#), [B23Q 7/00](#), [B23Q 41/02](#); vehicle, railway, sea or aircraft aspects [B60](#) to [B64](#); in packaging [B65B](#); handling thin or filamentary materials [B65H](#); hoisting, lifting, hauling, e.g. truck loaders [B66](#); handling liquids [B67](#); {transport or storage containers for preparing or distributing road building materials [E01C](#); construction or assembling of bulk storage containers employing civil engineering techniques in site or off the site [E04H 7/00](#)} ; specially adapted to underground conditions in mines [E21F 13/00](#); storing or distributing gases or liquids [F17](#); in handling radioactive materials [G21C 19/00](#))

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

<a href="#">B65G 33/28</a>	covered by	
<a href="#">B65G 33/265</a>		
<a href="#">B65G 47/10</a>	covered by	
<a href="#">B65G 1/1373</a>		
<a href="#">B65G 47/86</a>	covered by	<a href="#">B65G 47/842</a>
<a href="#">B65G 49/07</a>	covered by	<a href="#">B65G 47/847</a>
<a href="#">H01L 21/677</a>		
<a href="#">B65G 69/32</a>	covered by	
<a href="#">B65G 69/28</a>		
<a href="#">B65G 69/34</a>	covered by	<a href="#">B65G 69/28</a>

**B65G 1/00**

Storing articles, individually or in orderly arrangement, in warehouses or magazines (conveyer combinations in warehouses, magazines, or workshops [B65G 37/00](#); stacking of articles [B65G 57/00](#); removing articles from stacks [B65G 59/00](#); loading machines [B65G 65/02](#); arrangements of articles for drying or baking in kilns or ovens [F26](#); [F27](#))

NOTE

group [B65G 1/0442](#) takes precedence over the other groups, except over [B65G 1/08](#)

**B65G 1/02**

- Storage devices (furniture, shop fittings, table equipment [A47B](#), [A47F](#), [A47G](#); mechanical garages [E04H](#); for data record cards in association with machines for making or sensing data [G06K](#); coin changers or sorters [G07D](#); coin-freed apparatus [G07F](#) {pallets [B65D 19/00](#)})

**U B65G 1/04**

- mechanical

- U B65G 1/06
- • • with means for presenting articles for removal at predetermined position or level ([B65G 1/12](#) takes precedence)
- B65G 1/08
- • • • the articles being fed by gravity {(braking arrangements for roller-ways [B65G 13/075](#); separating or stopping elements [B65G 47/88](#))}
- B65G 1/10
- • • with relatively movable racks to facilitate insertion or removal of articles {(cabinets with means for moving compartments up and down [A47B 51/00](#); cabinet system, e.g. consisting of cabinets arranged in a row with means to open or close passages between adjacent cabinets [A47B 53/02](#))}
- B65G 3/00**
- Storing bulk material or loose, i.e. disorderly, articles (filling or emptying storage spaces or containers, spreading out or piling up bulk material or loose articles [B65G 65/28](#), [B65G 65/30](#), [B65G 69/04](#) {[B65G 63/00](#); storing agricultural or horticultural produce [A01F 25/00](#))}**
- B65G 7/00 -  
B65G 9/00**
- Devices assisting manual conveyance of articles over short distances, e.g. in storage depots, warehouses or factories (chutes [B65G 11/00](#); roller-ways [B65G 13/00](#); luggage carriers [A45C 13/38](#); holders or carriers for hand articles or for use while travelling or camping [A45F 5/00](#); vehicles in general, axles, wheels [B60](#); air-cushion vehicles [B60V](#); handcarts, sledges, features of hand-propelled wheeled devices or pedestrian-controlled, power-driven vehicles equally applicable to handcarts [B62B](#); ship-moving devices [B63C](#), [E02C](#); containers, pallets [B65D](#); air-cushions as bearing elements [F16C 29/00](#))**
- B65G 9/00**
- Apparatus having suspended load carriers movable by hand or gravity (manually-operated endless-rope or chain conveyers [B65G 17/00](#); railway systems [B61B](#))**
- B65G 11/00 -  
B65G 37/00**
- Chutes; Kinds or types of conveyers; Constructional features, details, or auxiliary devices peculiar to conveyers of particular types (feeding or discharging conveyers by devices incorporated in or operatively associated with conveyers [B65G 47/00](#); loading or unloading [B65G 65/00](#); escalators or moving walkways [B66B 21/00](#); drag-line scraper conveyers [E02F 3/46](#))**
- B65G 11/00**
- Chutes (used as storage devices [B65G 1/02](#), [B65D 88/26](#); for sports, games, or amusements [A63G 21/00](#); for refuse disposal in buildings [E04F 17/12](#))**
- B65G 13/00**
- Roller-ways (storage devices comprising roller-ways [B65G 1/02](#); endless-chain conveyers comprising load-supporting rollers [B65G 17/00](#); rollers, or arrangements thereof [B65G 39/00](#); feeding or discharging conveyers by devices incorporated in, or operatively associated with, conveyers [B65G 47/00](#), {e.g. by roller-ways as accumulating devices [B65G 47/261](#); } in metal-rolling equipment [B21B 39/00](#), [B21B 41/00](#))**
- U B65G 15/00
- Conveyers having endless load-conveying surfaces, i.e. belts and like continuous members, to which tractive effort is transmitted by means other than endless driving elements of similar configuration (having load-conveying surfaces formed by interconnected longitudinal links [B65G 17/06](#))**
- B65G 15/30
- Belts or like endless load-carriers (co-operating with rails or the like [B65G 21/22](#); with rollers [B65G 39/20](#); belts in general [F16G](#) {belt fastenings [F16G 3/00](#)})
- U B65G 17/00
- Conveyers having an endless traction element, e.g. a chain, transmitting movement to a continuous or substantially continuous load-carrying surface or to a series of individual load-carriers; Endless-chain conveyers in which the chains form the load-carrying surface (railway systems, detachable load-carriers on rails [B61B](#); escalators or paternosters neither combined nor associated with loading or unloading apparatus [B66B 9/00](#))**

- B65G 17/16 · comprising individual load-carriers which are pivotally mounted, e.g. for free-swinging movement (guides inverting or tilting load-carriers for emptying {[B65G 47/38](#); [B65G 17/20](#) takes precedence })
- B65G 17/30 · Details; Auxiliary devices (belts [B65G 15/30](#); framework [B65G 21/00](#))
- B65G 17/48 · · Controlling attitudes of load-carriers during movement ({[B65G 17/18](#) takes precedence; } guides [B65G 21/20](#); inverting or tilting load carriers to discharge contents [B65G 47/38](#))
- U B65G 19/00** **Conveyers comprising an impeller or a series of impellers carried by an endless traction element and arranged to move articles or materials over a supporting surface or underlying material, e.g. endless scraper conveyers**
- U B65G 19/18 · Details
- B65G 19/185 · · {for article conveyers, e.g. for container conveyers ([B65G 19/20](#)-, [B65G 19/22](#)-, [B65G 19/28](#) take precedence)}
- U B65G 21/00** **Supporting or protective framework or housings for endless load-carriers or traction elements of belt or chain conveyers ({for load-carriers in jiggling conveyers [B65G 27/08](#) } ; supporting framework or bases for conveyers as a whole [B65G 41/00](#))**
- U B65G 21/10 · movable, or having interchangeable or relatively movable parts; Devices for moving framework or parts thereof
- B65G 21/14 · · to allow adjustment of length or configuration of load-carrier or traction element (varying speed of conveyance by adjusting configuration of load-carrier [B65G 23/00](#)-, {tensioning arrangement for belt or chain [B65G 23/44](#)})
- B65G 21/20 · Means incorporated in, or attached to, framework or housings for guiding {or retaining} load-carriers, traction elements or loads supported on moving surfaces (arrangements for supporting belts [B65G 15/60](#)-, {-details of chain conveyers [B65G 17/30](#)-, } rollers or roller arrangements [B65G 39/00](#)-, [F16G](#))
- U B65G 21/2009 · · {Magnetic retaining means}
- B65G 21/2018 · · · {for retaining the load on the load-carrying surface, (retaining loads by magnetic load-carriers, e.g. belts [B65G 15/58](#)-, chains [B65G 17/46](#)-, individual magnetic grippers [B65G 17/323](#))}
- U B65G 27/00** **Jiggling conveyers (jigs for wet separation [B03B](#); generating or transmitting mechanical vibrations [B06](#); jiggers for screening, sifting or sorting [B07B 1/28](#))**
- B65G 27/02 · comprising helical or spiral channels or conduits for elevation of materials (helical or spiral chutes in general [B65G 11/06](#)-, {-use of such conveyers for arranging or orientating articles during feeding [B65G 47/1421](#)})
- B65G 29/00** **Rotary conveyers, e.g. rotating discs, arms, starwheels, cones (mechanical projectors [B65G 31/00](#)-, screw or rotary spiral conveyers [B65G 33/00](#)-, {-turntables as feeding, transfer or discharging devices [B65G 47/80](#)-, starwheels as feeding, transfer or discharging devices [B65G 47/84](#)})**
- B65G 29/02 · for inclined or vertical transit ([B65G 15/00](#)-, [B65G 17/00](#) take precedence)
- B65G 37/00** **Combinations of mechanical conveyers of the same kind, or of different kinds, of interest apart from their application in particular machines or use in particular manufacturing processes (in "live" storage devices [B65G 1/04](#)-, {-series of co-operating belt conveyer units [B65G 15/22](#)-, series of co-operating chain conveyer units [B65G 17/26](#)-, sequence control of combined conveyers [B65G 43/10](#)); specially adapted for handling radioactive materials [G21](#))**

- B65G 39/00** Rollers, e.g. drive rollers, or arrangements thereof incorporated in roller-ways or other types of mechanical conveyers (driving gear for rollers of roller-ways [B65G 13/06](#); drive rollers of endless conveyers [B65G 23/04](#); arrangement of rollers in metal-rolling equipment [B21B 39/10](#); friction members [F16H 55/32](#))
- U B65G 39/10 · Arrangements of rollers (on a single axle [B65G 39/04](#))
  - B65G 39/20 · · attached to moving belts or chains (belts [B65G 15/30](#); chains [B65G 17/38](#))
- U B65G 47/00** Article or material handling devices associated with conveyers; Methods employing such devices (for sorting, e.g. postal [B07C](#))
- U B65G 47/02 · Devices for feeding articles or materials to conveyers
  - U B65G 47/04 · · for feeding articles
  - B65G 47/06 · · · from a single group of articles arranged in orderly pattern, e.g. workpieces in magazines (de-stacking devices [B65G 59/00](#); picking-up flat workpieces [B65H](#))
  - U B65G 47/12 · · · from disorderly-arranged article piles or from loose assemblages of articles
  - B65G 47/14 · · · · arranging or orientating the articles by mechanical or pneumatic means during feeding (during transit by conveyer [B65G 47/24](#), [B65G 47/26](#))
  - U B65G 47/22 · Devices influencing the relative position or the attitude of articles during transit by conveyers (during feeding [B65G 47/14](#))
  - B65G 47/26 · · Arranging the articles, e.g. varying spacing between individual articles (stacking or destacking {during transit [B65G 57/32](#), [B65G 59/12](#)})
  - U B65G 47/34 · Devices for discharging articles or materials from conveyers ([B65G 47/256](#) takes precedence; sorting in general [B07](#))
  - B65G 47/46 · · and distributing, e.g. automatically, to desired points ({pivotable chutes [B65G 11/12](#)}; in tube mail systems [B65G 51/36](#); postal or like sorting [B07C](#); in railway operations [B61L](#); handling sheets or thin flat articles [B65H](#))
  - B65G 47/51 · · · according to unprogrammed signals, e.g. influenced by supply situation at destination (volume, flow or liquid level meters [G01F](#); scales or weighing machines [G01G](#); remote controls [G05G](#))
  - B65G 47/52 · Devices for transferring articles or materials between conveyers {or sections of one conveyer}, i.e. discharging and feeding devices (loading or unloading by means not incorporated in, or not operatively associated with, conveyers [B65G 65/00](#); transfer of workpieces during metal rolling [B21B 41/00](#))
  - U B65G 47/74 · Feeding, transfer, or discharging devices of particular kinds or types
  - B65G 47/84 · · Star-shaped wheels or devices having endless travelling belts or chains, the wheels or devices being equipped with article-engaging elements {(not used, see [B65G 47/841](#), [B65G 47/846](#))}
- U B65G 49/00** Conveying systems characterised by their application for specified purposes not otherwise provided for (for conveying sheet material [B65H](#))
- U B65G 49/05 · for fragile or damageable materials or articles
  - U B65G 49/06 · · for fragile sheets, e.g. glass (transporting of glass products during their manufacture [C03B 35/00](#))

**NOTE**

In group [B65G 49/06](#) and subgroups it is desirable to add indexing codes for specific aspects of conveying systems. The indexing codes are chosen from groups [B65G 2249/00](#) to [B65G 2249/045](#)

- B65G 49/061
- • • {Lifting, gripping, or carrying means, for one or more sheets forming independent means of transport, e.g. suction cups, transport frames (suction means as load-engaging elements attached to the lifting or lowering gear of cranes [B66C 1/02](#); suction cups for attaching purposes [F16B 47/00](#); suction cups on gripping heads [B25J 15/0616](#); suction cups in general [B65G 47/91](#); suction cups combined with cutting means on vertical conveyers [C03B 33/00](#) - [C03B 33/10](#); devices for turning sheets [B65G 49/067](#); suspending devices [B65G 49/066](#)}
- B65G 49/062
- • • {Easels, stands or shelves, e.g. castor-shelves, supporting means on vehicles; (vehicles adapted to carry glass sheets [B60P 3/002](#); storing articles [B65G 1/00](#) or [A47B 53/02](#); packaging for glass sheets [B65D 85/48](#)}
- B65G 49/067
- • • {Sheet handling, means, e.g. manipulators, devices for turning or tilting sheet glass (suction cups [B65G 49/061](#); combined with vertical conveyers [C03B 33/00](#) - [C03B 33/10](#); stacking and destacking [B65G 49/068](#)}
- B65G 49/068
- • • {Stacking or destacking devices; Means for preventing damage to stacked sheets; e.g. spaces (stacking in general [B65G 57/00](#); destacking in general [B65G 59/00](#); spacer sheets in general [B65H](#)}
- B65G 49/07
- • for semiconductor wafers{ (Not used, see [H01L 21/677](#))(specially adapted for conveying of semiconductor wafers during manufacture or treatment of semiconductor or electric solid state devices or components [H01L 21/677](#))}
- B65G 51/00**
- Conveying articles through pipes or tubes by fluid flow or pressure (pneumatic railways [B61B](#)); Conveying articles over a flat surface, e.g. the base of a trough, by jets located in the surface (pumps [F04](#); fluid dynamics [F15D](#); valves, taps, cocks [F16K](#); pipes, pipe joints, or associated devices [F16L](#))**
- B65G 53/00**
- Conveying materials in bulk through troughs, pipes, or tubes by floating the materials, or by flows of gas, liquid, or foam (fluidising in connection with loading or unloading [B65G 69/06](#); loaders for hay or cereals [A01D 87/00](#); {-discharging means for mixtures containing clay or cementitious material [B28C 7/16](#); } fluidising devices facilitating filling or emptying of large containers [B65D 88/72](#); {combined washing or cutting and conveyance of materials in sugar manufacture [A23N](#); [C13B](#);} dredging [E02F](#); winning materials out of alluvial deposits [E21C 45/00](#); hydraulic or pneumatic mine-filling-up machines [E21F 15/00](#); fluid dynamics [F15D](#) {pumping fluid by direct action of another fluid [F04F](#)})**
- U B65G 53/34
- Details
- B65G 53/36
- • Arrangements of containers (hoppers [B65D 3/06](#); containers in general [B65D](#))
- U B65G 53/52
- • Adaptations of pipes or tubes
- B65G 53/521
- • • {means for preventing the accumulation or for removal of deposits (preventing accumulation in pipes in general [F16L 55/24](#); preventing fouling in general [B08B 17/00](#)}
- B65G 57/00 -  
B65G 69/00**
- Stacking or de-stacking; Loading or unloading (by means incorporated in, or operatively associated with, conveyers [B65G 47/00](#); lift trucks [B60P](#); [B66F](#); handling sheet material or flat articles made therefrom [B65H](#); cranes [B66C](#); loading or unloading by soil-shifting or like equipment [E02F](#); stacking or de-stacking data record cards in association with machines for marking or sensing data [G06K](#))**

NOTE

In groups [B65G 57/00](#) to [B65G 61/00](#), the following term is used with the meaning indicated:

- "stacking" means disposing articles individually or in layers one above each other
- U B65G 57/02      · by adding to the top of the stack
- U B65G 57/11      · · the articles being stacked by direct action of the feeding conveyer
- B65G 57/14      · · · the articles being transferred from carriers moving in an endless path adjacent to the stacks (conveyer constructions [B65G 15/00](#) to [B65G 35/00](#); combinations of conveyers [B65G 37/00](#))
- B65G 63/00**      **Transferring or trans-shipping at storage areas, railway yards, harbours, {or in opening mining cuts}; Marshalling yard installations (transferring refuse between vehicles or containers [B65F 9/00](#); dredging, soil shifting [E02F](#); conveyers used in co-operation with coal or like winning apparatus [E21C 47/00](#))**
- U B65G 65/00**      **Loading or unloading (of vehicles [B65G 67/00](#))**
- B65G 65/30      · Methods or devices for filling or emptying bunkers, hoppers, tanks, or like containers, of interest apart from their use in particular chemical or physical processes or their application in particular machines, e.g. not covered by a single other subclass (devices for tilting and emptying containers [B65G 65/23](#); such containers having means facilitating filling or emptying [B65D 88/54](#))
- NOTE  
Methods or devices for filling bunkers, hoppers, or containers are only classified in group [B65G 65/30](#) if they are of general application apart from their use in particular processes or their application in particular machines or if they are not covered by a single other subclass
- B65G 65/32      · · Filling devices (pneumatic conveyers [B65G 51/00](#), [B65G 53/00](#))
- B65G 65/34      · · Emptying devices (conveyer constructions [B65G 15/00](#) to [B65G 35/00](#); devices similar to vehicle tipplers [B65G 67/48](#))
- U B65G 67/00**      **Loading or unloading vehicles (by means incorporated in the vehicles [B60](#) to [B64](#); ground or aircraft-carrier-deck installations [B64F](#); transferring refuse between vehicles or containers [B65F 9/00](#))**
- U B65G 67/02      · Loading or unloading land vehicles
- U B65G 67/24      · · Unloading land vehicles
- U B65G 67/32      · · · using fixed tipping installations
- B65G 67/34      · · · · Apparatus for tipping wagons or mine cars (inverting wagons [B65G 67/48](#); platform-lifts with tiltable platforms [B66F 7/22](#))
- U B65G 67/60      · Loading or unloading ships ([B65G 67/02](#) takes precedence; arrangement of ship-based loading or unloading equipment for cargo or passengers [B63B 27/00](#))
- B65G 67/62      · · using devices influenced by the tide or by the movement of the ship, e.g. devices on pontoons (horizontal loading or unloading platforms [B65G 69/22](#); loading ramps [B65G 69/28](#))
- U B65G 69/00**      **Auxiliary measures taken, or devices used, in connection with loading or unloading (in vehicles, see the relevant subclasses; preventing, minimising, or fighting fire [A62C](#))**
- B65G 69/22      · Horizontal loading or unloading platforms (pile tables [B65H](#); as road or railway equipment [E01F 1/00](#))

Project: N/A (B65H)

B65H

**HANDLING THIN OR FILAMENTARY MATERIAL, e.g. SHEETS, WEBS, CABLES**

**NOTES**

1. This subclass does not cover methods or devices intimately associated with other operations on thin or filamentary material, e.g. sheets, webs, cables or means for performing such operations, which are classified in the relevant subclasses for these operations, e.g.:

- [B07C](#) Postal sorting, similar sorting of documents, e.g. cheques
- [B08B 1/02](#) Cleaning travelling work, e.g. webs, by methods involving the use of tools, brushes or like members
- [B21B 41/00](#) Metal rolling involving guiding, conveying or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves
- [B21C 47/00](#), Winding-up, coiling, winding-off or temporarily
- [B21C 49/00](#) accumulating metal wire, metal band or other flexible metal material, characterised by features relevant to metal processing only, other than by rolling
- [B21D 43/00](#) Feeding, positioning or storing devices, combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal without essentially removing material
- [B23K 9/12](#) Means for automatic feeding of electrodes for spot or seam welding or cutting
- [B29C 31/00](#) Handling for shaping or joining of plastics, for shaping of substances in a plastic state in general or for after-treatment of shaped products, e.g. feeding the material to be shaped
- [B41B 15/32](#), Film-handling mechanisms in photographic
- [B41B 21/32](#) composing machines
- [B41F 13/02](#) Conveying or guiding webs through rotary printing presses or machines
- [B41J 11/00](#) to Handling of copy- or impression-transfer material
- [B41J 17/00](#) in typewriters or selective printing mechanisms
- [B41K 3/44](#) Means for handling copy matter in stamping or numbering apparatus or devices
- [B41L](#) Handling sheets or webs in apparatus or devices for manifolding, duplicating or printing for office or other commercial purposes, or on addressing machines or like series-printing machines

[B42B](#) Handling relating to permanently attaching together sheets, quires, or signatures

[B42C](#) Handling sheets in book-binding

[B65B](#) Handling of sheets or webs in apparatus for, or methods of, packaging articles, not of interest apart from their application in packaging machines

[B65C](#) Handling of labels in labelling or tagging apparatus

[C14B 1/62](#) Winding or stacking hides or leather in machines or devices for manufacturing leather

[D01](#) to [D07](#) Spinning, weaving, braiding, lace-making, knitting, sewing, making ropes or cables

[D21F 2/00](#) Transferring webs from wet ends to press sections in paper-making

[F26B 13/00](#) Handling fabrics, fibres, yarns or other material in long lengths in drying apparatus

[G03B](#) Film-strip handling or handling of pictures in apparatus for taking photographs or for projecting or viewing them

[G06K 13/00](#) Conveying record carriers from one station to another

[G06M 7/00](#) Counting of flat articles, e.g. sheets, carried by a conveyer

[G11B 15/00](#) to Information storage based on relative movement

[G11B 19/00](#), between record carrier and transducer,

[G11B 23/00](#), involving handling record carriers for

[G11B 25/00](#) recording or reproducing

[H01F 41/06](#) Manufacturing coils for magnets, inductances, transformers, by winding

[H01G 13/02](#) Machines for winding capacitors

[H04N 1/00](#) Sheet handling not of interest apart from its use in systems for transmission or reproduction of pictures or patterns not varying in time, e.g. facsimile transmission

2. In this subclass:

- the groups relating to thin material, as defined under (i) of Note (3) below, are primarily intended to cover the handling of articles made of paper or cardboard, but also include the handling of articles made of other materials which have similar characteristics or present similar handling problems, e.g. articles made of sheet- plastics or leather;
- the groups relating to filamentary material (groups [B65H 49/00](#) onwards,) as defined in Note (3) below, cover only methods or devices of general application or interest.

3. In this subclass, the following terms or expressions are used with the meanings indicated:

- "handling" includes feeding, folding (other than in the manufacture of products), guiding, orientating, storing, unwinding, and winding;
- "thin material" includes:
  - i. sheets, signatures, envelopes, blanks, and thin and thin piles thereof (hereinafter referred to as "articles"), and
  - ii. webs, tapes, and films, e.g. of paper, fabric, metal foil, or plastics;
- "filamentary material" includes thread, wires, ropes, cables, and hoses;
- "package" means a mass of filamentary material, formed by coiling, depositing, or winding, with or without a supporting core or former or an enclosing container or receptacle.
- {"yarn" also covers similar filamentary materials.}

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [B65H 35/07](#) covered by [B65H 35/0006](#)
- [B65H 77/00](#) covered by [B65H 23/00](#), [B65H 59/00](#)
- [B65H 83/00](#), [B65H 83/02](#) covered by [B07C 1/025](#), [G07D 11/00](#) and s.gr
- [B65H 85/00](#) covered by [G03B 27/62](#), [G03B 27/6264](#), [G03B 27/6257](#)

- U B65H 1/00** **Supports or magazines for piles from which articles are to be separated (carriers used for associating, collating, or gathering articles [B65H 39/00](#))**
- U B65H 1/08
  - with means for advancing the articles to present the articles to the separating device ({[B65H 1/02](#) takes precedence})
- B65H 1/16
  - • comprising pneumatic or hydraulic means ({[B65H 1/18](#)-, [B65H 1/20](#) take precedence})
- B65H 3/00** **Separating articles from piles (associating, collating, or gathering articles [B65H 39/00](#)-; machines for separating superposed webs [B65H 41/00](#)-; unpiling thin material combined with folding [B65H 45/26](#)-; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling [B65H 83/00](#)-, {[B07C 1/02](#)-, [G07D 11/0084](#)})**
- U B65H 3/02
  - using friction forces between articles and separator
- U B65H 3/06
  - • Rollers or like rotary separators ({[B65H 3/42](#) takes precedence})
- B65H 3/063
  - • • {separating from the bottom of pile ([B65H 3/0615](#)-, [B65H 3/0623](#) take precedence)}
- B65H 3/08
  - using pneumatic force ({[B65H 3/40](#)-, [B65H 3/42](#) take precedence})
- U B65H 3/0808
  - • {Suction grippers}
- B65H 3/0891
  - • • {Generating or controlling the depression ([B65H 3/0883](#)-, [B65H 3/14](#) take precedence; in response to abnormal circumstances [B65H 7/16](#))}
- B65H 5/00** **Feeding articles separated from piles; Feeding articles to machines ({[B65H 9/00](#) takes precedence; } identical mechanisms or parts for delivering or advancing articles from machines [B65H 29/00](#)-; recirculating articles [B65H 85/00](#)-, {[G03B 27/6257](#)})**
- B65H 5/02
  - by belts or chains, {e.g. between belts or chains (by combinations of endless conveyers and grippers [B65H 5/085](#)-; by suction belts [B65H 5/224](#))}
- B65H 5/04
  - by movable tables or carriages (rotary tables [B65H 5/18](#)-; {suction gripper or gripper tables [B65H 5/10](#)})

- B65H 16/00 - B65H 27/00**      **Feeding webs to or from machines; Winding or unwinding webs; Splicing webs (web-delivering apparatus incorporating devices for performing auxiliary operations [B65H 35/00](#), [B65H 37/00](#); associating two or more webs [B65H 39/16](#); winding or unwinding metal band or like flexible metallic material during manufacture [B21C](#); {cutting machines or devices in general [B26D](#)}; inselective printers, e.g. typewriters, ink-ribbon mechanisms [B41J](#); in cinematographic or photographic apparatus [G03B](#); winding, unwinding, or feeding tape to, in, or from, information processing apparatus [G06](#), [G11B](#))**
- B65H 16/00**      **Unwinding, paying-out webs {(reel-to-reel type web winding and unwinding mechanisms [B65H 18/103](#), [B65H 18/145](#))}**
- U B65H 20/00**      **Advancing webs**
- B65H 20/30**      • Arrangements for accumulating surplus web (while changing the web roll [B65H 19/14](#), [B65H 19/24](#))
- B65H 23/00**      **Registering, tensioning, smoothing or guiding webs (registering articles [B65H 9/00](#); in connection with splicing [B65H 21/00](#))**
- U B65H 23/04**      • longitudinally
- B65H 23/044**      • • {Sensing web tension ([B65H 23/06](#), [B65H 23/18](#) take precedence)}
- B65H 26/00**      **Warning or safety devices, e.g. automatic fault detectors, stop-motions, for web-advancing mechanisms (safety devices in general [F16P](#); investigating chemical or physical properties of materials in general [G01N](#); indicating devices in general [G08B](#))**
- U B65H 29/00**      **Delivering or advancing articles from machines; Advancing articles to or into piles**
- B65H 29/24**      • by air blast or suction apparatus ({[B65H 5/22](#) takes precedence; } dropping articles from suction carriers [B65H 29/32](#){ }; pneumatic brakes [B65H 29/686](#))
- B65H 35/00**      **Delivering articles from cutting or line-perforating machines; Article or web delivery apparatus incorporating cutting or line-perforating devices, e.g. of the kinds specified below (cutting or perforating machines or devices in general [B26D](#), [B26F](#))**
- U B65H 39/00**      **Associating, collating or gathering articles or webs (machines for both collating or gathering and permanently attaching together sheets or signatures [B42C 1/00](#))**
- B65H 39/10**      • Associating articles from a single source, to form e.g. a writing-pad {(laminating [B32B 37/00](#), [B32B 38/00](#))}
- U B65H 45/00**      **Folding thin material (specially adapted for the manufacture or treatment of particular products, see appropriate subclasses, e.g. [D06F 89/00](#))**
- B65H 45/02**      • Folding limp material {(Shaping of plastics or by bending or folding [B29C 53/00](#); Folding sheets, blanks or webs for box, carton, envelope or bag making [B31B 1/26](#); Shaping of paper or cardboard by bending or folding [B31F 1/0003](#); )} without application of pressure to define or form crease lines (winding or unwinding fabrics for feeding to or from machines [B65H 16/00](#) to [B65H 27/00](#); folding garments for packaging purposes [B65B](#); folding fabrics in sewing machines [D05B](#))

B65H 49/00 - B65H 73/00	<b>Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material (devices specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material <a href="#">B65H 75/34</a>; working and processing wire <a href="#">B21F</a>, <a href="#">B21G</a>; unwinding, paying-out, forwarding, or winding ropes or cables in load-moving apparatus <a href="#">B61B</a>; <a href="#">B65G</a>; <a href="#">B66</a>; creels, warping, beaming, or leasing machines or methods for textile manufacturing purposes <a href="#">D02H</a>)</b>
B65H 49/00	<b>Unwinding or paying-out filamentary material; Supporting, storing or transporting packages from which filamentary material is to be withdrawn or paid-out (winding <a href="#">B65H 54/00</a>; bobbins, tubes or other cores for packages <a href="#">B65H 75/00</a>)</b>
B65H 49/18	<ul style="list-style-type: none"> <li>• Methods or apparatus in which packages rotate (flyers or other guides assisting paying-out <a href="#">B65H 57/00</a>; supports or holders, for storing and repeatedly paying-out and rewinding lengths of material provided for particular purposes <a href="#">B65H 75/34</a>)</li> </ul>
B65H 49/36	<ul style="list-style-type: none"> <li>• Securing packages to supporting devices (arrangements for applying packages to, or removing from, supports <a href="#">B65H 65/00</a>; <a href="#">B65H 67/00</a>)</li> </ul>
B65H 51/00	<b>Forwarding filamentary material (stretch-spinning methods <a href="#">D01D 5/12</a>; drawing or drafting rovings or the like <a href="#">D01H 5/00</a>)</b>
B65H 51/02	<ul style="list-style-type: none"> <li>• Rotary devices, e.g. with helical forwarding surfaces (devices for temporarily storing filamentary material during forwarding <a href="#">B65H 51/20</a>; driven rotary devices for controlling tension <a href="#">B65H 59/18</a>)</li> </ul>
U B65H 51/20	<ul style="list-style-type: none"> <li>• Devices for temporarily storing filamentary material during forwarding, e.g. for buffer storage</li> </ul>
B65H 51/22	<ul style="list-style-type: none"> <li>• • Reels or cages, e.g. cylindrical, with storing and forwarding surfaces provided by rollers or bars {(measuring and temporarily storing the weft in looms <a href="#">D03D 47/36</a>; thread feeding devices for weft knitting machines <a href="#">D04B 15/48</a>)}</li> </ul>
B65H 51/30	<ul style="list-style-type: none"> <li>• Devices controlling the forwarding speed to synchronise with supply, treatment, or take-up apparatus (<a href="#">B65H 59/10</a>; <a href="#">B65H 59/38</a> take precedence)</li> </ul>
U B65H 54/00	<b>Winding, coiling, or depositing filamentary material (cores, formers, holders, cans or receptacles <a href="#">B65H 75/02</a>)</b>
U B65H 54/02	<ul style="list-style-type: none"> <li>• Winding and traversing material on to reels, bobbins, tubes, or like package cores or formers</li> </ul>
B65H 54/28	<ul style="list-style-type: none"> <li>• • Traversing devices; Package-shaping arrangements (arrangements for preventing ribbon winding <a href="#">B65H 54/38</a>; grooved, slotted, or split drums for driving of packages <a href="#">B65H 54/46</a>)</li> </ul>
U B65H 54/70	<ul style="list-style-type: none"> <li>• Other constructional features of yarn-winding machines</li> </ul>
B65H 54/702	<ul style="list-style-type: none"> <li>• • {Arrangements for confining or removing dust (for spinning <a href="#">D01H 11/00</a>; cleaning in general <a href="#">B08B</a>)}</li> </ul>
B65H 54/74	<ul style="list-style-type: none"> <li>• • Driving arrangements (arrangements for preventing ribbon winding <a href="#">B65H 54/38</a>; arrangements for rotating packages <a href="#">B65H 54/40</a>)</li> </ul>
U B65H 59/00	<b>Adjusting or controlling tension in filamentary material, e.g. for preventing snarling; Application of tension indicators</b>
B65H 59/02	<ul style="list-style-type: none"> <li>• by regulating delivery of material from supply package (by contact of package with support <a href="#">B65H 49/02</a>; by controlling speed of driving mechanism of unwinding or paying-out devices <a href="#">B65H 59/38</a>)</li> </ul>
B65H 63/00	<b>Warning or safety devices, e.g. automatic fault detectors, stop-motions (safety devices in general <a href="#">F16P</a>; indicating devices in general <a href="#">G08B</a>) {Quality control of the package}</b>
U B65H 67/00	<b>Replacing or removing cores, receptacles, or completed packages at paying-out, winding, or depositing stations</b>

- B65H 67/02
- Arrangements for removing spent cores or receptacles and replacing by supply packages at paying-out stations ({for cans [D01H 9/008](#); arrangement of the service carriage [B65H 54/26](#); } supports for packages [B65H 49/04](#), [B65H 49/20](#))
- B65H 67/06
- Supplying cores, receptacles, or packages to, or transporting from, winding or depositing stations {(between spinning and winding machines [D01H 9/18](#), e.g. transporting cans [D01H 9/185](#))}
- U B65H 69/00**      **Methods of, or devices for, interconnecting successive lengths of material; Knot-tying devices {;Control of the correct working of the interconnecting device}**
- B65H 69/06
- by splicing {(Grommets made by splicing [D07B 1/18](#), auxiliary apparatus for splicing ropes or cables [D07B 7/169](#))}
- B65H 75/00 - B65H 99/00**      **Methods, apparatus, or devices of general interest or not otherwise provided for in connection with the handling of webs, tapes, or filamentary materials (unwinding, paying-out, forwarding or winding ropes or cables in load-moving apparatus [B61B](#), [B65G](#), [B66](#))**
- B65H 75/00
- Storing webs, tapes, or filamentary material, e.g. on reels (fishing reels [A01K 89/00](#); storing means for record carriers, specially adapted for cooperation with the recording or reproducing apparatus [G11B 23/02](#))**
- U B65H 75/02**
- Cores, formers, supports, or holders for coiled, wound, or folded material, e.g. reels, spindles, bobbins, cop tubes, cans (packaging aspects [B65D 85/67](#))
- B65H 75/34
- • specially adapted or mounted for storing and repeatedly paying-out and restoring lengths of material provided for particular purposes, e.g. anchored hoses, power cables (retractors for storing flexible hoses as accessories of dental work stands [A61G 15/18](#); vehicle safety belt retractors [B60R 22/34](#); hose-storing devices in apparatus or devices for transferring liquids from bulk storage containers or reservoirs into vehicles or portable containers [B67D 7/40](#); clothes-line supports [D06F 53/00](#); spring drums for liftable blinds with horizontal lamellae [E06B 9/322](#); spring drums or tape drums for roll-type closures or roller blinds [E06B 9/56](#); hauling- or hoisting-chains with arrangements for holding electric cables, hoses or the like [F16G 13/16](#); devices for guiding pipes, cables or protective tubing, between relatively movable points, e.g. movable channels, [F16L 3/01](#); flexible rulers or tapes with scales [G01B 3/10](#); electrical features of stored material, see the relevant subclasses, e.g. [H02G](#))
- U B65H 75/38**
- • • involving the use of a core or former internal to, and supporting, a stored package of material
- U B65H 75/40**
- • • • mobile or transportable
- B65H 75/406
- • • • • {hand-held during use ([B65H 75/48](#), [B65H 75/4473](#) take precedence)}
- B65H 81/00**      **Methods, apparatus, or devices for covering or wrapping cores by winding webs, tapes, or filamentary material, not otherwise provided for (forming hollow objects by winding filamentary material on to fusible or soluble cores {[B29C 53/56](#)}; Wrapping for the purpose of packaging [B65B 11/00](#); making wound articles of paper [B31C](#))**
- U B65H 2511/00**      **Dimension; Position; Number; Identification; Occurrence**
- U B65H 2511/50**
- Occurrence
- B65H 2511/52
- • Error; Fault (dimensional irregularities [B65H 2511/16](#); irregularities in location [B65H 2511/24](#); speed irregularities [B65H 2513/106](#))

**Project: N/A (B66B)**

B66B	<b>ELEVATORS; ESCALATORS OR MOVING WALKWAYS</b> ({apparatus for raising or lowering persons on theatrical stages or the like <a href="#">A63J 5/12</a> }; funicular railbound systems with rigid ground-supported tracks and cable traction, e.g. cliff railways, <a href="#">B61B 9/00</a> ; arrangements of ammunition handlers in vessels <a href="#">B63G 3/00</a> ; hoists, lifts, or conveyers for loading or unloading in general <a href="#">B65G</a> ; braking or detent devices controlling normal movements of winding drums or barrels <a href="#">B66D</a> ; ship-lifting devices <a href="#">E02C</a> ; garages for many vehicles with mechanical means for lifting vehicles <a href="#">E04H 6/12</a> ; hoists for feeding ammunition or projectiles to launching apparatus or to loading mechanisms <a href="#">F41A 9/00</a> )
	<u>NOTE</u> In this subclass, the following term is used with the meaning indicated: <ul style="list-style-type: none"> <li>• "elevator" covers the term "lift", and the two terms are interchangeable</li> </ul>
<b>B66B 1/00</b>	<b>Control systems of elevators in general (safety devices <a href="#">B66B 5/00</a>; controlling door or gate operation <a href="#">B66B 13/00</a>; systems of general application <a href="#">G05</a>)</b>
U B66B 1/34	• Details, {e.g. call counting devices, data transmission from car to control system, devices giving information to the control system}
B66B 1/3492	• • {Position or motion detectors or driving means for the detector ( <a href="#">B66B 1/40</a> -, <a href="#">B66B 1/50</a> take precedence; length measuring <a href="#">G01B</a> ;-; speed measuring <a href="#">G01P</a> )}
B66B 1/46	• • Adaptations of switches or switchgear (switches or switchgear in general, applications of switches or switchgear for floor-levelling purpose <a href="#">H01H</a> ;-; panels for boards or switching arrangements <a href="#">H02B 1/015</a> )
B66B 1/48	• • • Adaptations of mechanically-operated limit switches (for cranes <a href="#">B66C 13/50</a> ;-; for winding mechanisms <a href="#">B66D 1/56</a> )
<b>U B66B 5/00</b>	<b>Application of checking, fault-correcting, or safety devices in elevators</b>
B66B 5/0087	• {Devices facilitating maintenance, repair or inspection tasks (devices incorporated in the buffer <a href="#">B66B 5/288</a> ;-; railings on top of the car <a href="#">B66B 11/0226</a> )}
<b>U B66B 7/00</b>	<b>Other common features of elevators</b>
U B66B 7/02	• Guideways; Guides (arrangements in mine shafts <a href="#">E21D 7/02</a> )
B66B 7/04	• • {Riding means, e.g.} Shoes, Rollers, {between car and guiding means, e.g. rails, ropes (rollers adapted to match the shape of a special guiding means <a href="#">B66B 7/02</a> ;-; vibration attenuation systems acting between car and its supporting frame <a href="#">B66B 11/026</a> )}
<b>B66B 9/00</b>	<b>Kinds or types of lifts in, or associated with, buildings or other structures (characterised by control systems <a href="#">B66B 1/00</a>;-; apparatus for raising or lowering persons on stages of theatres <a href="#">A63J 5/12</a>)</b>
B66B 9/16	• Mobile or transportable lifts specially adapted to be shifted from one part of a building or other structure to another part or to another building or structure (devices for lifting or lowering bulky or heavy goods for loading or unloading purposes <a href="#">B66F 9/00</a> ;-; e.g. fork-lift trucks <a href="#">B66B 9/06</a> )
<b>U B66B 11/00</b>	<b>Main component parts of lifts in, or associated with, buildings or other structures</b>
B66B 11/006	• {Applications of loading and unloading equipment for lifts associated with buildings (of general application <a href="#">B65G</a> ; for paternoster lifts <a href="#">B65G 17/00</a> ;-; for mine lifts <a href="#">B66B 17/14</a> )}

- U B66B 11/02 · Cages, {i.e. cars}(doors, gates or other apparatus controlling access to, or exit from, cages [B66B 13/00](#))
- B66B 11/026 · · {Attenuation system for shocks, vibrations, imbalance, e.g. passengers on the same side (acting between car or supporting frame and guides [B66B 7/04](#); acting between car and ropes, cables [B66B 7/08](#); correcting levelling between car and floor [B66B 1/40](#))}
- B66B 11/04 · Driving gear; {Details thereof, e.g. seals (braking devices acting on the driving gear [B66B 5/02](#); of mining-hoist winding devices [B66B 15/08](#))}
- B66B 11/043 · · {actuated by rotating motor; Details, e.g. ventilation (Roping on drum, sheave, winch or pulley [B66B 11/0065](#); Power supply or control [B66B 1/28](#), [H02P](#); Motor construction [H02K](#))}
- U B66B 19/00 Mining-hoist operation**
- B66B 19/06 · Applications of signalling devices (depth indicators [B66B 3/02](#); order telegraphs [G08B](#))
- U B66B 23/00 Component parts of escalators or moving walkways**
- U B66B 23/22 · Balustrades
- B66B 23/24 · · Handrails (driving gear therefor [B66B 23/02](#); tensioning means therefor [B66B 23/16](#); preventing jamming thereof by foreign objects [B66B 29/04](#); accessories therefor [B66B 31/02](#))
- B66B 25/00 Control of escalators or moving walkways (walkways of variable speed type [B66B 21/12](#); handrails of variable speed type [B66B 23/26](#); of general application [G05](#))**
- B66B 29/00 Safety devices of escalators or moving walkways (walkways of variable speed type [B66B 21/12](#); handrails of variable speed type [B66B 23/26](#))**
- U B66B 31/00 Accessories for escalators, or moving walkways, e.g. for sterilising or cleaning (for safety [B66B 29/00](#))**
- B66B 31/006 · {for conveying hand carts, e.g. shopping carts (hand carts per se [B62B 1/00](#), [B62B 3/00](#))}

**Project: N/A (B66C)**

- U B66C 23/00 Cranes comprising essentially a beam, boom, or triangular structure acting as a cantilever and mounted for translatory or swinging movements in vertical or horizontal planes or a combination of such movements, e.g. jib-cranes, derricks, tower cranes (base supporting structures with legs [B65C 5/00](#))**
- U B66C 23/60 · Derricks
- B66C 23/605 · · {employing ships` masts}([B66C 23/525](#) takes precedence)}

**Project: N/A (B66D)**

- U B66D 1/00 Rope, cable, or chain winding mechanisms; Capstans (portable or mobile lifting or hauling appliances [B66D 3/00](#))**
- U B66D 1/02 · Driving gear
- U B66D 1/14 · · Power transmissions between power sources and drums or barrels {(including brakes, one-way brakes, one-way clutches, clutches activated alternately with brakes, fixed ratio gearing unless otherwise provided for in [B66D 1/16](#) to [B66D 1/24](#))}
- B66D 1/16 · · · the drums or barrels being freely rotatable {-e.g. having a clutch activated independently of a brake ([B66D 1/20](#), [B66D 1/22](#), [B66D 1/24](#) take precedence; clutches activated alternately with brakes [B66D 1/14](#), slip couplings [B66D 1/14](#))}

B66D 1/22

- • • Planetary or differential gearings (for actuating grab buckets [B66D 1/70](#)) {i.e. with planet gears having movable axes of rotation}

**Project: N/A (B66F)**

B66F

**HOISTING, LIFTING, HAULING OR PUSHING, NOT OTHERWISE PROVIDED FOR, e.g. DEVICES WHICH APPLY A LIFTING OR PUSHING FORCE DIRECTLY TO THE SURFACE OF A LOAD** ({invalid lifting devices [A61G 7/10](#); } mounting artificial islands on piles or like supports [E02B 17/00](#) : scaffolding combined with lifting devices [E04G 1/22](#); lifting devices for sliding forms [E04G 11/24](#); lifting of buildings [E04G 23/06](#); shores or struts [E04G 25/00](#); lifts or other hoisting devices on ladders [E06C 7/12](#); props for mining [E21D 15/00](#))

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[B66F 19/02](#) covered by [B66F 19/00](#)

**U B66F 3/00**

**Devices, e.g. jacks, adapted for uninterrupted lifting of loads (mobile jacks of the garage type [B66F 5/00](#))**

B66F 3/24

- fluid-pressure operated (water-pressure machines [F03B](#); hydraulic gearings [F16H](#); cylinders, pistons [F16J](#); fluid-pressure servomotors [F15B](#))

**U B66F 3/25**

- • Constructional features

B66F 3/35

- • • Inflatable flexible elements, e.g. bellows (inflatable load-engaging elements [B66F 3/40](#); connection of valves to inflatable elastic bodies [B60C 29/00](#))

**B66F 9/00**

**Devices for lifting or lowering bulky or heavy goods for loading or unloading purposes (mobile or transportable lifts in, or associated with, buildings and specially adapted to be shifted from one part of a building or other structure to another part or to another building or structure [B66B 9/16](#); cranes [B66C](#))**

B66F 9/06

- movable, with their loads, on wheels or the like, e.g. fork-lift trucks (vehicle aspects [B60](#) to [B62](#); vehicles predominantly for transporting loads and modified to facilitate loading or unloading [B60P 1/00](#); low-lift hand trucks for transporting goods [B62B 3/06](#))

**U B66F 11/00**

**Lifting devices specially adapted for particular uses not otherwise provided for (ground-engaging vehicle fittings for supporting, lifting or manoeuvring the vehicle [B60S 9/00](#))**

B66F 11/04

- for movable platforms or cabins, e.g. on vehicles, permitting workmen to place themselves in any desired position for carrying out required operations ({Working platforms on fork-lift trucks [B66F 9/127](#); } vehicle aspects of service vehicles [B60P 3/14](#); platforms for cleaning windows [A47L 3/02](#); devices for rescuing persons from buildings [A62B 1/02](#); liftable or lowerable platforms for use on ladders [E06C 7/16](#); maintenance travellers for bridges [E01D 19/10](#); scaffolds on an extensible sub-structure [E04G 1/22](#))

**Project: N/A (B67)**

B67

**OPENING, CLOSING {OR CLEANING} BOTTLES, JARS OR SIMILAR CONTAINERS; LIQUID HANDLING (nozzles in general [B05B](#); packaging liquids [B65B](#), e.g. [B65B 3/00](#); pumps in general [F04](#); siphons [F04F 10/00](#); valves [F16K](#); handling liquefied gases [F17C](#))**

**Project: N/A (B67B)**

B67B 7/00

Hand- or power-operated devices for opening closed containers (nail pullers or extractors [B25C 11/00](#); {for expelling solid content, e.g. pills, from blister packs [B65B 69/0058](#)}; attached to, or incorporated in, containers or container closures [B65D](#); {dispensers for pills from blister packs [B65B 69/0058](#)})

**Project: N/A (B68G)**

B68G 7/00

Making upholstery (manufacturing upholstered panels [B68G 13/00](#); {from plastics [B29D 99/0092](#)}; sewing-machines [D05B](#))

B68G 13/00

Upholstered panels ({making upholstery from plastics [B29D 99/0092](#)}; specially adapted for sound-absorption [E04B](#), [G10K](#), {e.g. [G10K 11/00](#)})

**Project: N/A (B81B)**

B81B

**MICRO-STRUCTURAL DEVICES OR SYSTEMS, e.g. MICRO-MECHANICAL DEVICES (piezo-electric, electrostrictive or magnetostrictive elements per se [H01L 41/00](#))**

NOTES

1. This subclass does not cover:

- purely electrical or electronic devices per se which are covered by section H, e.g. subclass [H01L](#);
- purely optical devices per se which are covered by subclasses [G02B](#) or [G02F](#);
- essentially two-dimensional structures, e.g. layered products which are covered by subclass [B32B](#);
- chemical or biological structures per se which are covered by section C;
- structures in atomic scale produced by manipulation of single atoms or molecules, which are covered by group [B82B 1/00](#).

2. Devices or systems classified in this subclass are also classified in appropriate subclasses providing for their structural or functional features, if such features are of interest.

3. Attention is drawn to the following places:

[A61K 9/50](#) Microcapsules for medicinal preparations [B25J 7/00](#)  
 Micromanipulators [G02B 21/32](#) Micromanipulators combined with  
 microscopes [G11B 5/127](#) Magnetic heads [H01P 3/08](#) Waveguide  
 microstrips.

4. In this subclass, local "residual" subgroups, e.g. [B81B 7/0077](#), are used with the following purpose:

When classifying a document which does not fit in any of a set of subgroups with the same dot-level, the document should be classified in the residual group, if present, and not in the group at the hierarchical level one dot above.

In the example, the document shall be classified in [B81B 7/0077](#) and not in [B81B 7/0032](#) as [B81B 7/0077](#) is "residual" to [B81B 7/0035](#)-[B81B 7/0074](#)

**U B81B 3/00**

**Devices comprising flexible or deformable elements, e.g. comprising elastic tongues or membranes ([B81B 5/00](#) takes precedence)**

U B81B 3/0035

- {Constitution or structural means for controlling the movement of the flexible or deformable elements}

B81B 3/0051

- {For defining the movement, i.e. structures that guide or limit the movement of an element}; (mechanical arrangements for preventing or damping vibration or shock [H01H 3/60](#));

## Project: N/A (C01B)

## C01B

**NON-METALLIC ELEMENTS; COMPOUNDS THEREOF; {METALLOIDS OR COMPOUNDS THEREOF NOT COVERED BY SUBCLASS [C01C](#)}**NOTES

1. In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups.
2. Attention is drawn to the definitions of groups of chemical elements following the title of section C.

WARNINGS

1. The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C01B 31/16](#) covered by [B01J 39/24](#) ,  
[B01J 41/18](#)  
[C01B 35/16](#) , [C01B 35/18](#) covered by  
[C01B 35/00](#) + s.gr.

2. General concordance IPC4 or IPC5 to IPC6 groups is as follows:

[C01B 25/37](#) (partly) : [C01B 37/002](#)  
[C01B 25/453](#) : [C01B 37/00](#) ,  
[C01B 39/54](#)  
[C01B 33/185](#) : [C01B 37/02](#)  
[C01B 33/28](#) and subgroups : [C01B 37/00](#)  
 — , [C01B 39/00](#)  
[C01B 35/1009](#) : [C01B 37/06](#) ,  
[C01B 39/12](#) , [C01B 39/54](#)

## C01B 3/00

**Hydrogen; Gaseous mixtures containing hydrogen; Separation of hydrogen from mixtures containing it (separation of gases by physical means [B01D](#)); Purification of hydrogen (production of water gas or synthesis gas from solid carbonaceous material [C10J](#); purifying or modifying the chemical compositions of combustible technical gases containing carbon monoxide [C10K](#))**NOTES

1. In this group it is desirable to add the indexing codes of groups [B01J 2208/00](#) and [B01J 2219/00](#), for details relating to the reactors used in the generation of hydrogen or synthesis gas.
2. In groups [C01B 3/12](#) to [C01B 3/18](#) and in groups [C01B 3/22](#) to [C01B 3/586](#) it is desirable to add the indexing codes of group [C01B 2203/00](#), for aspects relating to hydrogen or synthesis gas generation processes.

- U C01B 3/0005 · {Reversible uptake of hydrogen by an appropriate medium, i.e. based on physical or chemical sorption phenomena or on reversible chemical reactions, e.g. for hydrogen storage purposes (purification of hydrogen [C01B 3/508](#)); Reversible gettering of hydrogen; Reversible uptake of hydrogen by electrodes}
- U C01B 3/001 · · {characterised by the uptaking medium; Treatment thereof}
- C01B 3/0026 · · · {of one single metal or a rare earth metal; Treatment thereof}

NOTES

1. In all of the groups [C01B 3/0026](#) to [C01B 3/0084](#), the metallic storage materials may contain minor quantities of non-metals such as B, C, O, S,

Se, Si; e.g. [C01B 3/0036](#) "only containing iron and titanium" includes Fe-Ti compositions comprising non-metals

2. In the groups [C01B 3/0026](#) and [C01B 3/0047](#) to [C01B 3/0068](#) a "rare-earth metal" means one single metal or a combination of metals selected from the lanthanides, Sc or Y

- C01B 4/00**      **Hydrogen isotopes; Inorganic compounds thereof prepared by isotope exchange, e.g.  $\text{NH}_3 + \text{D}_2 \rightarrow \text{NH}_2\text{D} + \text{HD}$  (separation of isotopes [B01D 59/00](#); other chemical reactions to form compounds of hydrogen isotopes, see the relevant groups for hydrogen compounds in class [C01](#))**
- C01B 6/00**      **Hydrides of metals {including fully or partially hydrided metals, alloys or intermetallic compounds (use of some thereof for reversible sorption of hydrogen [C01B 3/0005](#), [C01B 3/508](#)); Compounds containing at least one metal-hydrogen bond, e.g.  $(\text{GeH}_3)_2\text{S}$ ,  $\text{SiH GeH}$ }; Monoborane or diborane; Addition complexes thereof (higher hydrides of boron, substituted hydrides of boron [C01B 35/00](#))**
- U C01B 13/00**      **Oxygen; Ozone; Oxides or hydroxides in general**
- U C01B 13/02      • Preparation of oxygen (by liquefying [F25J](#))
- C01B 13/0229      • {Purification or separation processes}
- NOTE  
In groups [C01B 13/0229](#) to [C01B 13/0288](#), additional features relating to the purification or separation processes are indexed with codes chosen from [C01B 2210/0026](#) to [C01B 2210/0098](#).
- U C01B 13/10      • Preparation of ozone
- C01B 13/11      • • by electric discharge
- NOTE  
In groups [C01B 13/11](#) and [C01B 13/115](#), additional features relating to the preparation of ozone by electrical discharge are indexed with codes chosen from [C01B 2201/00](#) to [C01B 2201/90](#).
- U C01B 17/00**      **Sulfur; Compounds thereof**
- C01B 17/20      • Methods for preparing sulfides or polysulfides, in general (ammonium sulfides or polysulfides [C01C](#); sulfides or polysulfides of metals, other than alkali metals, magnesium, calcium, strontium and barium, see the relevant groups of subclasses [C01F](#) or [C01G](#), according to the metal)
- C01B 17/62      • Methods of preparing sulfites in general (particular individual sulfites, see the relevant groups of subclasses [C01B](#) to [C01G](#), according to the cation)
- U C01B 17/69      • Sulfur trioxide; Sulfuric acid
- U C01B 17/90      • • Separation; Purification
- C01B 17/901      • • • {Recovery from spent acids containing metallic ions, e.g. hydrolysis acids, pickling acids (obtaining sulfur dioxide as an intermediate in sulfur trioxide recovery from sulfates, e.g. iron sulfates [C01B 17/501](#), from spent acids [C01B 17/58](#))}
- C01B 17/96      • Methods for the preparation of sulfates in general (particular individual sulfates, see the relevant groups of subclasses [C01B](#) to [C01G](#), according to the cation)
- C01B 17/98      • Other compounds containing sulfur and oxygen (persulfuric acids [C01B 15/06](#); persulfates [C01B 15/08](#))
- U C01B 19/00**      **Selenium; Tellurium; Compounds thereof (phosphorus compounds [C01B 25/14](#))**

- C01B 19/04
- Binary compounds (including binary selenium-tellurium compounds ([C01B 19/004](#), [C01B 19/005](#), [C01B 19/007](#) take precedence))
- U C01B 21/00 Nitrogen; Compounds thereof**
- C01B 21/06
- Binary compounds of nitrogen with metals, with silicon, or with boron, {or with carbon, i.e. nitrides; Compounds of nitrogen with more than one metal, silicon or boron} (azides [C01B 21/08](#))
- NOTES**
1. Binary compounds, i.e. compounds of nitrogen with only one other element chosen from metals, silicon, boron or carbon, are classified in groups [C01B 21/06](#) or [C01B 21/0605](#) to [C01B 21/076](#). Compounds of nitrogen with more than one element chosen from metals, silicon or boron are classified in [C01B 21/0602](#)
2. Documents relating to several specific binary compounds are classified in [C01B 21/06](#) only and receive the indexing codes chosen from [C01B 21/0602](#) to [C01B 21/076](#) to identify the specific compounds
- C01B 21/0637
- • {with metals not specified in groups [C01B 21/0607](#) to [C01B 21/0635](#), other than aluminium, titanium, zirconium or hafnium}
- C01B 21/082
- Compounds containing nitrogen and non-metals {and optionally metals} ([C01B 21/06](#), [C01B 21/08](#) take precedence)
- U C01B 21/14**
- • Hydroxylamine; Salts thereof
- U C01B 21/1409**
- • • {Preparation}
- C01B 21/1454
- • • • {of hydroxylamine salts by processes not covered by one or more of groups [C01B 21/1418](#) to [C01B 21/1445](#), e.g. by conversion of one salt into another}
- U C01B 21/20**
- Nitrogen oxides; Oxyacids of nitrogen; Salts thereof
- C01B 21/36
- • Nitrogen dioxide (NO<sub>2</sub>, N<sub>2</sub>O<sub>4</sub>) ([C01B 21/203](#), [C01B 21/26](#), [C01B 21/30](#) take precedence)
- C01B 21/48
- • Methods for the preparation of nitrates in general (particular individual nitrates, see the relevant groups of subclasses [C01B](#) to [C01G](#), according to the cation)
- C01B 23/00 Noble gases; Compounds thereof (liquefying [F25J](#); ~~f~~ {noble gases obtained by rectification [F25J 3/028](#)})**
- C01B 25/00 Phosphorus; Compounds thereof ({[C01B 6/00](#)}, [C01B 21/00](#), [C01B 23/00](#) take precedence; perphosphates [C01B 15/16](#))**
- U C01B 25/16**
- Oxyacids of phosphorus; Salts thereof (peroxyacids or salts thereof [C01B 15/00](#))
- U C01B 25/18**
- • Phosphoric acid
- C01B 25/234
- • • Purification; Stabilisation; Concentration (purification concomitant with preparation [C01B 25/22](#); preparation involving solvent-solvent extraction [C01B 25/46](#))
- U C01B 25/26**
- • Phosphates (perphosphates [C01B 15/16](#))
- U C01B 25/45**
- • • containing plural metal, or metal and ammonium
- C01B 25/453
- • • • {having molecular-sieve properties}

**WARNING**

Group [C01B 25/453](#) is no longer used for the classification of new documents from May, 1995. The backlog of this groups is continuously being reclassified to the appropriate subgroups of [C01B 37/00](#) and [C01B 39/00](#).

- C01B 25/455
- • containing halogen {{completely halogenated alkali metal phosphates [C01D](#), e.g. lithium hexafluorophosphate [C01D 15/005](#)}}
- C01B 31/00**      **Carbon; Compounds thereof** ([C01B 6/00](#) , [C01B 21/00](#) , [C01B 23/00](#) take precedence; percarbonates [C01B 15/10](#); carbon black [C09C 1/48](#); gas carbon production [C10B](#))
- C01B 31/02
- Preparation of carbon (by using ultra high pressure, e.g. for the formation of diamonds, [B01J 3/06](#); by crystal growth [C30B](#)); Purification; {After-treatment}
- U C01B 31/08
- Active carbon
- C01B 31/10
- • Preparation by using gaseous activating agents {{[C01B 31/086](#) , [C01B 31/088](#) take precedence}}
- C01B 31/12
- • Preparation by using non-gaseous activating agents {{[C01B 31/086](#) , [C01B 31/088](#) take precedence}}
- U C01B 31/30
- Carbides (alloys [C22](#))
- C01B 31/301
- {Oxycarbides, sulfocarbides or mixtures of carbides with other bodies, e.g. graphite; Carbides of other non-metals, e.g. silicocarbides, borocarbides}
- NOTE
- Mixtures of carbides, other than those covered by group [C01B 31/308](#) , and belonging to more than one of the groups [C01B 31/303](#) to [C01B 31/36](#) are classified in [C01B 31/301](#)
- C01B 33/00**      **Silicon; Compounds thereof** ([C01B 6/00](#) , [C01B 21/00](#) , [C01B 23/00](#) take precedence; persilicates [C01B 15/14](#); carbides [C01B 31/36](#))
- U C01B 33/113
- Silicon oxides; Hydrates thereof {{preparing monoxide by reduction of siliceous material [C01B 33/182](#)}}
- U C01B 33/12
- • Silica; Hydrates thereof, e.g. lepidoc silicic acid
- C01B 33/18
- • Preparation of finely divided silica neither in sol nor in gel form; After-treatment thereof (preparation of aerogels by dehydrating gels [C01B 33/158](#); treatment to enhance the pigmenting or filling properties [C09C](#))
- C01B 33/20
- Silicates (persilicates [C01B 15/14](#); {-containing aluminium [C01B 33/26](#)})
- U C01B 33/36
- • having base-exchange properties but not having molecular sieve properties (regeneration thereof [B01J 49/00](#))
- C01B 33/38
- • Layered base-exchange silicates, e.g. clays, micas or alkali metal silicates of kenyaite or magadiite type {{activation of naturally occurring clays [B01J 20/12](#); pillared layered base-exchange silicates [B01J 29/049](#)}}
- C01B 35/00**      **Boron; Compounds thereof (monoborane, diborane, metal borohydrides or addition complexes thereof** [C01B 6/00](#); perborates [C01B 15/12](#); binary compounds with nitrogen [C01B 21/06](#); {-compounds of noble gases [C01B 23/0005](#)}; phosphides [C01B 25/08](#); carbides [C01B 31/36](#); alloys containing boron [C22](#))
- U C01B 35/08
- Compounds containing boron and nitrogen, phosphorus, oxygen, sulfur, selenium or tellurium
- U C01B 35/14
- • Compounds containing boron and nitrogen, phosphorus, sulfur, selenium or tellurium
- C01B 35/146
- • {Compounds containing boron and nitrogen, e.g. borazoles (ammonium tetrafluoroborates [C01B 35/063](#); ammonium borates [C01B 35/12](#))}

**C01B 39/00**

**Compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites; Their preparation; After-treatment, e.g. ion-exchange or dealumination (treatment to modify the sorption properties, e.g. shaping using a binder, [B01J 20/10](#); treatment to modify the catalytic properties, e.g. combination of treatments to make the zeolites appropriate to their use as a catalyst, [B01J 29/04](#); treatment to improve the ion-exchange properties [B01J 39/14](#); regeneration or reactivation of ion-exchange properties [B01J 49/00](#); preparation of stabilised suspensions used in detergents [C11D 3/12](#))**

NOTES

1. In this group, the following term is used with the meaning indicated:

- "zeolites" means:
  - i. crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional, microporous lattice framework structure of tetrahedral oxide units;
  - ii. compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron.

2. Compounds classified in main group [C01B 39/00](#) are also classified in other groups of class [C01](#) according to their composition

- |   |            |   |
|---|------------|---|
| U | C01B 39/02 | • Crystalline aluminosilicate zeolites; Isomorphous compound thereof; Direct preparation thereof; Preparation thereof starting from a reaction mixture containing a crystalline zeolite of another type, or from preformed reactants; After-treatment thereof |
|   | C01B 39/26 | • • Mordenite type {( <a href="#">C01B 39/023</a> , <a href="#">C01B 39/026</a> , <a href="#">C01B 39/06</a> take precedence)}  |
|   | C01B 39/28 | • • Phillipsite or harmotome type {( <a href="#">C01B 39/023</a> , <a href="#">C01B 39/026</a> , <a href="#">C01B 39/06</a> take precedence)}   |
|   | C01B 39/46 | • • Other types characterised by their X-ray diffraction pattern and their defined composition {( <a href="#">C01B 39/023</a> , <a href="#">C01B 39/026</a> , <a href="#">C01B 39/06</a> take precedence)}  |

**Project: N/A (C01C)**

- |   |           |  |
|---|-----------|--|
| U | C01C 1/00 | <b>Ammonia; Compounds thereof {(<a href="#">C01C 3/08</a>, <a href="#">C01C 3/14</a>, <a href="#">C01C 3/16</a>, <a href="#">C01C 3/20</a> take precedence)}</b> |
|---|-----------|--|

NOTE

Complex ammine salts, e.g. [Pd(NH<sub>3</sub>)<sub>4</sub>]Cl<sub>2</sub>, are { also} classified in the relevant groups of subclasses [C01D](#) to [C01G](#), according to the metal

- |   |             |   |
|---|-------------|---|
| U | C01C 1/02   | • Preparation, {purification} or separation of ammonia  |
|   | C01C 1/04   | • • Preparation of ammonia by synthesis {-in the gas phase}(preparation or purification of gas mixtures for ammonia synthesis { <a href="#">C01B 3/025</a> }) |
| U | C01C 1/0405 | • • • {from N <sub>2</sub> and H <sub>2</sub> in presence of a catalyst}  |
|   | C01C 1/0458 | • • • • {Separation of NH <sub>3</sub> (during purge gas treatment <a href="#">C01C 1/0476</a> )}   |

**Project: N/A (C01D)**

**C01D** COMPOUNDS OF ALKALI METALS, i.e. LITHIUM, SODIUM, POTASSIUM, RUBIDIUM, CAESIUM, OR FRANCIUM (metal hydrides {-monoborane, diborane or addition complexes thereof} [C01B 6/00](#); salts of oxyacids of halogens [C01B 11/00](#); peroxides, salts of peroxyacids [C01B 15/00](#); sulfides [C01B 17/22](#); thiosulfates, dithionites, polythionates [C01B 17/64](#); compounds containing selenium or tellurium [C01B 19/00](#); binary compounds of nitrogen with metals [C01B 21/06](#); azides [C01B 21/08](#); {-compounds other than ammonia and cyanogen, containing nitrogen and other non-metals [C01B 21/082](#)}; metal amides [C01B 21/092](#); nitrites [C01B 21/50](#); phosphides [C01B 21/50](#); {-compounds of noble gases [C01B 23/0005](#)}; phosphides [C01B 25/08](#); salts of oxyacids of phosphorus [C01B 25/16](#); carbides [C01B 31/30](#); compounds containing silicon [C01B 33/00](#); compounds containing boron [C01B 35/00](#); cyanides [C01C 3/08](#); salts of cyanic acid [C01C 3/14](#); salts of cyanamide [C01C 3/16](#); thiocyanates [C01C 3/20](#))

**Project: N/A (C01F)**

**C01F** COMPOUNDS OF THE METALS BERYLLIUM, MAGNESIUM, ALUMINIUM, CALCIUM, STRONTIUM, BARIUM, RADIUM, THORIUM, OR OF THE RARE-EARTH METALS (metal hydrides {-monoborane, diborane or addition complexes thereof} [C01B 6/00](#); salts of oxyacids of halogens [C01B 11/00](#); peroxides, salts of peroxyacids [C01B 15/00](#); sulfides or polysulfides of magnesium, calcium, strontium, or barium [C01B 17/42](#); thiosulfates, dithionites, polythionates [C01B 17/64](#); compounds containing selenium or tellurium [C01B 19/00](#); binary compounds of nitrogen with metals [C01B 21/06](#); azides [C01B 21/08](#); {-compounds other than ammonia or cyanogen containing nitrogen and non-metals and optionally metals [C01B 21/082](#); amides or imides of silicon [C01B 21/087](#)}; metal {-imides or} amides [C01B 21/092](#), {[C01B 21/0923](#)}; nitrites [C01B 21/50](#); {-compounds of noble gases [C01B 23/0005](#)}; phosphides [C01B 25/08](#); salts of oxyacids of phosphorus [C01B 25/16](#); carbides [C01B 31/30](#); compounds containing silicon [C01B 33/00](#); compounds containing boron [C01B 35/00](#); compounds having molecular sieve properties but not having base-exchange properties [C01B 37/00](#); compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites, [C01B 39/00](#); cyanides [C01C 3/08](#); salts of cyanic acid [C01C 3/14](#); salts of cyanamide [C01C 3/16](#); thiocyanates [C01C 3/20](#); {-double sulfates of magnesium with sodium or potassium [C01D 5/12](#); with other alkali metals [C01D 15/00](#), [C01D 17/00](#)})

- U C01F 7/00** **Compounds of aluminium**
- U C01F 7/02 · Aluminium oxide; Aluminium hydroxide; Aluminates
  - U C01F 7/20 · · Preparation of aluminium oxide or hydroxide from aluminous ores with acids or salts
  - C01F 7/22 · · · with halides {-or halogen acids}
  - U C01F 7/48 · Aluminium halides
  - U C01F 7/50 · · Fluorides
  - C01F 7/52 · · · Double compounds containing both fluorine and other acid {-halide} groups

**Project: N/A (C01G)****C01G**

**COMPOUNDS CONTAINING METALS NOT COVERED BY SUBCLASSES [C01D](#) OR [C01F](#)** (metal hydrides {monoborane, diborane or addition complexes thereof} [C01B 6/00](#); salts of oxyacids of halogens [C01B 11/00](#); peroxides, salts or peroxyacids [C01B 15/00](#); thiosulfates, dithionites, polythionates [C01B 17/64](#); compounds containing selenium, or tellurium [C01B 19/00](#); binary compounds of nitrogen with metals [C01B 21/06](#); azides [C01B 21/08](#); {compounds containing nitrogen, other non-metals and metal [C01B 21/082](#)}; metal amides [C01B 21/092](#); nitrites [C01B 21/50](#); {compounds of noble gases [C01B 23/0005](#)}; phosphides [C01B 25/08](#); salts of oxyacids of phosphorus [C01B 25/16](#); carbides [C01B 31/30](#); compounds containing silicon [C01B 33/00](#); compounds containing boron [C01B 35/00](#); compounds having molecular sieve properties but not having base-exchange properties [C01B 37/00](#); compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites, [C01B 39/00](#); cyanides [C01C 3/08](#); salts of cyanamide [C01C 3/16](#); thiocyanates [C01C 3/20](#))

WARNING

Groups [C01G 51/30](#) to [C01G 51/70](#) and [C01G 53/40](#) to [C01G 53/70](#) do not correspond to former or current IPC-groups. The concordance CPC : IPC is as follows: - [C01G 51/30](#) - [C01G 51/70](#) : [C01G 51/00](#) - [C01G 53/40](#) - [C01G 53/70](#) : [C01G 53/00](#)

**U C01G 45/00****Compounds of manganese**

C01G 45/12

- Manganates {manganites or} permanganates

**U C01G 51/00****Compounds of cobalt**

U C01G 51/40

- {Cobaltates}

C01G 51/70

- • {containing rare earth, e.g. LaCoO<sub>3</sub> ([C01G 51/68](#) takes precedence)}

**U C01G 53/00****Compounds of nickel**

U C01G 53/40

- {Nickelates}

WARNING

Groups [C01G 53/40](#) to [C01G 53/70](#) are not complete pending a reorganisation, see also [C01G 53/006](#) and [C01G 53/00](#)]

C01G 53/70

- • {containing rare earth, e.g. LaNiO<sub>3</sub> ([C01G 53/68](#) takes precedence)}

**Project: N/A (C02F)****C02F**

**TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE** (separation in general [B01D](#); special arrangements on waterborne vessels of installations for treating water, waste water or sewage, e.g. for producing fresh water, [B63J](#); adding materials to water to prevent corrosion [C23F](#); treating radioactively-contaminated liquids [G21F 9/04](#); regeneration of reactants for recirculation into processes, see the relevant places for the processes)

NOTE

When classifying in this subclass, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:  
[C02F 9/02](#) to [C02F 9/14](#) covered by [C02F 9/00](#) and subgroup

- U C02F 1/00 Treatment of water, waste water, or sewage ([C02F 3/00](#) to [C02F 9/00](#) take precedence)**
- C02F 1/02 · by heating (methods of steam generation [F22B](#); preheating boiler feed-water or accumulating preheated boiler feed-water [F22D](#))
- C02F 1/20 · by degassing, i.e. liberation of dissolved gases (degassing of liquids in general [B01D 19/00](#); arrangement of degassing apparatus in boiler feed supply [F22D](#))
- C02F 1/28 · by sorption (using ion-exchange [C02F 1/42](#); sorbent compositions [B01J](#))
- C02F 1/40 · Devices for separating or removing fatty or oily substances or similar floating material (cleaning or keeping clear the surface of open water from oil or like materials [E02B 15/04](#); devices in sewers for separating liquid or solid substances from sewage [E03F 5/14](#), e.g. for use in drains leading to the sewer [E03F 5/16](#))
- C02F 1/42 · by ion-exchange (ion-exchange in general [B01J](#))
- NOTE**  
When classifying in group [C02F 1/42](#), details of ion-exchangers can be further indexed by using indexing codes chosen from [C02F 2001/422](#) to [C02F 2001/427](#)
- C02F 1/44 · by dialysis, osmosis or reverse osmosis {(general membrane separation processes [B01D 61/00](#), membrane modules [B01D 63/00](#), electro dialysis [C02F 1/4693](#), combination of membrane modules and bioreactors [C02F 3/1268](#))}
- U C02F 1/46 · by electrochemical methods
- U C02F 1/461 · · by electrolysis
- U C02F 1/46104 · · · {Devices therefor; Their operating or servicing}
- C02F 1/46109 · · · · {Electrodes}
- NOTE**  
When classifying in group [C02F 1/46109](#), details of devices for electrolysis can be further indexed by using indexing codes chosen from [C02F 2001/46119](#) to [C02F 2001/46166](#) ]
- C02F 1/4618 · · · · {for producing "ionised" acidic or basic water}
- NOTE**  
When classifying in group [C02F 1/4618](#), details relating to the production of "ionised" acidic or basic water using electrolysis devices can be further indexed by using indexing codes chosen from [C02F 2001/46185](#) to [C02F 2001/46195](#)
- C02F 1/50 · by addition or application of a germicide or by oligodynamic treatment {([C02F 1/4606](#), [C02F 1/467](#), [C02F 1/76](#) take precedence )}
- C02F 1/58 · by removing specified dissolved compounds (using ion-exchange [C02F 1/42](#); softening water [C02F 5/00](#))
- C02F 1/66 · by neutralisation; pH adjustment (for degassing [C02F 1/20](#); using ion-exchange [C02F 1/42](#); for flocculation or precipitation of suspended impurities [C02F 1/52](#); for removing dissolved compounds [C02F 1/58](#))
- U C02F 3/00 Biological treatment of water, waste water, or sewage {([C02F 1/006](#) takes precedence)}**

- U C02F 3/02                   · Aerobic processes  
C02F 3/10                   · · Packings; Fillings; Grids (packing elements in general [B01J 19/30](#)-,  
[B01J 19/32](#))
- U C02F 2303/00               **Specific treatment goals**  
C02F 2303/22               · Eliminating or preventing deposits, scale removal, scale prevention  
([C02F 1/042](#)-, [C02F 1/4602](#)-, [C02F 5/00](#) take precedence)

**Project: N/A (C03B)****C03B****MANUFACTURE, SHAPING, OR SUPPLEMENTARY PROCESSES**WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C03B 8/00](#) covered by [C03B 19/00](#)\_\_\_\_\_ ,  
[C03B 37/00](#)  
[C03B 8/02](#) covered by [C03B 19/1065](#)\_\_\_\_\_ ,  
[C03B 19/12](#)\_\_\_\_\_ , [C03B 37/011](#)\_\_\_\_\_ , [C03B 37/016](#)  
[C03B 8/04](#) covered by [C03B 19/106](#)\_\_\_\_\_ ,  
[C03B 19/14](#)\_\_\_\_\_ , [C03B 37/014](#)

- U C03B 5/00                   **Melting in furnaces; Furnaces so far as specially adapted for glass manufacture**
- C03B 5/005                   · {of glass-forming waste materials (disposal or transformation of solid waste in general [B09B](#)-; treatment of radioactive waste [G21F 9/00](#))}
- U C03B 5/16                   · Special features of the melting process; Auxiliary means specially adapted for glass-melting furnaces
- C03B 5/163                   · · {Electrochemical treatments, e.g. to prevent bubbling or to create bubbles ([C03B 5/1672](#)-, [C03B 5/185](#) take precedence)}
- C03B 5/167                   · · Means for preventing damage to equipment, e.g. by molten glass, hot gases, batches ([C03B 5/20](#)-, [C03B 5/42](#) take precedence)
- C03B 5/225                   · · Refining ([C03B 5/18](#) takes precedence; {-Refining agents [C03C 1/004](#)})
- C03B 5/23                   · · Cooling the molten glass ([C03B 5/18](#)-, [C03B 5/225](#) take precedence)
- C03B 5/235                   · · Heating the glass ([C03B 5/02](#)-, [C03B 5/18](#)-, [C03B 5/225](#) take precedence)

NOTE

Devices for withholding dirt, foam, or batch are also classified in [C03B 5/202](#)

- U C03B 7/00                   **Distributors for the molten glass; Means for taking-off charges of molten glass; Producing the gob, {e.g. controlling the gob shape, weight or delivery tact}**
- C03B 7/01                   · Means for taking-off charges of molten glass {([C03B 7/08](#)-, [C03B 7/14](#) to [C03B 7/22](#) take precedence)}
- U C03B 9/00                   **Blowing glass; Production of hollow glass articles**
- C03B 9/13                   · in gob feeder machines ([C03B 9/28](#)-, [C03B 9/29](#) take precedence)
- C03B 9/14                   · · in "blow" machines or in "blow-and-blow" machines ([C03B 9/193](#)-, [C03B 9/20](#) take precedence)
- C03B 11/00                   **Pressing {molten} glass {or performed glass reheated to equivalent low viscosity without blowing (shaping molten glass by a press-blow process [C03B 9/00](#)-, e.g. [C03B 9/193](#)-; re-forming shaped glass [C03B 23/00](#)-; re-heating the performed glass [C03B 29/00](#)-; transporting the performed or pressed glass during its manufacture [C03B 35/00](#))}**

- C03B 13/00** Rolling {molten} glass, {i.e. where the molten glass is shaped by rolling (re-forming shaped glass by rolling [C03B 23/004](#), [C03B 23/033](#), [C03B 23/055](#))}
- C03B 13/14 • Rolling other articles, {i.e. not covered by [C03B 13/01](#) to [C03B 13/12](#), e.g. channeled articles, briquette-shaped articles}
- U C03B 19/00** Other methods of shaping glass (manufacture or treatment of flakes, fibres or filaments from softened glass, minerals or slags [C03B 37/00](#))
- U C03B 19/09 • by fusing powdered glass in a shaping mould
- C03B 19/095 • • {by centrifuging, e.g. arc discharge in rotating mould (crucibles for crystal pulling in general [C30B 15/10](#), [C30B 35/002](#))}
- C03B 20/00** Processes specially adapted for the production of quartz or fused silica articles, {not otherwise provided for ([C03B 19/01](#), [C03B 19/066](#), [C03B 19/106](#), [C03B 19/12](#), [C03B 19/14](#), [C03B 37/00](#) take precedence)}
- U C03B 23/00** Re-forming shaped glass (re-forming fibres or filaments [C03B 37/14](#))
- C03B 23/0006 • {by drawing ([C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- C03B 23/0013 • {by pressing ([C03B 21/04](#), [C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#), [C03B 23/26](#) take precedence)}
- C03B 23/0026 • {by gravity, e.g. sagging ([C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- C03B 23/0033 • {by centrifuging ([C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- C03B 23/004 • {by rolling ([C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- C03B 23/006 • {by fusing, e.g. for flame sealing ([C03B 9/42](#), [C03B 21/06](#), [C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#), [C03B 33/08](#) take precedence)}
- C03B 23/0066 • {by bending ([C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- C03B 23/0073 • {by blowing ([C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- C03B 23/0086 • {Heating devices specially adapted for re-forming shaped glass articles in general, e.g. burners ([C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- C03B 23/0093 • {Tools and machines specially adapted for re-forming shaped glass articles in general, e.g. chucks ([C03B 23/0086](#), [C03B 23/02](#), [C03B 23/04](#), [C03B 23/18](#) take precedence)}
- U C03B 23/04** • Re-forming tubes or rods
- C03B 23/049 • • by pressing ([C03B 21/04](#), {[C03B 23/092](#)}, [C03B 23/26](#) take precedence)
- C03B 23/057 • • by fusing, e.g. for flame sealing ([C03B 9/42](#), [C03B 21/06](#) {[C03B 23/099](#)}, [C03B 33/08](#) take precedence)
- U C03B 27/00** Tempering {or quenching} glass products
- C03B 27/012 • by heat treatment, e.g. for crystallisation; Heat treatment of glass products before tempering by cooling ([C03B 27/008](#), [C03B 27/016](#) take precedence)
- C03B 32/00** Thermal after-treatment of glass products not provided for in groups {[C03B 19/00](#)}, [C03B 25/00](#) to [C03B 31/00](#) {or [C03B 37/00](#)}, e.g. crystallisation, eliminating gas inclusions or other impurities; {Hot-pressing vitrified, non-porous, shaped glass products}
- U C03B 37/00** Manufacture or treatment of flakes, fibres, or filaments from softened glass, minerals, or slags
- U C03B 37/01 • Manufacture of glass fibres or filaments
- U C03B 37/012 • • Manufacture of preforms for drawing fibres or filaments
- U C03B 37/0128 • • • {starting from pulverulent glass}

- C03B 37/01288 . . . {by extrusion, e.g. of glass powder and binder (moulding plastics around a core using a cross-head annular extrusion nozzle [B29C 47/28](#); extrusion presses in general [B30B 11/22](#))}
- U C03B 37/014 . . . made entirely or partially by chemical means, {e.g. vapour phase deposition of bulk porous glass either by outside vapour deposition [OVD], or by outside vapour phase oxidation [OVPO] or by vapour axial deposition [VAD] ([C03C 17/02](#) takes precedence)}
- C03B 37/01413 . . . {Reactant delivery systems ([C03B 37/01807](#) takes precedence; devices therefor in general [B01D 1/00](#), [B01J 4/00](#))}
- C03B 37/0148 . . . {Means for heating preforms during or immediately prior to deposition ([C03B 37/0142](#), [C03B 37/01876](#) take precedence)}
- C03B 37/018 . . . by glass deposition on a glass substrate, e.g. by {inside-, modified-, plasma-, or plasma modified- chemical vapour deposition [ICVD, MCVD, PCVD, PMCVD], i.e. by thin layer coating on the inside or outside of a glass tube or on a glass rod} ([C03B 37/016](#) takes precedence; {bulk deposition of porous glass by OVD or VAD [C03B 37/014](#)}; surface treatment of glass by coating [C03C 17/02](#))
- U C03B 37/02 . . by drawing or extruding, {e.g. direct drawing of molten glass from nozzles; Cooling fins therefor ([C03B 37/04](#) takes precedence; sizing of the fibres [C03C 25/00](#))}
- U C03B 37/025 . . . from reheated softened tubes, rods, fibres or filaments, {e.g. drawing fibres from preforms (draw-down of tubes, rods or preforms to reduced diameter preforms [C03B 37/0124](#))}
- C03B 37/027 . . . Fibres composed of different sorts of glass, {e.g. glass optical fibres} ([C03B 37/0253](#), [C03B 37/028](#) take precedence)
- C03B 37/075 . Manufacture of {non-optical} fibres or filaments consisting of different sorts of glass or characterised by shape, e.g. undulated fibres ([C03B 37/022](#), [C03B 37/027](#), [C03B 37/028](#) take precedence; light guides [G02B 6/00](#))
- C03B 37/10 . Non-chemical treatment ([C03C 25/00](#) takes precedence; yarns or threads [D02](#); woven fabrics [D03](#); non-woven fabrics [D04](#))
- U C03B 37/14 . . Re-forming fibres or filaments, {i.e. changing their shape}([C03B 37/025](#) takes precedence)
- C03B 37/15 . . with heat application, e.g. for making optical fibres (fusion-splicing of light guides [G02B 6/255](#); treatment of light guides to shape optical elements [G02B 6/28](#))
- U C03B 2201/00 Type of glass produced**
- U C03B 2201/06 . Doped silica-based glasses
- U C03B 2201/20 . . doped with non-metals other than boron or fluorine
- C03B 2201/24 . . . doped with nitrogen, e.g. silicon oxy-nitride glasses
- NOTE**
- Codes [C03B 2201/28](#), [C03B 2201/31](#) and [C03B 2201/32](#) for the common dopants P, Ge and Al respectively, are only used for features specific to such dopants and not for general cases, such as for increasing the refractive index of silica glass.
- U C03B 2215/00 Press-moulding glass**
- U C03B 2215/02 . Press-mould materials
- U C03B 2215/08 . . Coated press-mould dies
- U C03B 2215/14 . . . Die top coat materials, e.g. materials for the glass-contacting layers
- C03B 2215/26 . . . Mixtures of materials covered by more than one of the groups [C03B 2215/16](#) to [C03B 2215/24](#), e.g. C-SiC, Cr-Cr<sub>2</sub>O<sub>3</sub>, SIALON

**Project: N/A (C03C)**

- U C03C 25/00 **Surface treatment of fibres or filaments from glass, minerals, or slags** **{{(woven fabrics D03; non-woven fabrics D04; treatment of fabrics in general or non-chemical aspects of treatment of glass fabrics D06M)}**
- U C03C 25/10  
C03C 25/48
- by coating
  - with two or more coatings having different compositions **{{(C03C 25/104 takes precedence C03C 25/104 takes precedence)}**

**NOTE**

If one or more of the individual coatings are of interest, for each of these coatings classification is also made in one or more of groups [C03C 25/24](#) to [C03C 25/46](#), in accordance with the note before group [C03C 25/24](#).

**Project: N/A (C04B)****C04B**

**LIME, MAGNESIA; SLAG; CEMENTS; COMPOSITIONS THEREOF, e.g. MORTARS, CONCRETE OR LIKE BUILDING MATERIALS; ARTIFICIAL STONE** **{{(roofing granules E04D 7/005)}**; **CERAMICS (devitrified glass-ceramics C03C 10/00); REFRACTORIES; TREATMENT OF NATURAL STONE**

**NOTES**

1. In this subclass, the following terms or expressions are used with the meanings indicated:
  - "fillers" includes pigments, aggregates and fibrous reinforcing materials;
  - "active ingredients" includes processing aids or property improvers, e.g. grinding aids used after the burning process or used in the absence of a burning process;
  - "mortars", "concrete" and "artificial stone" are to be considered as a single group of materials, and therefore, in the absence of an indication to the contrary, they include mortar, concrete and other cementitious compositions.
2. In groups [C04B 7/00](#) to [C04B 32/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
3. A composition classified in groups [C04B 26/00](#) or [C04B 28/00](#) is also classified in groups [C04B 14/00](#) to [C04B 24/00](#) if a filler or active ingredient is of interest.
4. In groups [C04B 2/00](#) to [C04B 32/00](#) and [C04B 38/00](#) to [C04B 41/00](#) it is desirable to classify the individual constituents of the mixtures, or other aspects relating to the mixtures or constituents, using Combination Sets with symbols chosen from groups [C04B 2/00](#) to [C04B 41/00](#).
5. In groups [C04B 2/00](#) to [C04B 32/00](#) and [C04B 38/00](#) to [C04B 41/00](#) it is desirable to classify the function of the individual constituents of the mixtures, or other aspects relating to the properties or uses of the mixtures or products obtained, using Combination Sets with symbols chosen from groups [C04B 2103/00](#) to [C04B 2111/00](#).
6. Groups [C04B 20/123](#) and [C04B 20/126](#) are used for indexing purposes only of documents classified in [C04B 20/12](#)

**WARNING**

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C04B 5/02](#) covered by [B01J 2/00](#),  
[C21B 3/06](#)  
[C04B 33/132](#) to [C04B 33/138](#) covered by  
[C04B 33/13](#)

C04B 35/035 covered by [C04B 35/26](#)  
+s.gr.  
C04B 35/567, [C04B 35/569](#), [C04B 35/576](#)  
, [C04B 35/577](#) covered by [C04B 35/565](#)  
, [C04B 35/571](#) to [C04B 35/575](#),  
[C04B 35/806](#)  
C04B 35/582 covered by [C04B 35/581](#),  
[C04B 35/806](#)  
C04B 35/583, [C04B 35/5835](#) covered by  
[C04B 35/583](#), [C04B 35/806](#)  
C04B 35/586, [C04B 35/587](#), [C04B 35/594](#)  
, [C04B 35/596](#) covered by [C04B 35/584](#)  
, [C04B 35/589](#) to [C04B 35/5935](#),  
[C04B 35/806](#)  
C04B 35/599 covered by [C04B 35/597](#)  
C04B 35/81 covered by [C04B 35/78](#)  
C04B 35/84 covered by [C04B 35/628](#),  
[C04B 35/78](#)

- U C04B 2/00** **Lime, magnesia or dolomite (hydraulic lime cements [C04B 7/34](#))**  
C04B 2/10
  - Preheating, burning calcining or cooling (decarbonation during burning of cement raw materials [C04B 7/43](#); {-obtaining CaO or MgO otherwise than by thermal decomposition of the corresponding carbonates [C01F 11/02](#), [C01F 5/02](#)})
- C04B 5/00** **Treatment of {metallurgical} slag (manufacture of slag wool [C03B](#); in, or for, the production of metals [C21B](#), [C22B](#)); Artificial stone from molten {metallurgical} slag (mechanical aspects [B28B 1/54](#){ {other cast stone [C04B 32/005](#)})**
- U C04B 7/00** **Hydraulic cements (calcium sulfate cements [C04B 11/00](#))**  
U C04B 7/36
  - Manufacture of hydraulic cements in general  
C04B 7/361
  - {Condition or time responsive control in hydraulic cement manufacturing processes (controlling or regulating in general [G05](#); [F27B 7/42](#) takes precedence)}  
U C04B 7/38
  - Preparing or treating the raw materials individually or as batches, {e.g. mixing with fuel; ([C04B 7/362](#) takes precedence)}  
C04B 7/42
  - Active ingredients added before, or during, the burning process (after the burning process [C04B 22/00](#), [C04B 24/00](#))
- U C04B 11/00** **Calcium sulfate cements**  
C04B 11/26
  - {strating from chemical gypsum}; starting from phosphogypsum or from waste, e.g. purification products of smoke ([C04B 11/02](#) takes precedence; chemical purification of smoke, fumes or exhaust gases [B01D 53/00](#){ {purification of gypsum [C01F 11/46](#)})  
C04B 11/28
  - Mixtures thereof with other inorganic cementitious materials ([C04B 7/04](#), [C04B 7/153](#) take precedence)
- U C04B 12/00** **Cements not provided for in groups [C04B 7/00](#) to [C04B 11/00](#)**  
C04B 12/02
  - Phosphate cements (in, or for, the manufacture of ceramics [C04B 33/00](#), [C04B 35/00](#))  
C04B 12/04
  - Alkali metal or ammonium silicate cements {Alkyl silicate cements; Silica sol cements; Soluble silicate cements} (alkali metal silicates per se, their preparation [C01B 33/32](#); ammonium silicates per se, their preparation [C01C 1/00](#))

**C04B 14/00 - C04B 20/00** Use of materials as fillers (ceramics [C04B 33/00](#), [C04B 35/00](#); reinforcing elements for building materials [E04C 5/00](#))

**C04B 14/00** **Use of inorganic materials as fillers, e.g. pigments, for mortars, concrete or artificial stone; Treatment of inorganic materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone (expanding or defibrillating materials [C04B 20/00](#))**

NOTE

Fillers with a well-defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#). However, if they are only characterised by their composition, classification is made in [C04B](#) only

- U C04B 14/02      • Granular materials, {e.g. micro-balloons}
- U C04B 14/04      • • Silica-rich materials; Silicates
- C04B 14/10      • • • Clay {(sepiolite [C04B 14/042](#); grog [C04B 18/025](#))}
- U C04B 14/36      • • Inorganic materials not provided for in groups {[C04B 14/022](#) and} [C04B 14/04](#) to [C04B 14/34](#)
- C04B 14/365     • • • {Gypsum (synthetic gypsum [C04B 18/0445](#), [C04B 18/064](#))}
- U C04B 14/38      • Fibrous materials; Whiskers
- U C04B 14/42      • • Glass
- C04B 14/44      • • • Treatment for enhancing alkali resistance {(composition of alkali resistant glass fibres [C03C 13/00](#); coating of glass fibres [C03C 25/10](#))}
- C04B 14/46      • • Rock wool; {Ceramic or silicate fibres ([C04B 14/40](#), [C04B 14/42](#) take precedence)}

**C04B 16/00** **Use of organic materials as fillers, e.g. pigments, for mortars, concrete or artificial stone; Treatment of organic materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone**

NOTE

Fillers with a well-defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#). However, if they are only characterised by their composition, classification is made in [C04B](#) only

- C04B 16/12      • characterised by the shape (fibrous macromolecular compounds [C04B 16/06](#); porous macromolecular compounds [C04B 16/08](#)), {e.g. perforated strips}

**C04B 18/00** **Use of agglomerated or waste materials or refuse as fillers for mortars, concrete or artificial stone (use of waste materials for the manufacture of cement [C04B 7/24](#)); Treatment of agglomerated or waste materials or refuse, specially adapted to enhance their filling properties in mortars, concrete or artificial stone**

NOTE

Fillers with a well defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#). However, if they are only characterised by their composition, classification is made in [C04B](#) only

- U C04B 18/04      • Waste materials; Refuse {([C04B 14/405](#) takes precedence)}
- C04B 18/14      • • from metallurgical processes (treatment of slag [C04B 5/00](#); for manufacture of cement [C04B 7/14](#))

**C04B 20/00**      **Use of materials as fillers for mortars, concrete or artificial stone according to more than one of groups [C04B 14/00](#) to [C04B 18/00](#) and characterised by shape or grain distribution; Treatment of materials according to more than one of the groups [C04B 14/00](#) to [C04B 18/00](#) specially adapted to enhance their filling properties in mortars, concrete or artificial stone; Expanding or defibrillating materials**

**NOTE**

Fillers with a well-defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#). However, if they are only characterised by their composition, classification is made in [C04B](#) only

C04B 20/0008      • {Materials specified by a shape not covered by [C04B 20/0016](#) to [C04B 20/0056](#); e.g. nanotubes}

U C04B 20/0076      • {characterised by the grain distribution}

C04B 20/008      • • {Micro- or nanosized fillers, e.g. micronised fillers with particle size smaller than that of the hydraulic binder (colloidal silica [C04B 14/062](#); silica fume [C04B 18/146](#))}

**C04B 22/00 -  
C04B 24/00**      **Use of materials as active ingredients**

**NOTE**

Active ingredients which react with cement compounds for forming new or modified mineralogical phases and are added before the hardening process, as well as cements added as additives to other cements, are classified in groups [C04B 7/00](#) to [C04B 12/00](#); e.g. in group [C04B 7/42](#).

C04B 22/008      • {Cement and like inorganic materials added as expanding or shrinkage compensating ingredients in mortar or concrete compositions, the expansion being the result of a recrystallisation (mixtures of cements [C04B 7/00](#), [C04B 28/00](#))}

**C04B 28/00**      **Compositions of mortars, concrete or artificial stone, containing inorganic binders or the reaction product of an inorganic and an organic binder, e.g. polycarboxylate cements**

**NOTE**

While using Combination Sets in this main group, the presence of an organic binder is indicated with symbols chosen from group [C04B 24/00](#), and the presence of a supplementary inorganic binder with symbols chosen from groups [C04B 7/00](#) to [C04B 12/00](#)

U C04B 28/02      • containing hydraulic cements other than calcium sulfates

C04B 28/021      • • {Ash cements, e.g. fly ash cements (fly ash as filler [C04B 18/08](#)); Cements based on incineration residues, e.g. alkali-activated slags from waste incineration (alkali-activated combustion residues as such [C04B 7/243](#); mixtures of the lime-pozzuolane type [C04B 28/18](#)); Kiln dust cements}

C04B 28/24      • containing alkyl, ammonium or metal silicates; containing silica sols {(reaction mixtures resulting in mineral polymers [C04B 28/006](#); polymeric reaction products of alkali metal silicates with isocyanates [C08G 18/3895](#))}

C04B 28/34      • containing cold phosphate binders

**NOTE**

While using Combination Sets in this main group, the presence of a reactive or reacted oxide is indicated with symbols chosen from [C04B 14/06](#) and [C04B 14/30](#) (and subgroups), except for boron oxide ( [C04B 22/0013](#) ) and oxides of the alkali or alkaline-earth metals, with the exception of magnesium ( [C04B 22/062](#) and [C04B 22/064](#) ), e.g. a composition containing a mixture of phosphoric acid, AlCr phosphate and magnesium oxide will be classified in

[C04B 28/346](#) and will be indexed with codes [C04B 14/303](#), [C04B 14/304](#) and [C04B 14/307](#). "Phosphates" includes monobasic and dibasic phosphates

- U C04B 32/00 Artificial stone not provided for in other groups of this subclass**  
C04B 32/005
- {Artificial stone obtained by melting at least part of the composition, e.g. metal ([C04B 28/36](#) and [C03C](#) take precedence; cast stone from molten slag [C04B 5/00](#); artificial stone obtained by melting the polymeric ingredient of the composition [C04B 26/00](#))}

**C04B 33/00 Clay-wares (monolithic refractories or refractory mortars [C04B 35/66](#); porous products [C04B 38/00](#))**

NOTE

In groups [C04B 33/00](#) to [C04B 33/36](#), from 01-10-2008 onwards, the indexing codes of groups [C04B 2235/00](#) to [C04B 2235/9646](#) are used (with the exception of [C04B 2235/349](#), [C04B 2235/6027](#), [C04B 2235/604](#) and [C04B 2235/9661](#) ) to identify aspects relating to ceramic starting mixtures and sintered ceramic products

- U C04B 33/02** • Preparing or treating the raw materials individually or as batches  
C04B 33/13 • • Compounding ingredients ([C04B 33/36](#), [C04B 35/71](#) take precedence; {pigments for ceramics [C09C 1/0009](#)})  
C04B 33/132 • • • Waste materials; Refuse; {Residues} ([C04B 33/16](#) takes precedence; {-waste glass [C04B 33/13](#)})

**C04B 35/00 Shaped ceramic products characterised by their composition {(porous ceramic products [C04B 38/00](#); ceramic articles characterised by particular shape, see the relevant classes, e.g. linings for casting ladles, tundishes, cups or the like [B22D 41/02](#); ceramic substrates for microelectronic semi-conductors [H01L 23/15](#)); Ceramics compositions (containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides other than as macroscopic reinforcing agents [C22C](#); {shaping of ceramics [B28B](#)); Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products {(Chemical preparation of powders of inorganic compounds [C01](#); infiltration of sintered ceramic preforms with molten metal [C04B 41/51](#))}**

NOTES

1. In this group, in the absence of an indication to the contrary, compositions are classified according to the constituent present in the highest proportion by weight.
2. In this group, magnesium is considered as an alkaline earth metal.
3. In this group, a composite is considered as a sintered material containing more than one phase, where the secondary phases are not resulting from sintering aids
4. In this group, fine ceramics are considered as products having a polycrystalline, fine-grained microstructure, e.g. of dimensions below 100 micrometers.
5. The production of ceramic powder is classified in this group in so far as it relates to the preparation of powder with specific characteristics.
6. In groups [C04B 35/00](#) to [C04B 35/83](#), from 01-01-2005 onwards, the indexing codes of groups [C04B 2235/00](#) to [C04B 2235/9692](#) are used to identify aspects relating to ceramic starting mixtures and sintered ceramic products

WARNING

Attention is drawn to WARNINGS 3 and 4 after subclass title

- U C04B 35/622
- Forming processes; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products
- NOTE
- In groups [C04B 35/622](#) and subgroups indexing codes are given for aspects relating to the preparation, properties or mechanical treatment or to heat treatments of green bodies. The codes are chosen from [C04B 2235/60](#) to [C04B 2235/668](#)
- C04B 35/62222
- {obtaining ceramic coatings (coating of mortars, concrete, artificial or natural stone or ceramics [C04B 41/45](#); laminated ceramic products [B32B 18/00](#); coating metallic materials [C23](#); coating of glass [C03C 17/00](#); applying ceramic coatings on silicon for semi-conductor purposes [H01L](#))}
- U C04B 35/62227
- {obtaining fibres}
- C04B 35/62272
- {based on non-oxide ceramics (carbon nanotubes [C01B 31/0206](#); carbon fibers [D01F 9/12](#))}
- C04B 35/626
- Preparing or treating the powders individually or as batches {(pigments for ceramics [C09C 1/0009](#)); preparing or treating macroscopic reinforcing agents for ceramic products, e.g. fibres; mechanical aspects section B}
- WARNING
- Groups [C04B 35/62605](#) to [C04B 35/62695](#) are not complete, see also other subgroups of [C04B 35/00](#), e.g. [C04B 35/626](#)
- C04B 35/64
- Burning or sintering processes ([C04B 33/32](#) takes precedence; {-powder metallurgy [B22F](#)})
- C04B 35/65
- Reaction sintering of free metal- or free silicon-containing compositions {([C04B 35/573](#), [C04B 35/591](#) take precedence)}
- U C04B 35/653
- Processes involving a melting step
- C04B 35/657
- for manufacturing refractories ([C04B 35/05](#), [C04B 35/107](#), [C04B 35/484](#) take precedence)
- C04B 35/71
- Ceramic products containing macroscopic reinforcing agents ([C04B 35/66](#) takes precedence; {-infiltration of a porous ceramic matrix with a material forming a non-ceramic phase [C04B 41/00](#), reaction infiltration with Si in order to form SiC [C04B 35/573](#), in order to form Si<sub>3</sub>N<sub>4</sub> [C04B 35/591](#))}
- NOTE
- In groups [C04B 35/71](#) to [C04B 35/83](#) the composition of the ceramic products is also classified in groups [C04B 35/01](#) to [C04B 35/597](#)
- C04B 37/00**
- Joining burned ceramic articles with other burned ceramic articles or other articles by heating (laminated products [B32B](#), [E04C](#); {soldering and welding materials [B23K 35/24](#))}**
- NOTE
- In groups [C04B 37/00](#) to [C04B 37/04](#), from 01-10-2008 onwards, features relating to interlayers, additional compositional information or further processing are indexed with codes chosen from [C04B 2237/00](#) to [C04B 2237/88](#)
- WARNING
- Groups [C04B 37/005](#), [C04B 37/006](#), [C04B 37/025](#) and [C04B 37/026](#) are no longer used for classification as from September 1, 2008. Aspects relating to interlayers are from that date indexed by codes chosen from [C04B 2237/02](#) to [C04B 2237/16](#)

**C04B 38/00** **Porous mortars, concrete, artificial stone or ceramic ware; Preparation thereof (treating slag with gases or gas generating material [C04B 5/06](#); {-expanded graphite [C04B 35/536](#)})**

NOTE

Porous materials based on fibres, i.e. materials where the porosity is due to the spaces between the fibres, are not classified in this maingroup, but in one or more of the other relevant maingroups of this subclass, e.g. in [C04B 30/02](#)

- U C04B 38/0006 · {Honeycomb structures (from one or more corrugated sheets by winding or stocking [C04B 38/0083](#))}
- U C04B 38/0016 · · {assembled from subunits}
- C04B 38/0019 · · · {characterised by the material used for joining separate subunits}

NOTE

{ When classifying in group [C04B 38/0019](#), classification is also made in [C04B 28/00](#) or [C04B 37/00](#) to give detailed information about the composition of the joining material }

C04B 38/009 · {Porous or hollow ceramic granular materials, e.g. micro-balloons ([C04B 18/027](#), [C04B 20/002](#) take precedence)}

- U C04B 38/06 · by burning-out added substances {by burning natural expanding materials or by sublimating or melting out added substances}

NOTE

Documents in which the characteristic feature is the choice of meltable or sublimable material or the physical aspects of the porous body obtained are classified accordingly, and symbols [C04B 38/0605](#) or [C04B 38/061](#) are allocated in Combination Sets.

- U C04B 38/063 · · {Preparing or treating the raw materials individually or as batches}
- U C04B 38/0635 · · · {Compounding ingredients ([C04B 38/0615](#) takes precedence)}
- C04B 38/069 · · · · {Other materials, e.g. catalysts ([C04B 33/13](#), [C04B 35/00](#) take precedence)}

**C04B 40/00** **Processes, in general, for influencing or modifying the properties of mortars, concrete or artificial stone compositions, e.g. their setting or hardening ability (active ingredients [C04B 22/00](#) to [C04B 24/00](#); hardening of a well-defined composition [C04B 26/00](#) to [C04B 28/00](#); making porous, cellular or lightening [C04B 38/00](#); mechanical aspects [B28](#), e.g. conditioning the materials prior to shaping [B28B 17/02](#))**

- U C04B 40/06 · Inhibiting the setting, e.g. mortars of the deferred action type containing water in breakable containers; {Inhibiting the action of active ingredients}

NOTE

Compositions with prolonged pot-life are not classified here. They are classified as other compositions and the symbol [C04B 2111/00086](#) is allocated in Combination Set.

C04B 40/0691 · · {Thermally activated mortars, e.g. by melting ingredients}

NOTE

In group [C04B 41/00](#), the following terms or expressions are used with the meanings indicated:

- "mortars", "concrete" and "artificial stone" cover materials after primary shaping

## C04B 41/00

After-treatment of mortars, concrete, artificial stone or ceramics; Treatment of natural stone (conditioning of the materials prior to shaping [C04B 40/00](#); applying liquids or other fluent materials to surfaces, in general [B05](#); grinding or polishing [B24](#); apparatus or processes for treating or working shaped articles of clay or other ceramic compositions, slag or mixtures containing cementitious material [B28B 11/00](#); working stone or stone-like materials [B28D](#); glazes, other than cold glazes, [C03C 8/00](#); etching, surface-brightening or pickling compositions [C09K 13/00](#))

## NOTES

- In this group, multiple classification is made according to the following rules:
  - when the substrate to be treated is of the artificial stone type, e.g. concrete, classification is made in the range [C04B 41/00](#) to [C04B 41/5392](#) as well as in the range [C04B 41/60](#) to [C04B 41/72](#)
  - when the substrate to be treated is of the ceramic type, classification is made in the range [C04B 41/00](#) to [C04B 41/5392](#) as well as in the range [C04B 41/80](#) to [C04B 41/91](#)
  - when the substrate to be treated is a-specific, classification is made only in the range [C04B 41/00](#) to [C04B 41/5392](#)
- In groups [C04B 41/0018](#) to [C04B 41/53](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
- Treating, e.g. coating or impregnating, a material with the same material or with a substance which ultimately is transformed into the same material is not considered after-treatment for this group but is classified as preparation of the material, e.g. a carbon body impregnated with a carbonisable substance is classified in [C04B 35/52](#).
- In groups [C04B 41/00](#) to [C04B 41/53](#), it is desirable to add the indexing codes relating to the nature of the substrate being treated. The indexing codes, which are chosen from groups [C04B 26/00](#) to [C04B 38/00](#) should be unlinked.
- In groups [C04B 41/00](#) to [C04B 41/53](#), it is desirable to add the indexing codes relating to aspects of the coating composition or to the method of application. The indexing codes, which are chosen from groups [C04B 41/00](#) to [C04B 41/5392](#) should be unlinked.
- Attention is drawn to internal Note (2) following the title of subclass [C04B](#).

## U C04B 41/45

- Coating or impregnating (paints [C09D](#)), {e.g. injection in masonry, partial coating of green or fired ceramics, organic coating compositions for adhering together two concrete elements (ion-implantation [C04B 41/0027](#))}

## NOTES

- In group [C04B 41/45](#) and sub-groups, as a general rule, classification is made according to the end products, rather than according to the starting materials, in the coating or impregnating compositions.
- In groups [C04B 41/45](#) to [C04B 41/528](#) the following term is used with the meaning indicated:
  - "coating" covers material applied to the substrates as powdery material or applied from the gas or liquid phase, e.g. as a slurry; it only covers the use of preformed sheet-like elements in so far as the thickness of these sheets is small compared with the thickness of the substrate and so far as the resulting product is not exclusively one of the type classifiable in [B32B](#)

## U C04B 41/4505

- {characterised by the method of application}

## U C04B 41/4564

- · {Electrolytic or electrophoretic processes, e.g. electrochemical re-alkalisation of reinforced concrete (desalination [C04B 41/53](#))}

## C04B 41/4566

- · · {Electrochemical re-alkalisation (electrochemical desalination [C04B 41/5369](#); cathodic protection [C23F 13/02](#))}

- C04B 41/4584
- • {Coating or impregnating of particulate or fibrous ceramic material ([C04B 20/10](#)-, [C04B 35/628](#) take precedence)}
- U C04B 41/46
- • with organic materials
- C04B 41/49
- • • Compounds having one or more carbon-to-metal or carbon-to-silicon linkages {Organo-clay compounds; Organo-silicates, i.e. ortho- or polysilicic acid esters (to obtain SiO<sub>2</sub> [C04B 41/5089](#)-, [C04B 41/5035](#)); Organo-phosphorus compounds; Organo-inorganic complexes}
- NOTE
- As distinct from the general practice in [C04B 41/00](#)-, classification in [C04B 41/49](#) and sub-groups is done according to the nature of the starting products, not according to the nature of the end products
- U C04B 41/50
- • with inorganic materials
- C04B 41/5022
- • • {with vitreous materials (composition of vitreous glazes and enamels [C03C](#)-, ceramic pigments [C09C 1/0009](#))}
- NOTE
- Glazing of concrete, natural or artificial stone or ceramics is only classified in [C04B 41/5022](#) when non-compositional aspects are important, e.g. aspects relating to the method of application or the choice of the substrate
- C04B 41/5072
- • • {with oxides or hydroxides not covered by [C04B 41/5025](#) ([C04B 40/0236](#) takes precedence; boron oxide [C04B 41/5006](#))}
- C04B 41/51
- • • Metallising, {e.g. infiltration of sintered ceramic preforms with molten metal (covering materials with metals in general [C23C](#)-, ceramic compositions containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides, other than as macroscopic reinforcing agents [C22C](#)-, infiltration of preforms containing free metal, e.g. cermets [C22C](#))}
- U C04B 41/53
- involving the removal of at least part of the materials of the treated article, {e.g. etching, drying of hardened concrete ([C04B 41/0036](#) to [C04B 41/0054](#) take precedence)}
- C04B 41/5338
- • {Etching (for obtaining decorative effects [B44C 1/22](#)-, etching of specific electronic compounds, see the relevant places, e.g. etching of semiconductor bodies [H01L 21/306](#))}
- U C04B 41/5369
- • {Desalination, e.g. of reinforced concrete}
- C04B 41/5376
- • • {Electrochemical desalination (electrochemical re-alkalisation [C04B 41/4566](#)-, drying by electro-osmosis [E04B 1/7007](#))}
- U C04B 2111/00**
- Mortars, concrete or artificial stone or mixtures to prepare them, characterised by specific function, property or use**
- U C04B 2111/00034
- Physico-chemical characteristics of the mixtures
- C04B 2111/00043
- • Anhydrous mixtures
- NOTE
- Code [C04B 2111/00043](#) is only used in combination with groups [C04B 26/00](#) to [C04B 26/32](#)-.

**Project: N/A (C07B)**

- U C07B 61/00**
- Other general methods**
- C07B 61/02
- Generation of organic free radicals; {-Organic free radicals per se}

## Project: N/A (C07C)

## C07C

## ACYCLIC OR CARBOCYCLIC COMPOUNDS

NOTES

1. In this subclass, the following terms or expressions are used with meanings indicated:

- "bridged" means the presence of at least one fusion other than ortho, peri or spiro;
- two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed;
- "condensed ring system" is a ring system in which all rings are condensed among themselves;
- "number of rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
- "quinones" are compounds derived from compounds containing a six-membered aromatic ring or a system comprising six-membered aromatic rings (which system may be condensed or not condensed) by replacing two or four CH groups of the six-membered aromatic rings by C=O groups, and by removing one or two carbon-to-carbon double bonds, respectively, and rearranging the remaining carbon-to-carbon double bonds to give a ring or ring system with alternating double bonds, including the carbon-to-oxygen bonds; this means that acenaphthenequinone or camphorquinone are not considered as quinones.

2. In this subclass, in the absence of an indication to the contrary, a process is classified in the last appropriate place.

3. In this subclass, in the absence of an indication to the contrary, "quaternary ammonium compounds" are classified with the corresponding "non-quaternised nitrogen compounds".

4. For the classification of compounds in groups [C07C 1/00](#) to [C07C 71/00](#) and [C07C 401/00](#) to [C07C 409/00](#) :

- a compound is classified considering the molecule as a whole (rule of the "whole molecule approach");
- a compound is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;
- a compound is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes six-membered aromatic ring, unless otherwise specified or implicitly derivable from the subdivision.

5. For the classification of compounds in groups [C07C 201/00](#) to [C07C 395/00](#), i.e. after the functional group has been determined according to the "last place rule", a compound is classified according to the following principles:

- compounds are classified in accordance with the nature of the carbon atom to which the functional group is attached;
- a carbon skeleton is a carbon atom, other than a carbon atom of a carboxyl group, or a chain of carbon atoms bound to each other, a carbon skeleton is considered to be terminated by every bond to an element other than carbon or to a carbon atom of a carboxyl group;
- when the molecule contains several functional groups, only functional groups linked to the same carbon skeleton as the one first determined are considered;
- a carbon skeleton is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;

- a carbon skeleton is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes a six-membered aromatic ring.

6. When classifying in this subclass, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

7. When a process is classified in a process group, combination sets are used to indicate the product of the process. A combination set consists of a process group, followed by and linked to the group of the product. The products are selected from the corresponding product groups.

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[C07C 27/02](#) covered by [C07C 29/00](#), [C07C 51/00](#)  
[C07C 47/042](#), [C07C 47/045](#), [C07C 47/048](#), [C07C 47/052](#), [C07C 47/055](#),  
[C07C 47/058](#) covered by [C07C 47/04](#)  
[C07C 47/07](#), [C07C 47/09](#) covered by [C07C 47/06](#)  
[C07C 53/04](#) covered by [C07C 53/02](#)  
[C07C 57/045](#), [C07C 57/05](#), [C07C 57/055](#), [C07C 57/065](#), [C07C 57/07](#),  
[C07C 57/075](#) covered by [C07C 57/04](#)  
[C07C 69/025](#), [C07C 69/03](#), [C07C 69/035](#) covered by [C07C 69/003](#) to  
[C07C 69/017](#) and [C07C 69/02](#)  
[C07C 69/347](#), [C07C 69/353](#) covered by [C07C 69/003](#) to [C07C 69/017](#) and  
[C07C 69/34](#)  
[C07C 69/527](#) covered by [C07C 69/003](#) to [C07C 69/017](#) and  
[C07C 69/52](#)  
[C07C 69/767](#), [C07C 69/773](#) covered by [C07C 69/003](#) to [C07C 69/017](#) and  
[C07C 69/76](#)  
[C07C 69/83](#) covered by [C07C 69/003](#) to [C07C 69/017](#) and [C07C 69/82](#)

**C07C 1/00 -  
C07C 15/00**

**Hydrocarbons (derivatives of cyclohexane or of a cyclohexene {or of cyclohexadiene}, having a side-chain containing an acyclic unsaturated part of at least four carbon atoms, this part being directly attached to the cyclohexane or cyclohexene {or cyclohexadiene} rings [C07C 403/00](#); preparation of macromolecular compounds [C08](#); production or separation from undefined hydrocarbon mixtures such as petroleum oil [C10G](#); natural gas, synthetic natural gas, liquefied petroleum gas [C10L 3/00](#); electrolytic or electrophoretic processes [C25B](#))**

**C07C 27/00 -  
C07C 71/00**

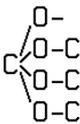
**Compounds containing carbon and oxygen, with or without hydrogen or halogens (irradiation products of cholesterol or its derivatives [C07C 401/00](#); vitamin D derivatives, 9,10-seco cyclopenta[a]phenanthrene or analogues obtained by chemical preparation without irradiation [C07C 401/00](#); derivatives of cyclohexane or of a cyclohexene {or of cyclohexadiene}, having a side-chain containing an acyclic unsaturated part of at least four carbon atoms, this part being directly attached to the cyclohexane or cyclohexene {or cyclohexadiene} rings [C07C 403/00](#); prostaglandins or derivatives thereof [C07C 405/00](#); peroxy compounds [C07C 407/00](#), [C07C 409/00](#))**

**U C07C 29/00**

**Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom not belonging to a six-membered aromatic ring**

C07C 29/03

- by addition of hydroxy groups to unsaturated carbon-to-carbon bonds, e.g. with the aid of H<sub>2</sub>O<sub>2</sub> (by simultaneous introduction of -OH groups and halogens [C07C 29/64](#))

- U C07C 43/00 Ethers; Compounds having  groups,  groups or 
- groups
- U C07C 43/02 · Ethers
- U C07C 43/03 · · having all ether-oxygen atoms bound to acyclic carbon atoms
- U C07C 43/04 · · · Saturated ethers
- U C07C 43/10 · · · · of polyhydroxy compounds
- C07C 43/11 · · · · · Polyethers containing -O-(C-C-O)<sub>n</sub> units with  $2 \leq n \leq 10$
- C07C 201/00 -  
C07C 291/00 **Compounds containing carbon and nitrogen with or without hydrogen, halogens or oxygen (irradiation products of cholesterol or its derivatives C07C 401/00; vitamin D derivatives, 9,10-seco cyclopenta[a]phenanthrene or analogues obtained by chemical preparation without irradiation C07C 401/00; derivatives of cyclohexane or of a cyclohexene {or of cyclohexadiene}, having a side-chain containing an acyclic unsaturated part of at least four carbon atoms, this part being directly attached to the cyclohexane or cyclohexene {or cyclohexadiene} rings C07C 403/00; prostaglandins or derivatives thereof C07C 405/00; peroxy compounds C07C 407/00, C07C 409/00)**
- C07C 301/00 -  
C07C 2531/00 **Compounds containing carbon together with sulfur, selenium, or tellurium, with or without hydrogen, halogens, oxygen, or nitrogen (irradiation products of cholesterol or its derivatives C07C 401/00; vitamin D derivatives, 9-10-seco cyclopenta[a]phenanthrene or analogues obtained by chemical preparation without irradiation C07C 401/00; derivatives of cyclohexane or of a cyclohexene {or of cyclohexadiene}, having a side-chain containing an acyclic unsaturated part of at least four carbon atoms, this part being directly attached to the cyclohexane or cyclohexene {or cyclohexadiene} rings C07C 403/00; prostaglandins or derivatives thereof C07C 405/00; peroxy compounds C07C 407/00, C07C 409/00)**
- C07C 403/00 **Derivatives of cyclohexane or of a cyclohexene {or of cyclohexadiene}, having a side-chain containing an acyclic unsaturated part of at least four carbon atoms, this part being directly attached to the cyclohexane or cyclohexene {or cyclohexadiene} rings, e.g. vitamin A, beta-carotene, beta-ionone**
- C07C 403/20 · having side-chains substituted by carboxyl groups {or halides, anhydrides, or (thio)esters thereof}
- C07C 2523/00 **Catalysts comprising metals or metal oxides or hydroxides, not provided for in group C07C 2521/00 (C07C 2521/16 takes precedence)**
- NOTE  
The indexing codes of group C07C 2523/00 are associated with groups C07C 1/00 to C07C 6/00.

## Project: N/A (C07D)

- U C07D 239/00 **Heterocyclic compounds containing 1,3-diazine or hydrogenated 1,3-diazine rings**
- U C07D 239/02 · not condensed with other rings
- U C07D 239/24 · · having three or more double bonds between ring members or between ring members and non-ring members

- U C07D 239/28
- • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, directly attached to ring carbon atoms
- U C07D 239/32
- • • • One oxygen, sulfur or nitrogen atom
- C07D 239/42
- • • • • One nitrogen atom (nitro radicals [C07D 239/30](#); benzenesulfonamido-pyrimidines [C07D 239/69](#))

**C07D 451/00 -  
C07D 521/00**

**Heterocyclic compounds containing condensed hetero ring systems**  
**[C07D 451/00 - C07D 517/00](#) cover compounds containing one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system, with or without other non- condensed hetero rings. For the purpose of classification in groups [C07D 451/00 - C07D 519/00](#), the degree of hydrogenation of the ring system is not taken into consideration. For the purpose of classification in groups [C07D 451/00 - C07D 463/00](#), [C07D 473/00 - C07D 477/00](#), [C07D 489/00](#), [C07D 499/00 - C07D 507/00](#), the wording of the groups has to be understood, in the absence of an indication to the contrary, as including ring systems further condensed with carbocyclic rings or ring systems, but excluding ring systems further condensed with other hetero rings, either directly or through a common carbocyclic ring system, e.g. sparteine is classified in group [C07D 471/22](#), not in group [C07D 455/02](#). In groups [C07D 471/00](#), [C07D 487/00](#), [C07D 491/00 - C07D 498/00](#) or [C07D 513/00 - C07D 517/00](#), the subdivision is based on the number of relevant hetero rings.**

**C07D 463/00**

**Heterocyclic compounds containing 1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:**



**condensed, e.g. 2,3-condensed with an oxygen-, nitrogen- or sulfur-containing hetero ring**

**WARNING**

The IPC subgroups of [C07D 463/00](#), introduced in the CPC scheme in October 2007, might be temporarily incomplete as a number of documents presently classified in CPC subgroups of [C07D 463/00](#) still needs reclassification to these IPC subgroups

**C07D 491/00**

**Heterocyclic compounds containing in the condensed ring system both one or more rings having oxygen atoms as the only ring hetero atoms and one or more rings having nitrogen atoms as the only ring hetero atoms, not provided for by groups [C07D 451/00](#) to [C07D 459/00](#), [C07D 463/00](#), [C07D 477/00](#) or [C07D 489/00](#)**

**C07D 498/00**

**Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and oxygen atoms as the only ring hetero atoms (4-oxa-1-azabicyclo [3.2.0] heptanes, e.g. oxapenicillins [C07D 503/00](#); 5-oxa-1-azabicyclo [4.2.0] octanes, e.g. oxacephalosporins [C07D 505/00](#); analogues thereof having ring oxygen atoms in other position [C07D 507/00](#))**

**C07D 507/00**

**Heterocyclic compounds containing a condensed beta-lactam ring system, not provided for by groups [C07D 463/00](#), [C07D 477/00](#) or [C07D 499/00](#) to [C07D 505/00](#); Such ring systems being further condensed**

- C07D 513/00** Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen and sulfur atoms as the only ring hetero atoms, not provided for in groups [C07D 463/00](#), [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#)
- C07D 515/00** Heterocyclic compounds containing in the condensed system at least one hetero ring having nitrogen, oxygen, and sulfur atoms as the only ring hetero atoms, not provided for in groups [C07D 463/00](#), [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#)
- U C07D 519/00** Heterocyclic compounds containing more than one system of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring system not provided for in groups [C07D 453/00](#) or [C07D 455/00](#)
- C07D 519/06
- containing at least one condensed beta-lactam ring system, provided for by groups [C07D 463/00](#), [C07D 477/00](#) or [C07D 499/00](#) to [C07D 507/00](#), e.g. a penem or a cepham system

**Project: N/A (C07F)**

- U C07F 9/00** **Compounds containing elements of the 5th Group of the Periodic System**
- U C07F 9/02** • Phosphorus compounds (sugar phosphates [C07H 11/04](#); nucleotides [C07H 19/00](#), [C07H 21/00](#); nucleic acids [C07H 21/00](#))
- U C07F 9/28** • • with one or more P-C bonds
- C07F 9/30** • • • Phosphinic acids  $R_2P(=O)(OH)$ ; Thiophosphinic acids {-i.e.  $R_2P(=X)(XH)$  ( $X = S, Se$ )}
- C07F 9/38** • • • Phosphonic acids  $RP(=O)(OH)_2$ ; Thiophosphonic acids {-i.e.  $RP(=X)(XH)_2$  ( $X = S, Se$ )}
- U C07F 9/42** • • • • Halides thereof
- C07F 9/425** • • • • {Acid or estermonohalides thereof, e.g.  $RP(=X)(YR)(Hal)$ ; ( $X, Y = O, S$  ( $X, Y = O, S$ ;  $R = H$ , or hydrocarbon group);  $R = H$ , or hydrocarbon group)}
- C07F 9/46** • • • Phosphinous acids  $R_2P-OH$ ; Thiophosphinous acids; Aminophosphines  $R_2P-NH_2$  {-including  $R_2P(=O)H$ ; derivatives thereof}
- C07F 9/48** • • • Phosphonous acids  $RP(OH)_2$ ; Thiophosphonous acids {-including  $RHP(=O)(OH)$ ; Derivatives thereof}
- U C07F 9/50** • • • Organo-phosphines
- U C07F 9/505** • • • • {Preparation; Separation; Purification; Stabilisation}
- C07F 9/5063** • • • • {from compounds having the structure P-H or P-Heteroatom, in which one or more of such bonds are converted into P-C bonds} ([C07F 9/5059](#) takes precedence)}
- C07F 9/5072** • • • • • {from starting materials having the structure P-H} ([C07F 9/5059](#) takes precedence)}
- C07F 15/00** **Compounds containing elements of the 8th Group of the Periodic System; {-General methods of preparation}**

**Project: N/A (C07G)**

- C07G 13/00** Vitamins (vitamin K1 [C07C 50/14](#); pantothenic acid [C07C 235/12](#); vitamins of the D group [C07C 401/00](#); vitamin A [C07C 403/08](#); pyridoxal, pyridoxamin [C07D 213/66](#); pyridoxin [C07D 213/67](#); vitamin C [C07D 307/62](#); tocopherols [C07D 311/72](#); lipoic acid [C07D 339/04](#); vitamin B1 [C07D 415/00](#); riboflavin [C07D 475/14](#); biotin [C07D 495/04](#); sideramines, corresponding deoferri compounds [C07F 15/03](#); vitamin B12 [C07H 23/00](#))

## Project: N/A (C07H)

## C07H

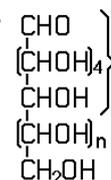
**SUGARS; DERIVATIVES THEREOF; NUCLEOSIDES; NUCLEOTIDES; NUCLEIC ACIDS (derivatives of aldonic or saccharic acids [C07C](#); [C07D](#); aldonic acids, saccharic acids [C07C 59/105](#); [C07C 59/285](#); cyanohydrins [C07C 255/16](#); glycols [C07D](#); compounds of unknown constitution [C07G](#); polysaccharides, derivatives thereof [C08B](#); DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification [C12N 15/00](#); sugar industry [C13](#))**

NOTES

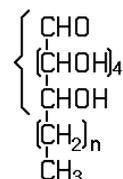
1. This subclass covers compounds containing saccharide radicals (see the definitions in Note (3) below).
2. This subclass does not cover polysaccharides which for the purpose of this subclass are defined as having more than five saccharide radicals attached to each other by glycosidic linkages.
3. In this subclass, the following expressions are used with the meanings indicated:
  - "saccharide radical" which is derived from acyclic polyhydroxy-aldehydes or acyclic polyhydroxy-ketones, or from their cyclic tautomers, by removing hydrogen atoms or by replacing hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium, in accordance with either of the following definitions:

## a. It

- i. consists of an uninterrupted carbon skeleton and oxygen atoms directly attached thereto, and
- ii. is considered to be terminated by every bond to a carbon atom of a cyclic structure and by every bond to a carbon atom having three bonds to hetero atoms, e.g. ester or nitrile radicals, and
- iii. contains within the carbon skeleton an unbranched sequence of at the most six carbon atoms in which at least three carbon atoms — at least two in the case of a skeleton having only four carbon atoms — have one single bond to an oxygen atom as the only hetero bond, and
  - in a cyclic or acyclic sequence, at least one other carbon atom has two single bonds to oxygen atoms as the only hetero bonds, or
  - in an acyclic sequence, at least one other carbon atom has one double bond to an oxygen atom as the only hetero bond, the said sequence containing at the most one double bond, i.e. C=C or possibly ketalised C=O), in addition to the hetero bonds mentioned above under (A) or (B), e.g. the compounds



sequence of at the most six carbon atoms, having bonds to oxygen as defined in this Note



n being an integer, are classified in group [C07H 3/02](#);

- b. It is also a radical derived from a radical as defined in (a) above by replacing at the most four of the specified hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium;

- "heterocyclic radical" or "hetero ring" is considered to exclude saccharide radicals as defined above

4. Attention is drawn to Note (3) after class [C07](#), which defines the last place priority rule applied in the range of subclasses [C07C-C07K](#) and within these subclasses.

**U C07H 3/00**

**Compounds containing only hydrogen atoms and saccharide radicals having only carbon, hydrogen, and oxygen atoms (preparation by hydrolysis of di-or polysaccharides [C13](#); separation or purification of sucrose, glucose, fructose, lactose or maltose [C13](#))**

C07H 3/08

• Deoxysugars; Unsaturated sugars (1,2-dideoxy-1-enoses [C07D](#)); Osones

C07H 11/00

**Compounds containing saccharide radicals esterified by inorganic acids; Metal salts thereof (halo-sugars [C07H 5/02](#); thio-, seleno-, or telluro-sugars [C07H 5/08](#))**

**Project: N/A (C07J)**

C07J 71/00

**Steroids in which the cyclopenta(a)hydrophenanthrene skeleton is condensed with a heterocyclic ring (spiro-condensed heterocyclic rings [C07J 21/00](#), [C07J 33/00](#), [C07J 43/00](#))**

**Project: N/A (C07K)**

C07K

**PEPTIDES (peptides in foodstuffs [A23](#); obtaining protein compositions for foodstuffs, working-up proteins for foodstuffs [A23J](#); preparations for medicinal purposes [A61K](#); peptides containing beta-lactam rings [C07D](#); cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, [C07D](#); ergot alkaloids of the cyclic peptide type [C07D 519/02](#); macromolecular compounds having statistically distributed amino acid units in their molecules, i.e. when the preparation does not provide for a specific; but for a random sequence of the amino acid units, homopolyamides and block copolyamides derived from amino acids [C08G 69/00](#); macromolecular products derived from proteins [C08H 1/00](#); preparation of glue or gelatine [C09H](#); single cell proteins, enzymes [C12N](#); genetic engineering processes for obtaining peptides [C12N 15/00](#); compositions for measuring or testing processes involving enzymes [C12Q](#); investigation or analysis of biological material [G01N 33/00](#))**

**NOTES**

1. In this subclass, the following terms or expressions are used with the meanings indicated:

- "amino acids" are compounds in which at least one amino group and at least one carboxyl group are bound to the same carbon skeleton and the nitrogen atom of the amino group may form part of a ring;
- "normal peptide link" is one between an alpha-amino group of an amino acid and the carboxyl group - in position 1 - of another alpha-amino acid;
- "abnormal peptide link" is a link where at least one of the linked amino acids is not an alpha-amino acid or a link formed by at least one carboxyl or amino group being part of the side chain of an alpha-amino acid;
- "peptides" are compounds containing at least two amino acid units, which are bound through at least one normal peptide link, including oligopeptides, polypeptides and proteins, where:
  - i. "linear peptides" may comprise rings formed through S-S bridges, or through a hydroxy or a mercapto group of a hydroxy- or mercapto-amino acid and the carboxyl group of another amino acid, (e.g. peptide lactones) but do not comprise rings which are formed only through peptide links;

- ii. "cyclic peptides" are peptides comprising at least one ring formed only through peptide links; the cyclisation may occur only through normal peptide links or through abnormal peptide links, e.g. through the 4-amino group of 2,4-diamino-butanoic acid. Thus, cyclic compounds in which at least one link in the ring is a non-peptide link are considered as "linear peptides";
- iii. "depsipeptides" are compounds containing a sequence of at least two alpha-amino acids and at least one alpha-hydroxy carboxylic acid, which are bound through at least one normal peptide link and ester links, derived from the hydroxy carboxylic acids, where:
  - a. "linear depsipeptides" may comprise rings formed through S-S bridges, or through an hydroxy or a mercapto group of an hydroxy- or mercapto-amino acid and the carboxyl group of another amino- of hydroxy-acid but do not comprise rings formed only through peptide or ester links derived from hydroxy carboxylic acids, e.g. Gly-Ala-Gly-OCH<sub>2</sub>CO<sub>2</sub>H and Gly-OCH<sub>2</sub>CO-Ala-Gly are considered as "linear depsipeptides", but HOCH<sub>2</sub>CO-Gly-Ala-Gly does not contain an ester link, and is thus a derivative of Gly-Ala-Gly which is covered by [C07K 5/08](#);
  - b. "cyclic depsipeptides" are peptides containing at least one ring formed only through peptide or ester links - derived from hydroxy carboxylic acids -, e.g. Gly-Ala-Gly-OCH<sub>2</sub>CO.

2. Fragments of peptides or peptides modified by removal or addition of amino acids, by substitution of amino acids by others, or by combination of these modifications, are classified as the parent peptides. However, fragments of peptides having only four or less amino acids are also classified in group [C07K 5/00](#).

3. Peptides prepared by chemical processes and having an amino acid sequence derived from naturally occurring peptides are classified with the natural one.

4. Peptides prepared by recombinant DNA technology are not classified according to the host, but according to the original peptide expressed, e.g. HIV peptide expressed in E. coli is classified with HIV peptides.

5. When classifying in this subclass, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">C07K 5/023</a>	covered by	<a href="#">C07K 5/0202</a>
<a href="#">C07K 5/027</a>	covered by	<a href="#">C07K 5/0205</a>
<a href="#">C07K 5/03</a>	covered by	<a href="#">C07K 5/0207</a>
<a href="#">C07K 5/033</a>	covered by	<a href="#">C07K 5/021</a>
<a href="#">C07K 5/037</a>	covered by	<a href="#">C07K 5/0215</a>
<a href="#">C07K 5/062</a>	covered by	<a href="#">C07K 5/06017</a>
<a href="#">C07K 5/065</a>	covered by	<a href="#">C07K 5/06078</a>
<a href="#">C07K 5/068</a>	covered by	<a href="#">C07K 5/06086</a>
<a href="#">C07K 5/072</a>	covered by	<a href="#">C07K 5/06104</a>
<a href="#">C07K 5/075</a>	covered by	<a href="#">C07K 5/0613</a>
<a href="#">C07K 5/078</a>	covered by	<a href="#">C07K 5/06139</a>
<a href="#">C07K 5/083</a>	covered by	<a href="#">C07K 5/0804</a>
<a href="#">C07K 5/087</a>	covered by	<a href="#">C07K 5/0812</a>
<a href="#">C07K 5/09</a>	covered by	<a href="#">C07K 5/0815</a>
<a href="#">C07K 5/093</a>	covered by	<a href="#">C07K 5/0819</a>
<a href="#">C07K 5/097</a>	covered by	<a href="#">C07K 5/0821</a>
<a href="#">C07K 5/103</a>	covered by	<a href="#">C07K 5/1005</a>

<a href="#">C07K 5/107</a>	covered by	<a href="#">C07K 5/1016</a>
<a href="#">C07K 5/11</a>	covered by	<a href="#">C07K 5/1019</a>
<a href="#">C07K 5/113</a>	covered by	<a href="#">C07K 5/1021</a>
<a href="#">C07K 5/117</a>	covered by	<a href="#">C07K 5/1024</a>
<a href="#">C07K 14/185</a>	covered by	<a href="#">C07K 14/1816</a>
<a href="#">C07K 14/725</a>	covered by	<a href="#">C07K 14/705</a>
<a href="#">C07K 14/73</a>	covered by	<a href="#">C07K 14/70514</a>
<a href="#">C07K 14/735</a>	covered by	<a href="#">C07K 14/70535</a>
<a href="#">C07K 14/74</a>	covered by	<a href="#">C07K 14/70539</a>

**U C07K 1/00**

**General methods for the preparation of peptides {i.e. processes for the organic chemical preparation of peptides or proteins of any length}**

- C07K 1/02 • in solution {([C07K 1/003](#)-, [C07K 1/006](#) take precedence)}
- C07K 1/04 • on carriers {([C07K 1/003](#)-, [C07K 1/006](#) take precedence)}
- C07K 1/06 • using protecting groups or activating agents {([C07K 1/003](#)-, [C07K 1/006](#) take precedence)}
- C07K 1/08 • • using activating agents {([C07K 1/003](#)-, [C07K 1/006](#) take precedence)}

**U C07K 5/00**

**Peptides containing up to four amino acids in a fully defined sequence; Derivatives thereof**

- U C07K 5/02 • containing at least one abnormal peptide link
- C07K 5/021 • • {containing the structure -NH-(X)<sub>n</sub>-C(=O)-, n being 5 or 6; for n > 6, classification in [C07K 5/06](#) to [C07K 5/10](#)-, according to the moiety having normal peptide bonds}
- U C07K 5/04 • containing only normal peptide links

**NOTE**

In groups [C07K 5/06](#) to [C07K 5/10](#) the following terms or expressions are used with the meaning indicated:

neutral: amino acids having in the sidechain the same number of amino groups and carboxylic acid groups or derivatives thereof, e.g. Gly;  
basic: amino acids having in the sidechain more amino groups than carboxylic acid groups or derivatives thereof, e.g. Arg;  
acidic: amino acids having in the sidechain more carboxylic acid groups or derivatives thereof than amino groups, e.g. Asp;  
aliphatic: amino acids having only acyclic carbon atoms in the sidechain, e.g. Ala aromatic;  
cycloaliphatic: amino acids having a carbocyclic ring in the sidechain, e.g. Phe  
heterocyclic: amino acids wherein the sidechain contains or is part of a heteroring, e.g. Pro;  
side chain: the R radical in the optionally functionalised amino acid R-CH(NH<sub>2</sub>)CO<sub>2</sub>H)

- U C07K 5/06 • • Dipeptides
- U C07K 5/06008 • • • {with the first amino acid being neutral}
- U C07K 5/06017 • • • • {and aliphatic}
- C07K 5/0606 • • • • • {the side chain containing heteroatoms not provided for by [C07K 5/06086](#) to [C07K 5/06139](#)-, e.g. Ser, Met, Cys, Thr}

**C07K 7/00 Peptides having 5 to 20 amino acids in a fully defined sequence; Derivatives thereof**NOTE

In this subgroup cyclic compounds related to specific compounds which are classified in a specific group, e.g. [C07K 7/062](#), are classified in this specific group only

- U C07K 7/04  
C07K 7/08
- Linear peptides containing only normal peptide links
  - · having 12 to 20 amino acids (gastrins [C07K 14/595](#); somatostatins [C07K 14/655](#); melanotropins [C07K 14/68](#))
- U C07K 14/00 **Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof**
- C07K 14/195
- from bacteria
- NOTE
- In groups [C07K 14/20](#) to [C07K 14/365](#), where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets.
- U C07K 14/435  
C07K 14/575
- from animals; from humans
  - · Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [C07K 14/665](#), e.g. corticotropin [C07K 14/695](#))
- U C07K 14/705
- · Receptors; Cell surface antigens; Cell surface determinants {(tumour specific antigens [C07K 14/4748](#))}
- C07K 14/70575
- · · {NGF/TNF-superfamily, e.g. CD70, CD95L, CD153, CD154 (NGF [C07K 14/48](#), TNF [C07K 14/525](#))}
- C07K 14/70578
- · · {NGF-receptor/TNF-receptor superfamily, e.g. CD27, CD30, CD40, CD95 (NGF-receptor [C07K 14/71](#), TNF-receptor [C07K 14/7151](#))}
- U C07K 16/00 **Immunoglobulins [IGs], e.g. monoclonal or polyclonal antibodies {(antibodies with enzymatic activity, e.g. abzymes [C12N 9/0002](#))}**
- NOTES
1. Documents characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified in [C07K 16/00](#) to [C07K 16/065](#) or [C07K 16/46](#) to [C07K 16/468](#)
  2. Documents not characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified only according to their specificity, where necessary accompanied by one or more appropriate indexing codes
- U C07K 16/18
- against material from animals or humans
- U C07K 16/28  
C07K 16/2875
- · against receptors, cell surface antigens or cell surface determinants
  - · · {against the NGF/TNF superfamily, e.g. CD70, CD95L, CD153, CD154 (against NGF [C07K 16/22](#), against TNF [C07K 16/241](#))}

**Project: N/A (C08B)****C08B**

**POLYSACCHARIDES; DERIVATIVES THEREOF (polysaccharides containing less than six saccharide radicals attached to each other by glycosidic linkages [C07H](#); fermentation or enzyme-using processes [C12P 19/00](#); sugar industry [C13](#); production of cellulose [D21](#))**

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [C08B 37/06](#) covered by [C08B 37/0045](#)  
- [C08B 37/10](#) covered by [C08B 37/0075](#)  
- [C08B 37/12](#) covered by [C08B 37/0039](#)

- U C08B 1/00** {Preparatory treatment of cellulose for making derivatives thereof, e.g. pre-treatment, pre-soaking, activation}
- C08B 1/02 · Rendering cellulose suitable for esterification {(esterification per se, [C08B 3/00](#)-, [C08B 5/00](#)-, [C08B 7/00](#) or [C08B 9/00](#))}
- C08B 9/00** Cellulose xanthate; Viscose {(formation of films [C08J 5/18](#)-, formation of fibres [D01F](#); rendering cellulose suitable for esterification [C08B 1/02](#))}
- U C08B 30/00** Preparation of starch, degraded or non-chemically modified starch, amylose, or amylopectin
- C08B 30/20 · Amylose or amylopectin (chemical derivatives thereof [C08B 33/00](#)-, [C08B 35/00](#))
- C08B 31/00** Preparation of derivatives of starch (derivatives of amylose [C08B 33/00](#)-, derivatives of amylopectin [C08B 35/00](#))
- C08B 37/00** Preparation of polysaccharides not provided for in groups [C08B 1/00](#) to [C08B 35/00](#); Derivatives thereof (cellulose [D21](#)-, {microbiological processes [C12P](#)})

**Project: N/A (C08F)**

**C08F**

**MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS**

NOTES

- In this subclass, boron or silicon are considered as metals.
- In this subclass, the following expression is used with the meaning indicated:
  - aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to:
    - an element other than carbon
    - a carbon atom having a double bond to one atom other than carbon
    - an aromatic carbocyclic ring or a heterocyclic ring.Examples: Polymers of
    - $\text{CH}_2=\text{CH}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{C}(=\text{O})\text{O}-\text{CH}_2-\text{CH}_2-\text{OH}$  are classified in group [C08F 16/28](#)
    - $\text{CH}_2=\text{CH}-\text{C}(=\text{O})-\text{CH}=\text{CH}_2$  are classified in group [C08F 16/36](#)
    - para- $\text{C}_6\text{H}_4\text{Cl}(\text{CH}=\text{CH}_2)$  are classified in group [C08F 12/18](#).
- In this subclass:
  - in the absence of an indication to the contrary, a catalyst or a polymer is classified in the last appropriate place .
  - {From April 2012 onwards, in a copolymer, the monomer in majority is given an Indexing Code and the monomer(s) in minority are given Indexing Code(s) in the form of a C-Set. The Indexing Codes are linked. The monomer in majority is always indicated first in the C-set. Example: a copolymer having ethylene in majority and styrene in minority is classified in ( [C08F 210/02](#)-, [C08F 212/08](#) ).}
- In this subclass:
  - macromolecular compounds and their preparation are classified in the groups for the type of compound prepared. General processes for the preparation of macromolecular compounds according to more than one main group are classified in the groups for the processes

- employed ( [C08F 2/00](#) to [C08F 8/00](#) ). Processes for the preparation of macromolecular compounds are also classified in the groups for the types of reactions employed, if of interest;
- b. subject matter relating to both homopolymers and copolymers is classified in groups [C08F 10/00](#) to [C08F 38/00](#);
  - c. subject matter limited to homopolymers is classified only in groups [C08F 110/00](#) to [C08F 138/00](#);
  - d. subject matter limited to copolymers is classified only in groups [C08F 210/00](#) to [C08F 246/00](#);
  - e. in groups [C08F 210/00](#) to [C08F 238/00](#)-, in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.
5. This subclass covers also compositions based on monomers which form macromolecular compounds classifiable in this subclass (paints [C09D 4/00](#);- adhesives [C09J 4/00](#) ). In this subclass:
- a. if the monomers are defined, classification is made according to the polymer to be formed:
    - in groups [C08F 10/00](#) to [C08F 246/00](#) if no preformed polymer is present;
    - in groups [C08F 251/00](#) to [C08F 291/00](#) if a preformed polymer is present, considering the reaction to take place as a graft or cross-linking reaction;
  - b. if the presence of compounding ingredients is of interest, classification is made in group [C08F 2/44](#) (sensitising agents [C08F 2/50](#);- catalysts [C08F 4/00](#) );
  - c. if the compounding ingredients are of interest per se, classification is also made in subclass [C08K](#).

## C08F 2/00

### Processes of polymerisation

#### NOTE

Group [C08F 2/00](#) and subgroups can be incomplete according to the following classification rules:

- if a process of polymerisation is specifically used for only one type of polymer, it is not classified in [C08F 2/00](#);-;
- in such a case, the classification symbol of [C08F 2/00](#) providing for the process of polymerisation may be used in the form of Combination Set in the groups providing for the polymer, e.g. ( [C08F 36/04](#)-, [C08F 2/14](#) )
- this method of classification is applied only when a note after the group providing for the polymer explicitly indicates which symbols of [C08F 2/00](#) may be used for forming the Combination Set.

## C08F 2/001

- {Multistage polymerisation processes characterised by a change in reactor conditions without deactivating the intermediate polymer ([C08F 295/00](#)-, [C08F 297/00](#) take precedence)}

## C08F 4/00

### Polymerisation catalysts (catalysts in general [B01J](#))

#### NOTES

1. Group [C08F 4/00](#) and subgroups can be incomplete according to the following classification rules:

- if a catalyst is specifically used for only one type of polymer, it is not classified in [C08F 4/00](#);-;
- in such a case, the classification symbol of [C08F 4/00](#) providing for the catalyst may be used as a symbol for a C-Set in the groups providing for the polymer, e.g. ( [C08F 12/04](#)-, [C08F 4/62](#) )

- this method of classification is applied only when a note after the group providing for the polymer explicitly indicates which symbols of [C08F 4/00](#) may be used for forming the C-set.
  - 2. When classifying in group [C08F 4/00](#), the type of catalyst can be further indexed by using indexing codes chosen from [C08F 2410/00](#), [C08F 2420/00](#) or their subgroups
- C08F 4/005
- {Friedel-Crafts catalysts in general}
- NOTE  
Where a carrier is considered of particular interest a further classification may be made in group [C08F 4/02](#).
- U C08F 4/42
- Metals; Metal hydrides; Metallo-organic compounds; Use thereof as catalyst precursors
- U C08F 4/44
- • selected from light metals, zinc, cadmium, mercury, copper, silver, gold, boron, gallium, indium, thallium, rare earths or actinides
- U C08F 4/46
- • • selected from alkali metals
- C08F 4/461
- • • • {Catalysts containing at least two different components covered by the same or by different subgroups of group [C08F 4/46](#), e.g. butyllithium + propylrubidium}
- C08F 4/60
- • • together with refractory metals, iron group metals, platinum group metals, manganese, rhenium {technetium} or compounds thereof
- NOTES
1. In groups [C08F 4/60](#) to [C08F 4/64](#), the term "component" comprises the transition metal or a compound thereof, pretreated or not { (pretreating per se [C08F 4/61](#), [C08F 4/63](#) and [C08F 4/65](#) ) }
  2. Group [C08F 4/60003](#) takes precedence over groups [C08F 4/602](#) to [C08F 4/619](#)
- C08F 4/605
- • • • Component covered by group [C08F 4/60](#) with a metal or compound covered by group [C08F 4/44](#), not provided for in a single group of groups [C08F 4/602](#) or [C08F 4/603](#) {([C08F 4/60003](#) - [C08F 4/60196](#) take precedence)}
- U C08F 4/62
- • • • Refractory metals or compounds thereof
- NOTE  
Group [C08F 4/62003](#) takes precedence over groups [C08F 4/622](#) to [C08F 4/639](#)
- C08F 4/625
- • • • • Component covered by group [C08F 4/62](#) with a metal or compound covered by group [C08F 4/44](#), not provided for in a single group of groups [C08F 4/622](#) or [C08F 4/623](#) {([C08F 4/62003](#) - [C08F 4/62196](#) take precedence)}
- U C08F 4/64
- • • • • Titanium, zirconium, hafnium or compounds thereof
- NOTE  
Group [C08F 4/64003](#) takes precedence over groups [C08F 4/642](#) to [C08F 4/659](#)
- C08F 4/645
- • • • • • Component covered by group [C08F 4/64](#) with a metal or compound covered by group [C08F 4/44](#), not provided for in a single group of groups [C08F 4/642](#) to [C08F 4/643](#) {([C08F 4/60003](#) - [C08F 4/60196](#) take precedence)}
- C08F 4/72
- • selected from metals not provided for in group [C08F 4/44](#) ([C08F 4/54](#) to [C08F 4/70](#) take precedence)

<b>C08F 6/00</b>	<p><b>Post-polymerisation treatments (<a href="#">C08F 8/00</a> takes precedence; of conjugated diene rubbers <a href="#">C08C</a>)</b></p> <p><u>NOTES</u></p> <p>1. In groups <a href="#">C08F 6/00</a> to <a href="#">C08F 6/28</a> the treatment of specific polymers is indicated using the subdivision of <a href="#">C08L 23/00</a> to <a href="#">C08L 57/12</a> in the form of C-Sets. Example: ( <a href="#">C08F 6/12</a>-, <a href="#">C08L 25/06</a> )</p> <p>2. Groups <a href="#">C08F 6/001</a>, <a href="#">C08F 6/006</a>, <a href="#">C08F 6/008</a>, <a href="#">C08F 6/02</a>-, <a href="#">C08F 6/04</a> take precedence over the other groups.</p>
C08F 6/02	<ul style="list-style-type: none"> <li>· Neutralisation of the polymerisation mass, e.g. killing the catalyst (short-stopping <a href="#">C08F 2/42</a> )}{also removal of catalyst residues}</li> </ul>
<b>C08F 8/00</b>	<p><b>Chemical modification by after-treatment (graft polymers, block polymers, cross-linking with unsaturated monomers or with polymers <a href="#">C08F 251/00</a> to <a href="#">C08F 299/00</a> ; of conjugated diene rubbers <a href="#">C08C</a>; cross-linking in general <a href="#">C08J</a>)</b></p> <p><u>NOTE</u></p> <p>Classification is given in the form of C-Sets when sufficient information is provided concerning the polymer to be modified. In groups <a href="#">C08F 8/00</a> to <a href="#">C08F 8/50</a>-, the chemical modification of specific polymers is indicated using the subdivisions of <a href="#">C08F 10/00</a> to <a href="#">C08F 34/04</a>-, <a href="#">C08F 38/00</a> to <a href="#">C08F 38/04</a>-, <a href="#">C08F 110/00</a> to <a href="#">C08F 134/04</a>-, <a href="#">C08F 138/00</a> to <a href="#">C08F 138/04</a>-, <a href="#">C08F 210/00</a> to <a href="#">C08F 234/04</a>-, <a href="#">C08F 238/00</a> to <a href="#">C08F 299/08</a>-. Example: ( <a href="#">C08F 8/44</a>-, <a href="#">C08F 16/06</a> ) Otherwise, only the <a href="#">C08F 8/00</a> - <a href="#">C08F 8/50</a> symbol(s) is (are) given.</p>
<b>C08F 10/00</b>	<p><b>Homopolymers and copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond</b></p> <p><u>NOTE</u></p> <p>In groups <a href="#">C08F 10/00</a> to <a href="#">C08F 10/14</a> the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of <a href="#">C08F 2/00</a> to <a href="#">C08F 2/58</a> or of <a href="#">C08F 4/00</a> to <a href="#">C08F 4/82</a> in the form of C-Sets. Example: ( <a href="#">C08F 10/02</a>-, <a href="#">C08F 4/651</a> )</p>
<b>C08F 12/00</b>	<p><b>Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring</b></p> <p><u>NOTES</u></p> <p>1. Until March 2012, in groups <a href="#">C08F 12/04</a> to <a href="#">C08F 12/08</a> the method of polymerisation might be indicated using the subdivision of <a href="#">C08F 2/02</a> to <a href="#">C08F 2/06</a>-, <a href="#">C08F 2/16</a> to <a href="#">C08F 2/30</a>-, <a href="#">C08F 2/34</a> or <a href="#">C08F 2/38</a> to <a href="#">C08F 2/46</a> in the form of C-sets; the nature of the catalyst might be indicated using the subdivision of <a href="#">C08F 4/00</a> to <a href="#">C08F 4/60</a>-, <a href="#">C08F 4/62</a>-, <a href="#">C08F 4/64</a> or <a href="#">C08F 4/68</a> to <a href="#">C08F 4/82</a> in the form of C-Sets. Example: ( <a href="#">C08F 12/08</a>-, <a href="#">C08F 2/20</a> )</p> <p>2. From April 2012 on, in groups <a href="#">C08F 12/00</a> to <a href="#">C08F 12/36</a> the method of polymerisation may be indicated using the subdivision of <a href="#">C08F 2/00</a> to <a href="#">C08F 2/60</a> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of <a href="#">C08F 4/00</a> to <a href="#">C08F 4/82</a> in the form of C-Sets. Example: ( <a href="#">C08F 12/08</a>-, <a href="#">C08F 2/56</a> )</p>
<b>U C08F 14/00</b>	<p><b>Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen</b></p>
U C08F 14/02	<ul style="list-style-type: none"> <li>· Monomers containing chlorine</li> </ul>

- U C08F 14/04  
C08F 14/06
- • Monomers containing two carbon atoms
  - • • Vinyl chloride
- NOTE  
In group [C08F 14/06](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#) to [C08F 2/06](#), [C08F 2/16](#) to [C08F 2/30](#), [C08F 2/34](#) or [C08F 2/38](#) to [C08F 2/46](#) in the form of C-Sets. Example: ( [C08F 14/06](#), [C08F 2/44](#) )
- C08F 14/18
- Monomers containing fluorine
- NOTE  
In group [C08F 14/18](#) and subgroups, the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#), [C08F 2/04](#), [C08F 2/16](#), [C08F 2/38](#), [C08F 2/44](#) and [C08F 2/46](#) in the form of C-Sets. Example: ( [C08F 14/22](#), [C08F 2/38](#) )
- U **C08F 20/00**
- Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical or a salt, anhydride, ester, amide, imide or nitrile thereof**
- U C08F 20/02  
C08F 20/10
- Monocarboxylic acids having less than ten carbon atoms, Derivatives thereof
  - • Esters
- NOTE  
In groups [C08F 20/12](#) to [C08F 20/14](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#) to [C08F 2/06](#), [C08F 2/16](#) to [C08F 2/30](#), [C08F 2/34](#) or [C08F 2/38](#) to [C08F 2/46](#) in the form of C-Sets. Example: ( [C08F 20/12](#), [C08F 2/26](#) )
- U C08F 20/42  
C08F 20/44
- • Nitriles
  - • • Acrylonitrile
- NOTE  
In group [C08F 20/44](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#) to [C08F 2/06](#), [C08F 2/16](#) to [C08F 2/30](#), [C08F 2/34](#) or [C08F 2/38](#) to [C08F 2/46](#) in the form of C-Sets. Example: ( [C08F 20/44](#), [C08F 2/46](#) )
- C08F 24/00**
- Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids [C08F 18/00](#); cyclic anhydrides of unsaturated acids [C08F 20/00](#), [C08F 22/00](#))**
- C08F 34/00**
- Homopolymers and copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids [C08F 18/00](#); cyclic anhydrides or imides [C08F 22/00](#))**
- C08F 36/00**
- Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds ([C08F 32/00](#) takes precedence)**
- NOTE  
In [C08F 36/00](#) to [C08F 36/22](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/60](#),

[C08F 4/62](#), [C08F 4/64](#), [C08F 4/642](#), [C08F 4/6421](#), [C08F 4/643](#) or [C08F 4/68](#) to [C08F 4/82](#) in the form of C-Sets. Example: ( [C08F 36/04](#), [C08F 4/642](#) )

**C08F 110/00 Homopolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond**

NOTE

In groups [C08F 110/00](#) to [C08F 110/14](#) the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) or of [C08F 4/00](#) to [C08F 4/82](#) in the form of C-Sets. Example: ( [C08F 110/14](#), [C08F 4/6592](#) )

**C08F 112/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring**

NOTE

From April 2012 on, in groups [C08F 112/00](#) to [C08F 112/36](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/60](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/82](#) in the form of C-Sets. Example: ( [C08F 112/08](#), [C08F 4/70](#) )

**C08F 124/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids [C08F 118/00](#); cyclic anhydrides of unsaturated acids [C08F 120/00](#), [C08F 122/00](#))**

**C08F 134/00 Homopolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids [C08F 118/00](#); cyclic anhydrides or imides [C08F 122/00](#))**

**C08F 136/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds ([C08F 132/00](#) takes precedence)**

NOTE

In [C08F 136/00](#) to [C08F 136/22](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/60](#), [C08F 4/62](#), [C08F 4/64](#), [C08F 4/642](#), [C08F 4/6421](#), [C08F 4/643](#) or [C08F 4/68](#) to [C08F 4/82](#) in the form of C-Sets. Example: ( [C08F 136/18](#), [C08F 2/26](#) )

**C08F 210/00 Copolymers of unsaturated aliphatic hydrocarbon having only one carbon-to-carbon double bond**

NOTE

In [C08F 210/00](#) to [C08F 210/18](#) the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) or of [C08F 4/00](#) to [C08F 4/82](#) in the form of C-Sets. Example: ( [C08F 210/06](#), [C08F 4/04](#) )

- C08F 212/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring
- NOTE  
From April 2012 on, in groups [C08F 212/00](#) to [C08F 212/36](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/60](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/82](#) in the form of C-Sets. Example: ( [C08F 212/08](#)-, [C08F 4/16](#) )
- C08F 224/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids [C08F 218/00](#); cyclic anhydrides of unsaturated acids [C08F 220/00](#), [C08F 222/00](#))
- C08F 234/00** Copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids [C08F 218/00](#); cyclic anhydrides or imides [C08F 222/00](#))
- C08F 236/00** Copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds ([C08F 232/00](#) takes precedence)
- NOTE  
In [C08F 236/00](#) to [C08F 236/22](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/00](#) to [C08F 2/58](#) in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of [C08F 4/00](#) to [C08F 4/60](#), [C08F 4/62](#), [C08F 4/64](#), [C08F 4/642](#), [C08F 4/643](#) or [C08F 4/68](#) to [C08F 4/82](#) in the form of C-Sets. Example: ( [C08F 236/10](#)-, [C08F 4/46](#) )
- U C08F 265/00** Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated monocarboxylic acids or derivatives thereof as defined in group [C08F 20/00](#)
- U C08F 265/04** · on to polymers of esters
- C08F 265/06** · · Polymerisation of acrylate or methacrylate esters on to polymers thereof
- NOTE  
In [C08F 265/06](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#)-, [C08F 2/16](#)-, [C08F 2/18](#) or [C08F 2/22](#) in the form of C-Sets. Example: ( [C08F 265/06](#)-, [C08F 2/16](#) )
- C08F 279/00** Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having two or more carbon-to-carbon double bonds as defined in group [C08F 36/00](#)
- NOTE  
In [C08F 279/02](#) and [C08F 279/04](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#)-, [C08F 2/16](#)-, [C08F 2/18](#) or [C08F 2/22](#) in the form of C-Sets. Example: ( [C08F 279/02](#)-, [C08F 2/22](#) )
- U C08F 283/00** Macromolecular compounds obtained by polymerising monomers on to polymers provided for in subclass [C08G](#) {(on to polymers modified by introduction of aliphatic unsaturated end or side groups [C08F 290/00](#))}
- C08F 283/006** · {on to polymers provided for in [C08G 18/00](#) ([C08F 283/004](#) takes precedence)}

- C08F 283/01      · on to unsaturated polyesters {(C08F 283/004 takes precedence)}
- NOTE  
After the symbol of group [C08F 283/01](#) - [C08F 283/14](#) and using the C-Sets, notations concerning the method of polymerisation or the nature of the catalyst can be indicated. These notations are selected from groups [C08F 2/00](#)-, [C08F 2/16](#)-, [C08F 2/46](#)-, [C08F 2/48](#)-, [C08F 2/50](#)-, [C08F 4/00](#)-, [C08F 4/04](#)-, [C08F 4/06](#)-, [C08F 4/28](#) and [C08F 4/42](#)-. Example: ( [C08F 283/01](#)-, [C08F 2/16](#) )

- C08F 291/00      Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds according to more than one of the groups [C08F 251/00](#) to [C08F 289/00](#)**

NOTE

In [C08F 291/00](#) the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#)-, [C08F 2/16](#)-, [C08F 2/18](#) or [C08F 2/22](#) in the form of C-Sets. Example: ( [C08F 291/00](#)-, [C08F 2/16](#) )

- C08F 299/00      Macromolecular compounds obtained by interreacting polymers involving only carbon-to-carbon unsaturated bond reactions, in the absence of non-macromolecular monomers (in the presence of non-macromolecular monomers [C08F 251/00](#) to [C08F 291/00](#)); involving other reactions [C08G 81/00](#))**

**Project: N/A (C08G)**

- C08G 16/00      Condensation polymers of aldehydes or ketones with monomers not provided for in the groups [C08G 4/00](#) to [C08G 14/00](#) (with polynitriles [C08G 69/38](#))**

- U    C08G 59/00      Polycondensates containing more than one epoxy group per molecule (low-molecular-weight polyepoxy compounds [C07](#)); Macromolecules obtained by polymerising compounds containing more than one epoxy group per molecule using curing agents or catalysts which react with the epoxy groups**

- C08G 59/18      · Macromolecules obtained by polymerising compounds containing more than one epoxy group per molecule using curing agents or catalysts which react with the epoxy groups; {e.g. general methods of curing}

- U    C08G 63/00      Macromolecular compounds obtained by reactions forming a carboxylic ester link in the main chain of the macromolecule (polyester-amides [C08G 69/44](#); polyester-imides [C08G 73/16](#))**

NOTE

Compounds characterised by the chemical constitution of the polyesters are classified in the groups for the type of polyester compound. Compounds characterised by the preparation process of the polyesters are classified in the groups for the process employed (groups [C08G 63/78](#) to [C08G 63/87](#)). Compounds characterised both by the chemical constitution and by the preparation process are classified according to each of these aspects.

- U    C08G 63/78      · Preparation processes
- U    C08G 63/82      · · characterised by the catalyst used
- C08G 63/826      · · · {Metals not provided for in groups [C08G 63/83](#) to [C08G 63/86](#) ([C08G 63/823](#) takes precedence)}

**Project: N/A (C08H)**

- C08H**                    **DERIVATIVES OF NATURAL MACROMOLECULAR COMPOUNDS**  
(polysaccharides [C08B](#); natural rubber [C08C](#); natural resins or their derivatives [C09F](#); bituminous materials [C10](#))
- C08H 6/00**            **Macromolecular compounds derived from lignin, {e.g. tannins, humic acids}**
- NOTE  
Attention is drawn to the following place, which could be of interest for search:
- Lignin or lignin derivatives, [C07G 1/00](#)
- C08H 99/00**           **Subject matter not provided for in other groups of this subclass, {e.g. flours, kernels}**

**Project: N/A (C08J)**

- C08J**                    **WORKING-UP; GENERAL PROCESSES OF COMPOUNDING; AFTER-TREATMENT NOT COVERED BY SUBCLASSES [C08B](#), [C08C](#), [C08F](#), [C08G](#) (mechanical aspects [B29](#); layered products, manufacture thereof [B32B](#); treatment of macromolecular material specially adapted to enhance its filling properties in mortars, concrete or artificial stone [C04B 16/04](#), [C04B 18/20](#), [C04B 20/00](#); treatment of textiles [D06](#))**

NOTES

1. This subclass covers processes, not covered by subclasses [C08B](#) to [C08H](#), for treating polymers.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place

2. When classifying in subclass [C08J](#), the treatment of specific polymers is indicated using indexing codes chosen from [C08J 2300/00](#) or subgroups thereof.

Example:

- Preparation of particles of polystyrene by impregnation of the particles with the blowing agent: [C08J 9/18](#) and [C08J 2325/06](#).

The use of a polymeric component in minority, e.g. masterbatch, coating, impregnating agent or thin binder is indicated using indexing codes chosen from [C08J 2400/00](#) or subgroups thereof. Examples:

- Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/10](#)
- Bonding of polystyrene by heating: [C08J 5/121](#) and [C08J 2325/06](#)
- Coating of a polyethylene substrate with a polyurethane coating: [C08J 7/047](#) and [C08J 2323/06](#) and [C08J 2475/04](#)
- Use of ABS as an additive for foamed polyacrylamide : [C08J 9/0061](#) and [C08J 2333/26](#) and [C08J 2455/02](#)

In the following subgroups, the codes of [C08J 2300/00](#) to [C08J 2399/00](#) are used to specify:

- [C08J 3/226](#) : the polymeric material to which the masterbatch carrier is added.
- [C08J 7/047](#) : the polymeric substrate to be coated.
- [C08J 9/0061](#) : the polymeric component in majority in a multicomponents foamable blend.

3. Group [C08J 2400/00](#) was introduced on January 1st, 2012. Patent documents are continuously being reclassified. As a consequence, documents published before 01/01/2012, and to which [C08J 2400/00](#) indexing codes were allocated, are indexed in the corresponding head group. Example:

- Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/00](#), instead of [C08J 2433/10](#).

In the following subgroups, the codes of [C08J 2400/00](#) to [C08J 2499/00](#) are used to specify:

- [C08J 3/226](#) : the polymeric carrier in a masterbatch.
- [C08J 5/12](#) : the chemical nature of the adhesive
- [C08J 7/047](#) : the chemical nature of the coating(s).
- [C08J 9/0061](#) : the polymeric component in minority in a multicomponents foamable blend.
- [C08J 9/224](#), [C08J 9/236](#), [C08J 9/36](#), [C08J 9/40](#) and [C08J 9/42](#) : the polymer used for coating, binding, or impregnating the foam. [C08J 9/26](#) : the polymer to be leached out.
- [C08J 9/33](#) and [C08J 9/35](#) : the foam fragments included in the (foamable) polymer matrix.
- in all other subgroups, when the presence of a polymeric component in minority is of relevance.

#### WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C08J 5/14](#) covered by [B24D 3/20](#), [F16D 69/02](#)

[C08J 5/16](#) covered by [C10M](#)

- U C08J 3/00 Processes of treating or compounding macromolecular substances**
- C08J 3/12 • Powdering or granulating {(preparation of active ingredients, e.g. medical preparations in form of capsules [A61K 9/51](#); making granules [B29B 9/00](#))}
- C08J 3/124 • {Treatment for improving the free-flowing characteristics (agglomerates, granulates or microbeadlets [A61K 9/16](#); process or devices for granulating material, e.g. non-sticking properties [B01J 2/30](#); auxiliary treatment of particle [B29B 9/16](#))}
- C08J 3/24 • Crosslinking, e.g. vulcanising, of macromolecules (mechanical aspects [B29C 35/00](#); crosslinking agents [C08K](#); {-crosslinking aspects not classifiable in [C08G](#), [C08F](#), [C08K](#); compounding [C08J 3/20](#))}
- C08J 5/00 Manufacture of articles or shaped materials containing macromolecular substances (shaping of foodstuffs [A23P](#); manufacture of semi-permeable membranes [B01D 67/00](#) to [B01D 71/00](#); mechanical features, see the relevant classes, e.g. [B29](#))**
- C08J 5/005 • {Reinforced macromolecular compounds with nanosized materials, e.g. nanoparticles, nanofibres, nanotubes, nanowires, nanorods or nanolayered materials (use of ingredients characterised by shape [C08K 7/00](#); nanotechnology for materials and surface science [B82Y 30/00](#))}
- C08J 5/04 • Reinforcing macromolecular compounds with loose or coherent fibrous material (after-treatment of threads during manufacture [D01F](#); {-finishing of textiles [D06M](#)})
- U C08J 5/12** • Bonding of a preformed macromolecular material to the same or other solid material such as metal, glass, leather, e.g. using adhesives {(mechanical aspects [B29C 65/00](#))}
- C08J 5/124 • {using adhesives based on a macromolecular component (adhesive compositions per se [C09J 4/00](#), [C09J 101/00](#) to [C09J 201/00](#))}
- C08J 5/18 • Manufacture of films or sheets {(Producing films or sheets [B29D 7/01](#); wrappers or flexible covers, packaging materials of special type or form [B65D 65/00](#) - [B65D 65/466](#); shaping by stretching characterized by the choice of materials [B29C 55/005](#); layered products essentially comprising synthetic resin [B32B 27/00](#) - [B32B 27/42](#))}
- U C08J 5/20** • Manufacture of shaped of ion-exchange resins [Use of macromolecular compounds as anion [B01J 41/14](#) or cation [B01J 39/20](#) exchangers]

C08J 5/22

- Films, membranes, or diaphragms {(ion-exchange in general, [B01J 39/18](#) - [B01J 39/22](#)-, [B01J 41/12](#) - [B01J 41/16](#)-, [B01J 43/00](#)-, [B01J 45/00](#)-, [B01J 47/12](#) - [B01J 49/00](#)-, fuel cells with polymeric electrolyte material [H01M 8/1018](#))}

**NOTES**

1. [N: Membranes of which at least the ion-exchanging parts are inorganic, i.e. mixtures of non polymeric ion exchange compounds, e.g. inorganic salts, and at least one polymer are classified in [C08J 5/22](#)-, membranes based on cellulose are classified in [C08J 5/2212](#)-.

2. Methods for incorporating reinforcement supports or filling bodies are classified in [C08J 5/2206](#) (the support or filling body has no ion exchange activity).

3. Groups, e.g. SO<sub>2</sub>F, which do not have ion-exchanging properties, but which may, by simple hydrolysis in an alkaline, neutral or acid medium, be transformed into ion-exchanging groups, e.g. SO<sub>2</sub>H, are considered as such.

4. Ion-exchanging fibrous fabrics are considered as heterogeneous membranes and are classified in [C08J 5/2275](#)-, they include composite membranes, mixtures of two or more (ion exchange) polymers.

5. Membranes obtained by homogeneous melting or from a solution are considered as homogeneous, even if the membrane contains (after solidification of the melt or the solution) heterogeneous elements, e.g. filling bodies, supports e.g. in the form of fabrics, or the like, i.e. the ion exchange resin forms the membrane.

6. Reactions which change the nature of the ion-exchanging groups, introduction of ion-exchanging groups, after-treatment (membrane has already been formed) are classified in [C08J 5/2287](#).

7. Quaternising reactions are not considered as after-treatments.

**C08J 7/00**

**Chemical treatment or coating of shaped articles made of macromolecular substances (coating with metallic material [C23C](#)-, electrolytic deposition of metals [C25](#))**

C08J 7/04

- Coating {(Coating compositions per se [C09D 4/00](#)-, [C09D 101/00](#) to [C09D 201/00](#))}

U C08J 7/12

- Chemical modification

C08J 7/123

- {Treatment by wave energy or particle radiation ([C08J 7/18](#) takes precedence; surface shaping of articles by plasma treatment [B29C 59/14](#)-, by wave energy or particle radiation [B29C 59/16](#))}

**C08J 9/00**

**Working-up of macromolecular substances to porous or cellular articles or materials; After-treatment thereof (mechanical aspects [B29C 44/00](#)-, foamed polymeric products of isocyanates or isothiocyanates characterised by the monomers or catalysts used [C08G 18/00](#))**

U C08J 9/04

- using blowing gases generated by a previously added blowing agent

U C08J 9/12

- by a physical blowing agent

U C08J 9/14

- • organic

C08J 9/149

- • • {Mixtures of blowing agents covered by more than one of the groups [C08J 9/141](#) to [C08J 9/143](#)}

**NOTE**

In groups [C08J 9/16](#) to [C08J 9/232](#)-, the following term is used with the meaning indicated:

- "expandable" includes also expanding, pre-expanded or expanded

- C08J 11/00**      **Recovery or working-up of waste materials (polymerisation processes involving purification or recycling of waste polymers or their depolymerisation products [C08B](#), [C08C](#), [C08F](#), [C08G](#), [C08H](#); mechanical treatments [B29](#))**
- U C08J 11/04      · of polymers
- U C08J 11/06      · · without chemical reactions
- C08J 11/08      · · · using selective solvents for polymer components (working-up tar by extraction with selective solvents [C10C 1/18](#); working-up pitch, asphalt, bitumen by selective extraction [C10C 3/08](#))
- C08J 11/10      · · by chemically breaking down the molecular chains of polymers or breaking of crosslinks, e.g. devulcanisation (depolymerisation to the original monomer [C07](#); production of liquid hydrocarbon mixtures from rubber or rubber waste [C10G 1/10](#); {depolymerisation of halogenated hydrocarbon polymers [C07C 17/367](#); depolymerisation of polyesters, [C07C 51/09](#), [C07C 63/26](#); depolymerisation of polyamides [C07D 201/12](#); depolymerisation of rubber [C08C 19/08](#)})
- U C08J 2203/00**      **Foams characterized by the expanding agent**
- U C08J 2203/18      · Binary blends of expanding agents
- C08J 2203/182      · · of physical blowing agents, e.g. acetone and butane
- NOTE  
The blowing agents should be specified by using codes [C08J 2203/06](#) to [C08J 2203/166](#).
- C08J 2203/184      · · of chemical foaming agent and physical blowing agent, e.g. azodicarbonamide and fluorocarbon
- NOTE  
The expanding agents should be specified by using codes [C08J 2203/02](#) to [C08J 2203/166](#).
- U C08J 2203/20      · Ternary blends of expanding agents
- C08J 2203/202      · · of physical blowing agents
- NOTE  
The blowing agents should be specified by using codes [C08J 2203/02](#) to [C08J 2203/166](#).
- C08J 2203/204      · · of chemical foaming agent and physical blowing agents
- NOTE  
The expanding agents should be specified by using codes [C08J 2203/02](#) to [C08J 2203/166](#).
- U C08J 2309/00**      **Characterised by the use of homopolymers or copolymers of conjugated diene hydrocarbons**
- C08J 2309/10      · Latex ([C08J 2309/04](#), [C08J 2309/08](#) take precedence)
- C08J 2315/00**      **Characterised by the use of rubber derivatives ([C08J 2311/00](#), [C08J 2313/00](#) takes precedence)**
- U C08J 2325/00**      **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Derivatives of such polymers**
- U C08J 2325/02      · Homopolymers or copolymers of hydrocarbons

- U C08J 2325/04  
C08J 2325/08
- · Homopolymers or copolymers of styrene
  - · · Copolymers of styrene ([C08J 2329/08](#), [C08J 2335/06](#), [C08J 2355/02](#) take precedence)
- U C08J 2335/00
- Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Derivatives of such polymers**
- C08J 2335/02
- Characterised by the use of homopolymers or copolymers of esters ([C08J 2335/06](#), [C08J 2335/08](#) take precedence)
- C08J 2335/04
- Homopolymers or copolymers of nitriles ([C08J 2335/06](#), [C08J 2335/08](#) take precedence)
- C08J 2337/00
- Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (of cyclic esters of polyfunctional acids [C08J 2331/00](#); of cyclic anhydrides of unsaturated acids [C08J 2335/00](#)); Derivatives of such polymers**
- C08J 2345/00
- Characterised by the use of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Derivatives of such polymers (of cyclic anhydrides or imides [C08J 2335/00](#); of cyclic esters of polyfunctional acids [C08J 2331/00](#))**
- C08J 2361/00
- Characterised by the use of condensation polymers of aldehydes or ketones (with polyalcohols [C08J 2359/00](#); with polynitriles [C08J 2377/00](#)); Derivatives of such polymers**
- C08J 2361/34
- Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C08J 2361/04](#), [C08J 2361/18](#), and [C08J 2361/20](#)
- C08J 2365/00
- Characterised by the use of macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain ([C08J 2307/00](#) to [C08J 2357/00](#), [C08J 2361/00](#) take precedence); Derivatives of such polymers**
- C08J 2367/00
- Characterised by the use of polyesters obtained by reactions forming a carboxylic ester link in the main chain (of polyester-amides [C08J 2377/12](#); of polyester-imides [C08J 2379/08](#)); Derivatives of such polymers**
- C08J 2371/00
- Characterised by the use of polyethers obtained by reactions forming an ether link in the main chain (of polyacetals [C08J 2359/00](#); of epoxy resins [C08J 2363/00](#); of polythioether-ethers [C08J 2381/02](#); of polyethersulfones [C08J 2381/06](#)); Derivatives of such polymers**
- C08J 2377/00
- Characterised by the use of polyamides obtained by reactions forming a carboxylic amide link in the main chain (of polyhydrazides [C08J 2379/06](#); of polyamide-imides or polyamide acids [C08J 2379/08](#)); Derivatives of such polymers**
- U C08J 2383/00
- Characterised by the use of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon with or without sulfur, nitrogen, oxygen, or carbon only; Derivatives of such polymers**

- C08J 2383/10 · Block- or graft-copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C08J 2351/08](#)-, [C08J 2353/00](#))
- C08J 2393/00** **Characterised by the use of natural resins; Derivatives thereof (of polysaccharides [C08J 2301/00](#) to [C08J 2305/00](#);-; of natural rubber [C08J 2317/00](#))**
- U C08J 2409/00** **Characterised by the use of homopolymers or copolymers of conjugated diene hydrocarbons**
- C08J 2409/10 · Latex ([C08J 2409/04](#)-, [C08J 2409/08](#) take precedence)
- C08J 2415/00** **Characterised by the use of rubber derivatives ([C08J 2411/00](#)-, [C08J 2413/00](#) takes precedence)**
- U C08J 2425/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Derivatives of such polymers**
- U C08J 2425/02 · Homopolymers or copolymers of hydrocarbons
- U C08J 2425/04 · · Homopolymers or copolymers of styrene
- C08J 2425/08 · · · Copolymers of styrene ([C08J 2429/08](#)-, [C08J 2435/06](#)-, [C08J 2455/02](#) take precedence)
- U C08J 2435/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Derivatives of such polymers**
- C08J 2435/02 · Characterised by the use of homopolymers or copolymers of esters ([C08J 2435/06](#)-, [C08J 2435/08](#) take precedence)
- C08J 2435/04 · Homopolymers or copolymers of nitriles ([C08J 2435/06](#)-, [C08J 2435/08](#) take precedence)
- C08J 2437/00** **Characterised by the use of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (of cyclic esters of polyfunctional acids [C08J 2431/00](#);-; of cyclic anhydrides of unsaturated acids [C08J 2435/00](#)); Derivatives of such polymers**
- C08J 2445/00** **Characterised by the use of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Derivatives of such polymers (of cyclic anhydrides or imides [C08J 2435/00](#);-; of cyclic esters of polyfunctional acids [C08J 2431/00](#))**
- C08J 2461/00** **Characterised by the use of condensation polymers of aldehydes or ketones (with polyalcohols [C08J 2459/00](#);-; with polynitriles [C08J 2477/00](#)); Derivatives of such polymers**
- C08J 2461/34 · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C08J 2461/04](#)-, [C08J 2461/18](#)-, and [C08J 2461/20](#)
- C08J 2465/00** **Characterised by the use of macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain ([C08J 2407/00](#) to [C08J 2457/00](#)-, [C08J 2461/00](#) take precedence); Derivatives of such polymers**

- C08J 2467/00** Characterised by the use of polyesters obtained by reactions forming a carboxylic ester link in the main chain (of polyester-amides [C08J 2477/12](#); of polyester-imides [C08J 2479/08](#)); Derivatives of such polymers
- C08J 2471/00** Characterised by the use of polyethers obtained by reactions forming an ether link in the main chain (of polyacetals [C08J 2459/00](#); of epoxy resins [C08J 2463/00](#); of polythioether-ethers [C08J 2481/02](#); of polyethersulfones [C08J 2481/06](#)); Derivatives of such polymers
- C08J 2477/00** Characterised by the use of polyamides obtained by reactions forming a carboxylic amide link in the main chain (of polyhydrazides [C08J 2479/06](#); of polyamide-imides or polyamide acids [C08J 2479/08](#)); Derivatives of such polymers
- U C08J 2483/00** Characterised by the use of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon with or without sulfur, nitrogen, oxygen, or carbon only; Derivatives of such polymers
- C08J 2483/10
- Block- or graft-copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C08J 2451/08](#), [C08J 2453/00](#))
- C08J 2493/00** Characterised by the use of natural resins; Derivatives thereof (of polysaccharides [C08J 2401/00](#) to [C08J 2405/00](#); of natural rubber [C08J 2417/00](#))

**Project: N/A (C08K)**

- U C08K 5/00** Use of organic ingredients
- U C08K 5/04
- Oxygen-containing compounds {([C08K 5/0091](#) takes precedence)}
- U C08K 5/10
- • Esters; Ether-esters
- C08K 5/109
- • • of carbonic acid, {-e.g. R-O-C(=O)-O-R}
- U C08K 5/36
- Sulfur-, selenium-, or tellurium-containing compounds {([C08K 5/0091](#) takes precedence)}
- C08K 5/38
- • Thiocarbonic acids; Derivatives thereof, e.g. xanthates; {-i.e. compounds containing -X-C(=X)- groups, X being oxygen or sulfur, at least one X being sulfur}

**Project: N/A (C08L)**

**C08L** **COMPOSITIONS OF MACROMOLECULAR COMPOUNDS (pesticides, herbicides [A01N](#); pharmaceuticals, cosmetics [A61K](#); explosives [C06B](#); compositions based on polymerisable monomers [C08F](#), [C08G](#); paints, inks, varnishes, dyes, polishes, adhesives [C09](#); lubricants [C10M](#); detergents [C11D](#); artificial filaments or fibres [D01F](#); textile treating compositions [D06](#))**

**NOTES**

1. Compositions classified in [C08K](#) according to note 3 of [C08K](#), are not classified in [C08L](#).
2. Documents classified before 09.2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set. List of [C08L](#) codes: [C08L 23/00](#), [C08L 23/26](#), [C08L 25/00](#), [C08L 27/00](#), [C08L 27/04](#), [C08L 27/12](#), [C08L 29/00](#), [C08L 31/00](#), [C08L 33/00](#), [C08L 35/00](#), [C08L 37/00](#), [C08L 51/00](#), [C08L 53/00](#), [C08L 55/02](#), [C08L 61/04](#), [C08L 61/20](#), [C08L 63/00](#), [C08L 67/00](#), [C08L 67/02](#), [C08L 67/025](#),

~~C08L 67/03~~, ~~C08L 67/04~~, ~~C08L 67/06~~, ~~C08L 67/07~~, ~~C08L 69/00~~,  
~~C08L 69/005~~, ~~C08L 71/00~~, ~~C08L 75/04~~, ~~C08L 77/00~~, ~~C08L 77/08~~,  
~~C08L 77/12~~, ~~C08L 79/08~~, ~~C08L 79/085~~, ~~C08L 81/00~~, ~~C08L 83/00~~,  
~~C08L 85/00~~, ~~C08L 91/06~~, ~~C08L 95/00~~ or ~~C08L 2666/00 - C08L 2666/86~~.

Documents from group ~~C08L 23/00 - C08L 23/36~~, ~~C08L 45/00 - C08L 45/02~~  
and ~~C08L 49/00~~ have all been reclassified following Note 3 below. An additive  
is classified in the last appropriate place in the list as selected for each ~~C08L~~  
group. Examples:

- a. A composition based on a polyamide and a graft polymer is classified in ( ~~C08L 77/00~~, ~~C08L 2666/24~~ ).
- b. A composition based on polyvinylchloride and containing CaCO<sub>3</sub> is classified according to note 4 of ~~C08K~~, i.e. in ( ~~C08K 3/26~~, ~~C08L 27/06~~ ). If this composition contains also a polyamide, then the classification will be ( ~~C08L 27/06~~, ~~C08L 77/00~~, ~~C08K 3/26~~ ).
- c. A composition based on a polysiloxane ( ~~C08L 83/04~~ ) and containing a second polysiloxane, a phenol and silica is classified in ( ~~C08L 83/04~~, ~~C08L 83/04~~, ~~C08L 2666/34~~, ~~C08L 2666/58~~ ).

3. From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a ~~C08L~~ class, and the minor components are characterised by Indexing Codes taken from ~~C08L~~ or ~~C08K~~ and they are linked or unlinked. The polymer in majority is always first in the C-Set. List of ~~C08L~~ codes in the C-Set: ~~C08L 1/00~~, ~~C08L 81/00~~, ~~C08L 83/00~~, ~~C08L 91/06~~, ~~C08L 95/00~~ or ~~C08L 2666/02 - C08L 2666/08~~, ~~C08L 2666/14 - C08L 2666/26~~.

Examples:

- a. A blend of 60 parts polyvinylchloride ( ~~C08L 27/06~~ ) and 40 parts polyamide is classified in ( ~~C08L 27/06~~, ~~C08L 2666/20~~ ) and ~~C08L 77/00~~.
- b. A blend of 50 parts polyvinylchloride ( ~~C08L 27/06~~ ) and 50 parts polyamide ( ~~C08L 77/00~~ ) is classified in ( ~~C08L 27/06~~, ~~C08L 2666/20~~ ) and ~~C08L 77/00~~, as well as in ( ~~C08L 77/00~~, ~~C08L 2666/04~~ ) and ~~C08L 27/06~~.
- c. A composition based on polyvinylchloride and containing CaCO<sub>3</sub> is classified according to [N: Note 4 of ~~C08K~~, i.e. in ( ~~C08K 3/26~~, ~~C08L 27/06~~ ). If this composition contains also a polyamide, then the classification will be ( ~~C08L 27/06~~, ~~C08L 2666/20~~ ) and ~~C08K 3/26~~.
- d. A composition based on a first polysiloxane ( ~~C08L 83/04~~ ) and containing a second polysiloxane, a phenol and silica is classified in ( ~~C08L 83/04~~, ~~C08L 83/04~~, ~~C08K 5/13~~, ~~C08K 3/36~~ ) and ~~C08L 2205/02~~.

4. From April 2012 onwards, after the notation ~~C08L~~, notations concerning the other constituents of the composition may be added, in the form of C-Sets. The further constituent is added with an indexing code. The indexing codes are chosen from ~~C08L 1/00 - C08L 2555/86~~ or ~~C08K~~ and they may be linked or unlinked: - ~~C08L 1/00 - C08L 101/10~~ are linked. - ~~C08L 2201/00 - C08L 2555/86~~ are unlinked. The polymer in majority is always first in the C-Set. Examples:

- a. A blend of 60 parts polyvinylchloride ( ~~C08L 27/06~~ ) and 40 parts polyamide ( ~~C08L 77/00~~ ) is classified in ( ~~C08L 27/06~~, ~~C08L 77/00~~ ).
- b. A blend of 50 parts polyvinylchloride ( ~~C08L 27/06~~ ) and 50 parts polyamide ( ~~C08L 77/00~~ ) is classified in ( ~~C08L 27/06~~, ~~C08L 77/00~~ ) and ( ~~C08L 77/00~~, ~~C08L 27/06~~ ).
- c. A composition based on polyvinylchloride and containing CaCO<sub>3</sub> is classified according to [N: Note 4 of ~~C08K~~, i.e. in ( ~~C08K 3/26~~, ~~C08L 27/06~~ ). If this composition contains also a polyamide, then the classification will be ( ~~C08L 27/06~~, ~~C08L 77/00~~, ~~C08K 3/26~~ ).
- d. A composition based on a first polysiloxane ( ~~C08L 83/04~~ ) and containing a second polysiloxane, a phenol and silica is classified in ( ~~C08L 83/04~~, ~~C08L 83/00~~, ~~C08K 5/13~~, ~~C08K 3/36~~ ) and ~~C08L 2205/02~~.

- e. A composition containing a polyamide in majority, a polyester and a polyethylene is classified in ( [C08L 77/00](#), [C08L 67/00](#), [C08L 23/06](#) ) and [C08L 2205/03](#).
5. "Rubber" includes:
- natural or conjugated diene rubbers;
  - rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for compositions of such macromolecular compounds).
6. In this subclass:
- a. compositions are classified according to the mutual proportions by weight of only the macromolecular constituents;
- b. compositions are classified according to the macromolecular constituent or constituents present in the highest proportion: if all these constituents are present in equal proportions the composition is classified according to each of these constituents.

- U C08L 9/00**      **Compositions of homopolymers or copolymers of conjugated diene hydrocarbons**
- C08L 9/10      · Latex ([C08L 9/04](#), [C08L 9/08](#) take precedence)
- C08L 15/00**      **Compositions of rubber derivatives ([C08L 11/00](#), [C08L 13/00](#) take precedence)**
- U C08L 25/00**      **Compositions of, homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Compositions of derivatives of such polymers**
- U C08L 25/02      · Homopolymers or copolymers of hydrocarbons
- U C08L 25/04      · · Homopolymers or copolymers of styrene
- C08L 25/08      · · · Copolymers of styrene ([C08L 29/08](#), [C08L 35/06](#), [C08L 55/02](#) take precedence)
- U C08L 35/00**      **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Compositions of derivatives of such polymers**
- C08L 35/02      · Homopolymers or copolymers of esters ([C08L 35/06](#), [C08L 35/08](#) take precedence)
- C08L 35/04      · Homopolymers or copolymers of nitriles ([C08L 35/06](#), [C08L 35/08](#) take precedence)
- C08L 37/00**      **Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (of cyclic esters of polyfunctional acids [C08L 31/00](#); of cyclic anhydrides of unsaturated acids [C08L 35/00](#)); Compositions of derivatives of such polymers**
- C08L 45/00**      **Compositions of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Compositions of derivatives of such polymers (of cyclic anhydrides or imides [C08L 35/00](#); of cyclic esters of polyfunctional acids [C08L 31/00](#))**

- U C08L 51/00** **Compositions of graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (for ABS polymers [C08L 55/02](#)); Compositions of derivatives of such polymers**
- C08L 51/003 · {grafted on to macromolecular compounds obtained by reactions only involving unsaturated carbon-to-carbon bonds ([C08L 51/04](#), [C08L 51/06](#) take precedence)}
- C08L 61/00** **Compositions of condensation polymers of aldehydes or ketones (with polyalcohols [C08L 59/00](#); with polynitriles [C08L 77/00](#)); Compositions of derivatives of such polymers**
- C08L 61/34 · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C08L 61/04](#), [C08L 61/18](#) and [C08L 61/20](#)
- U C08L 63/00** **Compositions of epoxy resins; Compositions of derivatives of epoxy resins**
- C08L 63/10 · Epoxy resins modified by unsaturated compounds
- NOTE  
In groups [C08L 65/00](#) to [C08L 85/00](#), in the absence of an indication to the contrary, compositions of macromolecular compounds, obtained by reactions forming two different linkages in the main chain, are classified only according to the linkage present in excess
- C08L 65/00** **Compositions of macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain ([C08L 7/00](#) to [C08L 57/00](#), [C08L 61/00](#) take precedence); Compositions of derivatives of such polymers**
- C08L 67/00** **Compositions of polyesters obtained by reactions forming a carboxylic ester link in the main chain (of polyester-amides [C08L 77/12](#); of polyester-imides [C08L 79/08](#)); Compositions of derivatives of such polymers**
- C08L 71/00** **Compositions of polyethers obtained by reactions forming an ether link in the main chain (of polyacetals [C08L 59/00](#); of epoxy resins [C08L 63/00](#); of polythioether-ethers [C08L 81/02](#); of polyether-sulfones [C08L 81/06](#)); Compositions of derivatives of such polymers**
- C08L 77/00** **Compositions of polyamides obtained by reactions forming a carboxylic amide link in the main chain (of polyhydrazides [C08L 79/06](#); of polyamideimides or polyamide acids [C08L 79/08](#)); Compositions of derivatives of such polymers**
- U C08L 83/00** **Compositions of macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon with or without sulfur, nitrogen, oxygen or carbon only; Compositions of derivatives of such polymers**
- NOTE  
In this main group, from 01.09.2010 onwards, new documents are classified according to the following system. The composition is identified with the C-Set, e.g. ([C08L83/04](#), [C08L 83/04](#)) (for a composition containing two or more siloxanes), while the info
- C08L 83/10 · Block- or graft-copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C08L 51/08](#), [C08L 53/00](#))

**C08L 89/00 -  
C08L 101/00** Compositions of natural macromolecular compounds or of derivatives thereof (of polysaccharides [C08L 1/00](#) to [C08L 5/00](#); of natural rubber [C08L 7/00](#))

- U C08L 97/00** **Compositions of lignin-containing materials**  
C08L 97/002 · {Peat, lignite, coal (ceramic products based on carbon or carbides [C04B 35/00](#); working-up peat [C10F 7/00](#); briquettes [C10L 5/00](#))}
- U C08L 2205/00** **Polymer mixtures characterised by other features**  
U C08L 2205/02 · containing two or more polymers of the same [C08L](#) -group  
C08L 2205/025 · · containing two or more polymers of the same hierarchy [C08L](#), and differing only in parameters such as density, comonomer content, molecular weight, structure
- U C08L 2666/00** **Composition of polymers characterized by a further compound in the blend, being organic macromolecular compounds, natural resins, waxes or and bituminous materials, non-macromolecular organic substances, inorganic substances or characterized by their function in the composition (not used)**

NOTE

These codes are not used for the classification of new documents. They are a replacement of the combination classes.

- U C08L 2666/02 · Organic macromolecular compounds, natural resins, waxes or and bituminous materials
- C08L 2666/04 · · Macromolecular compounds according to groups [C08L 7/00](#) to [C08L 49/00](#), or [C08L 55/00](#) to [C08L 57/00](#); Derivatives thereof
- C08L 2666/24 · · Graft or block copolymers according to groups [C08L 51/00](#), [C08L 53/00](#) or [C08L 55/02](#); Derivatives thereof
- C08L 2666/26 · · Natural polymers, natural resins or derivatives thereof according to [C08L 1/00](#) to [C08L 5/00](#), [C08L 89/00](#), [C08L 93/00](#), [C08L 97/00](#) or [C08L 99/00](#)

**Project: N/A (C09B)**

**C09B**

**ORGANIC DYES OR CLOSELY-RELATED COMPOUNDS FOR PRODUCING DYES; MORDANTS; LAKES (fermentation or enzyme-using processes to synthesise a desired chemical compound [C12P](#))**

NOTE

In this subclass, in the absence of an indication to the contrary, a compound is classified in the last appropriate place

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">C09B 23/01</a>	covered by	<a href="#">C09B 23/0008</a>	to
<a href="#">C09B 23/0091</a>			
<a href="#">C09B 29/01</a>	" "	<a href="#">C09B 29/0003</a>	to
<a href="#">C09B 29/0022</a>			
<a href="#">C09B 29/03</a>	" "	<a href="#">C09B 29/0007</a>	
<a href="#">C09B 29/033</a>	" "	<a href="#">C09B 29/0025</a>	
<a href="#">C09B 29/036</a>	" "	<a href="#">C09B 29/0029</a>	
<a href="#">C09B 29/039</a>	" "	<a href="#">C09B 29/0074</a>	to
<a href="#">C09B 29/0081</a>			
<a href="#">C09B 29/042</a>	" "	<a href="#">C09B 29/0085</a>	
<del>C09B 29/045</del> <a href="#">C09B 29/045</a>	" "	" "	<a href="#">C09B 29/0088</a>
<a href="#">C09B 29/048</a>	" "	<a href="#">C09B 29/0092</a>	

<a href="#">C09B 29/085</a>	"	"	<a href="#">C09B 29/0003</a> _____ ,	
<a href="#">C09B 29/0801</a>		to	<a href="#">C09B 29/0848</a>	
<a href="#">C09B 29/09</a>	"	"	<a href="#">C09B 29/0025</a> _____ ,	
<a href="#">C09B 29/0801</a>		to	<a href="#">C09B 29/0848</a>	
<a href="#">C09B 29/15</a>	"	"	<a href="#">C09B 29/103</a>	
<a href="#">C09B 29/40</a>	"	"	<a href="#">C09B 29/3608</a>	to
<a href="#">C09B 29/3613</a>				
<a href="#">C09B 29/42</a>	"	"	<a href="#">C09B 29/3617</a>	to
<a href="#">C09B 29/3639</a>				
<a href="#">C09B 29/44</a>	"	"	<a href="#">C09B 29/3643</a>	
<a href="#">C09B 29/46</a>	"	"	<a href="#">C09B 29/3652</a>	
<a href="#">C09B 29/48</a>	"	"	<a href="#">C09B 29/3656</a>	
<a href="#">C09B 29/50</a>	"	"	<a href="#">C09B 29/366</a>	
<a href="#">C09B 29/52</a>	"	"	<a href="#">C09B 29/3665</a>	
<a href="#">C09B 33/13</a>	"	"	<a href="#">C09B 33/12</a>	
<a href="#">C09B 46/00</a>	"	"	<a href="#">C09B 27/00</a>	to
<a href="#">C09B 45/00</a>				
<a href="#">C09B 67/02</a>	"	"	<a href="#">C09B 67/0097</a>	
<a href="#">C09B 67/04</a>	"	"	<a href="#">C09B 67/0001</a>	
<a href="#">C09B 67/06</a>	"	"	<a href="#">C09B 67/0003</a>	
<a href="#">C09B 67/08</a>	"	"	<a href="#">C09B 67/0004</a>	
<a href="#">C09B 67/10</a>	"	"	<a href="#">C09B 67/0014</a>	
<a href="#">C09B 67/12</a>	"	"	<a href="#">C09B 67/0016</a>	
<a href="#">C09B 67/14</a>	"	"	<a href="#">C09B 67/0017</a>	
<a href="#">C09B 67/16</a>	"	"	<a href="#">C09B 67/0019</a>	
<a href="#">C09B 67/18</a>	"	"	<a href="#">C09B 67/002</a>	
<a href="#">C09B 67/20</a>	"	"	<a href="#">C09B 67/006</a>	
<a href="#">C09B 67/22</a>	"	"	<a href="#">C09B 67/0033</a>	
<a href="#">C09B 67/24</a>	"	"	<a href="#">C09B 67/0072</a>	
<a href="#">C09B 67/26</a>	"	"	<a href="#">C09B 67/0073</a>	
<a href="#">C09B 67/28</a>	"	"	<a href="#">C09B 67/0077</a>	
<a href="#">C09B 67/30</a>	"	"	<a href="#">C09B 67/0078</a>	
<a href="#">C09B 67/32</a>	"	"	<a href="#">C09B 67/0075</a>	
<a href="#">C09B 67/34</a>	"	"	<a href="#">C09B 67/0076</a>	
<a href="#">C09B 67/36</a>	"	"	<a href="#">C09B 67/0079</a>	
<a href="#">C09B 67/38</a>	"	"	<a href="#">C09B 67/008</a>	
<a href="#">C09B 67/40</a>	"	"	<a href="#">C09B 67/0082</a>	
<a href="#">C09B 67/42</a>	"	"	<a href="#">C09B 67/0071</a>	
<a href="#">C09B 67/44</a>	"	"	<a href="#">C09B 67/0083</a>	
<a href="#">C09B 67/46</a>	"	"	<a href="#">C09B 67/0084</a>	
<a href="#">C09B 67/48</a>	"	"	<a href="#">C09B 67/0025</a>	
<a href="#">C09B 67/50</a>	"	"	<a href="#">C09B 67/0026</a>	
<a href="#">C09B 67/52</a>	"	"	<a href="#">C09B 67/0027</a>	
<a href="#">C09B 67/54</a>	"	"	<a href="#">C09B 67/0096</a>	

**U C09B 1/00**

U C09B 1/56  
C09B 1/58

**Dyes with anthracene nucleus not condensed with any other ring**

- Mercapto-anthraquinones {([C09B 1/007](#) takes precedence)}
- with mercapto groups substituted by aliphatic, cycloaliphatic, araliphatic or aryl radicals

**NOTE**

After the notation of groups [C09B 1/58](#)-, [C09B 1/585](#)-, [C09B 1/60](#) and separated therefrom by a + sign, notations concerning the nature of other substituents may be added. These notations are selected from the groups:

- [C09B 1/02](#) \_\_\_\_\_ .
- [C09B 1/16](#) \_\_\_\_\_ .
- [C09B 1/22](#) \_\_\_\_\_ . .
- [C09B 1/28](#) \_\_\_\_\_ . . .

[C09B 1/32](#) . . .

[C09B 1/36](#) . .

[C09B 1/50](#) .

and have the same meaning as the corresponding groups

**U C09B 23/00**

**Methine or polymethine dyes, e.g. cyanine dyes**

U C09B 23/14

• Styryl dyes

C09B 23/148

• • {Stilbene dyes containing the moiety  $-C_6H_5-CH=CH-C_6H_5$  (stilbene azo dyes [C09B 29/00](#))}

U C09B 23/16

• the polymethine chain containing hetero atoms

C09B 23/162

• • {only nitrogen atoms (azomethine dyes [C09B 55/00](#)-, e.g. those of formula aryl-CH=N-aryl; formazan dyes [C09B 50/00](#)-, e.g. dyes containing the moiety -N-N=CR-N=N-)}

**C09B 27/00 -  
C09B 62/00**

**Azo dyes**

**NOTE**

In groups [C09B 27/00](#) to [C09B 45/00](#)-, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

**U C09B 29/00**

**Monoazo dyes prepared by diazotising and coupling**

U C09B 29/06

• from coupling components containing amino as the only directing group

U C09B 29/08

• • Amino benzenes

U C09B 29/0833

• • • {characterised by the substituent on the benzene ring excepted the substituents:  $CH_3$ ,  $C_2H_5$ , O-alkyl, NHCO-alkyl, NHCOO-alkyl, NHCO-  $C_6H_5$ , NHCOO- $C_6H_5$ }

C09B 29/0834

• • • • {linked through -O- (for OH see [C09B 29/24](#)-, [C09B 29/26](#))}

**U C09B 35/00**

**Disazo and polyazo dyes of the type A<-D->B prepared by diazotising and coupling**

U C09B 35/02

• Disazo dyes

U C09B 35/039

• • characterised by the tetrazo component

U C09B 35/205

• • • the tetrazo component being a derivative of a diaryl- or triaryl- alkane or alkene

C09B 35/215

• • • • of diarylethane or diarylethene {(other stilbene-azo dyes, [C09B 56/04](#)-, [C09B 56/06](#))}

**U C09B 56/00**

**Azo dyes containing other chromophoric systems**

C09B 56/12

• Anthraquinone-azo dyes {(from diazotised aminoanthracene [C09B 29/0022](#)-, azo dyes containing hydroxyl groups acylated with polyfunctional anthraquinone derivatives [C09B 43/26](#))}

**U C09B 62/00**

**Reactive dyes, i.e. dyes which form covalent bonds with the substrates or which polymerise with themselves**

U C09B 62/44

• with the reactive group not directly attached to a heterocyclic ring

U C09B 62/503

• • the reactive group being an esterified or non-esterified hydroxyalkyl sulfonyl or mercaptoalkyl sulfonyl group, a quaternised or non-quaternised aminoalkyl sulfonyl group, a heterylmercapto alkyl sulfonyl group, a vinyl sulfonyl or a substituted vinyl sulfonyl group, or a thiophene-dioxide group

C09B 62/505

• • • Anthracene dyes {([C09B 62/5033](#)-, [C09B 62/5036](#) take precedence)}

C09B 62/507

• • • Azo dyes {([C09B 62/5033](#)-, [C09B 62/5036](#) take precedence)}

- C09B 62/517 . . . Porphines; Azaporphines {(C09B 62/5033-, C09B 62/5036 take precedence)}
- U C09B 63/00 Lakes**
- C09B 63/005 . {Metal lakes of dyes (complex metal compounds of azo dyes [C09B 45/00-](#), metal complexes of colourless compounds [C09B 57/10](#))}
- C09B 65/00 Compositions containing mordants (preparation of the mordant compounds [C01-](#), [C07](#))**
- U C09B 67/00 Influencing the physical, e.g. the dyeing or printing properties of dyestuffs without chemical reactions, e.g. by treating with solvents {grinding or grinding assistants, coating of pigments or dyes}; Process features in the making of dyestuff preparations; Dyestuff preparations of a special physical nature, e.g. tablets, films**
- C09B 67/0032 . {Treatment of phthalocyanine pigments ([C09B 67/0016-](#), [C09B 67/0019](#) take precedence)}
- U C09B 68/00 {Organic pigments surface-modified by grafting, e.g. by establishing covalent or complex bonds, in order to improve the pigment properties, e.g. dispersibility or rheology}**
- WARNING
- Groups [C09B 68/00](#) to [C09B 68/485](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [C09B 68/40](#) : [C09B 67/00](#) or subgroups - [C09B 68/41](#) : [C09B 67/00](#) or subgroups - [C09B 68/42](#) : [C09B 67/00](#) or subgroups
- U C09B 68/40** . {characterised by the chemical nature of the attached groups}
- C09B 68/41 . . {Polymers attached to the pigment surface ([C09B 68/444-](#), [C09B 68/446](#) take precedence)}
- U C09B 69/00 Dyes not provided for by a single group of this subclass**
- C09B 69/08 . Dyes containing a splittable water solubilizing group {(Dyes containing an onium group attached to the dye molecule via a bridge are to be considered as cationic dyes and are classified with the respective dyes such as [C09B 44/02](#) to [C09B 44/08-](#); [C09B 69/001](#) to [C09B 69/005](#))}
- C09B 69/10 . Polymeric dyes; Reaction products of dyes with monomers or with macromolecular compounds {(addition products of alkylene oxide to dyes, [C09B 69/00-](#); dyeing with polymeric dyes [D06P 1/0056](#))}

## Project: N/A (C09D)

## C09D

COATING COMPOSITIONS, e.g. PAINTS, VARNISHES OR LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOVERS; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR (cosmetics [A61K](#); processes for applying liquids or other fluent materials to surfaces, in general, [B05D](#); staining wood [B27K 5/02](#); glazes or vitreous enamels [C03C](#); organic macromolecular compounds [C08](#); organic dyes or closely-related compounds for producing dyes, mordants or lakes, per se, [C09B](#); treatment of inorganic materials other than fibrous fillers used as pigments or fillers [C09C](#); natural resins, French polish, drying-oils, driers, turpentine, per se, [C09F](#); polishing compositions other than French polish, ski waxes [C09G](#); preparation of glue or gelatine [C09H](#), {[C08H 1/06](#)}; adhesives or use of materials as adhesives [C09J](#); materials for sealing or packing joints or covers [C09K 3/10](#); materials for stopping leaks [C09K 3/12](#); processes for the electrolytic or electrophoretic production of coatings [C25D](#); textile-treating compositions [D06](#); paper-making [D21](#); conductors, insulators [H01B](#))

## NOTES

1. In this subclass, the following terms or expressions are used with the meanings indicated:

- "use of materials for coating compositions" means the use of known or new polymers or products;
- "rubber" includes:
  - a. natural or conjugated diene rubbers;
  - b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for coating compositions based on such macromolecular compounds);
- "based on" is defined by means of Note 3, below;
- "filling pastes" means materials used to fill up the holes or cavities of a substrate in order to smooth its surface prior to coating.

2. In this subclass, coating compositions containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

Example: a coating composition containing polyethene and amino-propyltrimethoxysilane is classified in group [C09D 123/06](#).

However, coating compositions containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09D 159/00](#) to [C09D 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09D 4/00](#).

Example: a coating composition containing polyethene and styrene monomer is classified in group [C09D 4/06](#).

Aspects relating to the physical nature of the coating compositions or to the effects produced, as defined in group [C09D 5/00](#), if clearly and explicitly stated, are also classified in this subclass.

Coating compositions characterised by other features, e.g. additives, are classified in group [C09D 7/00](#), unless the macromolecular constituent is specified.

3. In this subclass, coating compositions comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the composition is based. If the composition is based on two or more constituents, present in equal proportions, the composition is classified according to each of these constituents.

Examples:

A coating composition containing 80 parts of polyethene and 20 parts of polyvinylchloride

is classified in group [C09D 123/06](#);

A coating composition containing 40 parts of polyethene and 40 parts of polyvinylchloride

is classified in groups [C09D 123/06](#) and [C09D 127/06](#).

4. Documents classified up until 04.2012: after the notation of group [C09D 4/06](#), and separated therefrom by a + sign, notations concerning the macromolecular compound may be added. The notations are selected from the main groups [C08F 251/00](#) to [C08F 291/00](#) and from the subgroups of [C08F 290/00](#) to [C08F 290/048](#) and [C08F 290/08](#) to [C08F 290/128](#).

Example: a paint based on a mixture of methylmethacrylate monomer and a polymer of vinylchloride is classified in [C09D 4/06](#) + [C08F 259/04](#).

5. From April 2012 onwards, after the notation [C09D 4/00](#), classification concerning the monomer may be added, in the form of C-sets. The notation is selected from [C08F 210/00](#) to [C08F 246/00](#), [C08G 77/00](#) to [C08G 77/04](#) or [C08G 77/20](#) to [C08G 77/30](#). Ex.: A paint based on a mixture of methylmethacrylate monomer and a polymer of vinylchloride is classified ( [C09D 4/06](#), [C08F 259/04](#) ).

6. Documents classified up until 09-2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C09D 101/00](#) - [C09D 201/10](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set. List of [C08L](#) codes: [C08L 23/00](#), [C08L 23/26](#), [C08L 25/00](#), [C08L 27/00](#), [C08L 27/04](#), [C08L 27/12](#), [C08L 29/00](#), [C08L 31/00](#), [C08L 33/00](#), [C08L 35/00](#), [C08L 37/00](#), [C08L 51/00](#), [C08L 53/00](#), [C08L 55/02](#), [C08L 61/04](#), [C08L 61/20](#), [C08L 63/00](#), [C08L 67/00](#), [C08L 67/02](#), [C08L 67/025](#), [C08L 67/03](#), [C08L 67/04](#), [C08L 67/06](#), [C08L 67/07](#), [C08L 69/00](#), [C08L 69/005](#), [C08L 71/00](#), [C08L 75/04](#), [C08L 77/00](#), [C08L 77/08](#), [C08L 77/12](#), [C08L 79/08](#), [C08L 79/085](#), [C08L 81/00](#), [C08L 83/00](#), [C08L 85/00](#), [C08L 91/06](#), [C08L 95/00](#) or [C08L 2666/00](#) - [C08L 2666/86](#). Documents from group [C09D 123/00](#) - [C09D 123/36](#), [C09D 145/00](#) - [C09D 145/02](#) and [C09D 149/00](#) have all been reclassified following Note 3 below. An additive is classified in the last appropriate place in the list as selected for each [C09D](#) group.

Examples:

- a. A coating composition based on a polyamide and a graft polymer is classified in ([C09D 177/00](#), [C08L 2666/24](#)).
- b. A coating composition based on polyvinylchloride and containing CaCO<sub>3</sub> is classified according to note 4 of [C08K](#), i.e. in [C08K 3/26](#) and [C09D 127/06](#). If this coating composition contains also a polyamide, then the classification will be ([C09D 127/06](#), [C08L 77/00](#), [C08K 3/26](#)).
- c. A coating composition based on a polysiloxane ([C09D 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09D 183/04](#), [C08L 83/04](#), [C08L 2666/34](#), [C08L 2666/54](#)).

7. From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a [C09D](#) symbol, and the minor components are characterised by Indexing Codes taken from [C08L](#) or [C08K](#) and they are linked or unlinked. The polymer in majority is always first in the C-set. List of indexing codes in the C-Sets: [C08L 1/00](#), [C08L 81/00](#), [C08L 83/00](#), [C08L 91/06](#), [C08L 95/00](#) or [C08L 2666/02](#) - [C08L 2666/08](#), [C08L 2666/14](#) - [C08L 2666/26](#).

Examples:

- a. A coating of 60 parts polyvinylchloride ([C09D 127/06](#)) and 40 parts polyamide is classified in ([C09D 127/06](#), [C08L 2666/20](#)), [C08L 77/00](#).
- b. A coating of 50 parts polyvinylchloride ([C09D 127/06](#)) and 50 parts polyamide ([C09D 177/00](#)) is classified in ([C09D 127/06](#), [C08L 2666/20](#)), and [C08L 77/00](#), as well as ([C09D 177/00](#), [C08L 2666/04](#)) and [C08L 27/06](#)

- c. A coating composition based on polyvinylchloride and containing CaCO<sub>3</sub> is classified according to [N: Note 4 of [C08K](#), i.e. in [C08K 3/26](#), [C09D 127/06](#). If this composition contains also a polyamide, then the classification will be ([C09D 127/06](#), [C08L 2666/20](#)) and [C08K 3/26](#).
- d. A composition based on a first polysiloxane ([C09D 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09D 183/04](#), [C08L 83/00](#), [C08K 5/13](#), [C08K 3/36](#)) and [C08L 2205/02](#).
8. From April 2012 onwards, after the notation of groups [C09D 101/00](#) to [C09D 201/00](#), notations concerning the other constituents of the coating composition may be added, in the form of C-Sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) - [C08L 2555/86](#) or [C08K](#) and they may be linked or unlinked: - [C08L 1/00](#) - [C08L 101/10](#) are linked. - [C08L 2201/00](#) - [C08L 2555/86](#) are unlinked. The polymer in majority is always first in the C-set. Examples:
- a. A coating composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09D 123/06](#) and [C08K 5/544](#) (unlinked).
- b. A coating composition containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in ([C09D 123/06](#), [C08L 27/06](#)).
- c. A coating composition containing 40 parts of polyethene and 40 parts of polyvinylchloride is classified in ([C09D 123/06](#), [C08L 27/06](#)) and ([C09D 127/06](#), [C08L 23/06](#)).
- d. A coating composition containing 90% of polysiloxane ([C09D 183/04](#)) further containing 10% of polyester ([C08L 67/00](#)) and an alcohol is classified in ([C09D 183/04](#), [C08L 67/00](#), [C08K 5/05](#)).

#### WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">C09D 4/02</a>	covered by	<a href="#">C09D 4/00</a>	,
<a href="#">C08F 220/00</a>			
<a href="#">C09D 4/04</a>	covered by	<a href="#">C09D 4/00</a>	,
<a href="#">C08F 222/00</a>			
<a href="#">C09D 5/23</a>	covered by	<a href="#">H01F 41/16</a>	
<a href="#">C09D 5/25</a>	covered by	<a href="#">H01B 3/308</a>	
<a href="#">C09D 5/33</a>	covered by	<a href="#">C09D 5/004</a>	
<a href="#">C09D 5/46</a>	covered by	<a href="#">C09D 5/03</a>	
<a href="#">C09D 161/08</a>		<a href="#">C09D 161/10</a>	covered
by	<a href="#">C09D 161/06</a>		
<a href="#">C09D 163/02</a>	covered by	<a href="#">C09D 163/00</a>	
<a href="#">C09D 171/08</a>	covered by	<a href="#">C09D 171/02</a>	
<a href="#">C09D 171/10</a>	covered by	<a href="#">C09D 171/12</a>	
<a href="#">C09D 183/05</a>	covered by	<a href="#">C09D 183/04</a>	
<a href="#">C09D 183/07</a>	covered by	<a href="#">C09D 183/04</a>	
		<a href="#">C09D 183/06</a>	

- C09D 4/00** Coating compositions, e.g. paints, varnishes or lacquers, based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond; {Coating compositions, based on monomers of macromolecular compounds of groups [C09D 183/00](#) to [C09D 183/16](#)}
- C09D 5/00** Coating compositions, e.g. paints, varnishes or lacquers, characterised by their physical nature or the effects produced; Filling pastes {(magnetisable or magnetic paints [H01F 1/00](#); electrically insulating paints [H01B 3/00](#); paints for electrophoretic applications [C25D 13/00](#))}
- C09D 5/34** • Filling pastes (materials for sealing or packing joints or covers [C09K 3/10](#); materials for stopping leaks [C09K 3/12](#))

- U C09D 5/44
- for electrophoretic applications (processes for coating by electrophoresis [C25D 13/00](#))
- NOTE
- The groups [C09D 5/4403](#) to [C09D 5/4476](#) relating to paints based on a specified film-forming polymer or mixture of polymers take precedence over the groups [C09D 5/448](#) to [C09D 5/4496](#) relating to paints characterised by other features
- C09D 5/448
- {characterised by the additives used ([C09D 5/4403](#) to [C09D 5/4476](#)-, [C09D 5/4492](#) take precedence)}
- C09D 7/00**
- Features of coating compositions, not provided for in group [C09D 5/00](#) (driers [C09F 9/00](#))**
- U C09D 109/00
- Coating compositions based on homopolymers or copolymers of conjugated diene hydrocarbons**
- C09D 109/10
- Latex ([C09D 109/04](#)-, [C09D 109/08](#) take precedence)
- C09D 115/00
- Coating compositions based on rubber derivatives ([C09D 111/00](#)-, [C09D 113/00](#) take precedence)**
- U C09D 125/00
- Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Coating compositions based on derivatives of such polymers**
- U C09D 125/02
- Homopolymers or copolymers of hydrocarbons
- U C09D 125/04
- Homopolymers or copolymers of styrene
- C09D 125/08
- Copolymers of styrene ([C09D 129/08](#)-, [C09D 135/06](#)-, [C09D 155/02](#) take precedence)
- U C09D 135/00
- Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least another carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Coating compositions based on derivatives of such polymers**
- C09D 135/02
- Homopolymers or copolymers of esters ([C09D 135/06](#)-, [C09D 135/08](#) take precedence)
- C09D 135/04
- Homopolymers or copolymers of nitriles ([C09D 135/06](#)-, [C09D 135/08](#) take precedence)
- C09D 137/00**
- Coating compositions based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (based on polymers of cyclic esters of polyfunctional acids [C09D 131/00](#)-, based on polymers of cyclic anhydrides of unsaturated acids [C09D 135/00](#)); Coating compositions based on derivatives of such polymers**
- C09D 145/00
- Coating compositions based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic system; Coating compositions based on derivatives of such polymers (based on polymers of cyclic esters of polyfunctional acids [C09D 131/00](#)-, based on polymers of cyclic anhydrides or imides [C09D 135/00](#))**

- U C09D 151/00** Coating compositions based on graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (based on ABS polymers [C09D 155/02](#)); Coating compositions based on derivatives of such polymers
- C09D 151/003 · {grafted on to macromolecular compounds obtained by reactions only involving unsaturated carbon-to-carbon bonds ([C09D 151/04](#)-, [C09D 151/06](#) take precedence)}
- C09D 161/00** Coating compositions based on condensation polymers of aldehydes or ketones (with polyalcohols [C09D 159/00](#)-; with polynitriles [C09D 177/00](#)); Coating compositions based on derivatives of such polymers
- C09D 161/34 · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C09D 161/04](#)-, [C09D 161/18](#) and [C09D 161/20](#)
- U C09D 163/00** Coating compositions based on epoxy resins; Coating compositions based on derivatives of epoxy resins
- C09D 163/10 · Epoxy resins modified by unsaturated compounds
- NOTE  
In groups [C09D 165/00](#) to [C09D 185/00](#)-, in the absence of an indication to the contrary, adhesives based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified according to the linkage present in excess.
- C09D 165/00** Coating compositions based on macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain ([C09D 107/00](#) to [C09D 157/00](#)-, [C09D 161/00](#) take precedence); Coating compositions based on derivatives of such polymers
- C09D 167/00** Coating compositions based on polyesters obtained by reactions forming a carboxylic ester link in the main chain (based on polyester-amides [C09D 177/12](#)-, based on polyester-imides [C09D 179/08](#)); Coating compositions based on derivatives of such polymers
- C09D 171/00** Coating compositions based on polyethers obtained by reactions forming an ether link in the main chain (based on polyacetals [C09D 159/00](#)-, based on epoxy resins [C09D 163/00](#)-, based on polythioether-ethers [C09D 181/02](#)-, based on polyethersulfones [C09D 181/06](#)); Coating compositions based on derivatives of such polymers
- C09D 177/00** Coating compositions based on polyamides obtained by reactions forming a carboxylic amide link in the main chain (based on polyhydrazides [C09D 179/06](#)-, based on polyamide-imides [C09D 179/08](#)); Coating compositions based on derivatives of such polymers
- C09D 183/00** Coating compositions based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon, with or without sulfur, nitrogen, oxygen, or carbon only; Coating compositions based on derivatives of such polymers
- NOTE  
In this main group and its subgroups, from 01.09.2010 onwards, new documents are classified according to the following system. The coating composition is identified with the C-Set, e.g. ( [C09D 183/04](#)-, [C08L 83/04](#) ) (for a coating composition containing two or more siloxanes), while the information as to which different polymers are present in the coating composition is identified with additional indexing codes, e.g. [C08G 77/12](#) and [C08G 77/20](#)-.

- C09D 183/10 · Block or graft copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C09D 151/08](#); [C09D 153/00](#))
- C09D 189/00 -  
C09D 201/00** **Coating compositions based on natural macromolecular compounds or on derivatives thereof (based on polysaccharides [C09D 101/00](#) to [C09D 105/00](#); based on natural rubber [C09D 107/00](#))**
- C09D 191/00** **Coating compositions based on oils, fats or waxes; Coating compositions based on derivatives thereof (polishing compositions, ski waxes [C09G](#); soaps, detergent compositions [C11D](#))**
- U C09D 197/00** **Coating compositions based on lignin-containing materials**
- C09D 197/002 · {Peat, lignite, coal (briquettes [C10L 5/00](#); working-up peat ; ceramic products based on carbon or carbides)}

**Project: N/A (C09J)****C09J**

**ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES (surgical adhesives [A61L 24/00](#); processes for applying liquids or other fluent materials to surfaces in general [B05D](#); adhesives on the basis of non specified organic macromolecular compounds used as bonding agents in layered products [B32B](#); organic labelling fabrics or comparable materials or articles with deformable surface using adhesives and thermo-activatable adhesives respectively [B65C 5/02](#); [B65C 5/04](#); organic macromolecular compounds [C08](#); production of multi-layer textile fabrics [D06M 17/00](#); preparation of glue or gelatine [C09H](#); adhesive labels, tag tickets or similar identification of indication means [G09F 3/10](#))**

**NOTES**

1. In this subclass, the following terms or expressions are used with the meanings indicated:

- "use of materials as adhesives" means the use of known or new polymers or products;
- "rubber" includes:
  - a. natural or conjugated diene rubbers;
  - b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for adhesives based on such macromolecular compounds);
- "based on" is defined by means of Note 3, below.

2. In this subclass, adhesives containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

Example: an adhesive containing polyethene and amino-propyltrimethoxysilane is classified in group [C09J 123/06](#).

However, adhesives containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09J 159/00](#) to [C09J 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09J 4/00](#).

Example: an adhesive containing polyethene and styrene monomer is classified in group [C09J 4/06](#).

Aspects relating to the physical nature of the adhesives or to the effects produced, as defined in group [C09J 9/00](#), if clearly and explicitly stated, are also classified in this subclass. Adhesives characterised by other features,

e.g. additives, are classified in group [C09J 11/00](#), unless the macromolecular constituent is specified.

3. In this subclass, adhesives comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the adhesive is based. If the adhesive is based on two or more constituents, present in equal proportions, the adhesive is classified according to each of these constituents.

Examples: An adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride

is classified in group [C09J 123/06](#);

An adhesive containing 40 parts of polyethene and 40 parts of polyvinylchloride is

classified in groups [C09J 123/06](#) and [C09J 127/06](#).

4. An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#)

5. Documents classified up until 09-2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C09J 101/00](#) - [C09J 201/10](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set.

List of [C08L](#) codes: [C08L 23/00](#), [C08L 23/26](#), [C08L 25/00](#), [C08L 27/00](#), [C08L 27/04](#), [C08L 27/12](#), [C08L 29/00](#), [C08L 31/00](#), [C08L 33/00](#), [C08L 35/00](#), [C08L 37/00](#), [C08L 51/00](#), [C08L 53/00](#), [C08L 55/02](#), [C08L 61/04](#), [C08L 61/20](#), [C08L 63/00](#), [C08L 67/00](#), [C08L 67/02](#), [C08L 67/025](#), [C08L 67/03](#), [C08L 67/04](#), [C08L 67/06](#), [C08L 67/07](#), [C08L 69/00](#), [C08L 69/005](#), [C08L 71/00](#), [C08L 75/04](#), [C08L 77/00](#), [C08L 77/08](#), [C08L 77/12](#), [C08L 79/08](#), [C08L 79/085](#), [C08L 81/00](#), [C08L 83/00](#), [C08L 85/00](#), [C08L 91/06](#), [C08L 95/00](#) or [C08L 2666/00](#) - [C08L 2666/86](#). An additive is classified in the last appropriate place in the list as selected for each [C09J](#) group. Examples:

- a. An adhesive composition based on a polyamide and a graft polymer is classified in ([C09J 177/00](#), [C08L 2666/24](#)).
- b. An adhesive composition based on polyvinylchloride and containing CaCO<sub>3</sub> is classified according to note 4 of [C08K](#), i.e. in [C08K 3/26](#) and [C09J 127/06](#). If this adhesive composition contains also a polyamide, then the classification will be ([C09J 127/06](#), [C08L 77/00](#), [C08K 3/26](#)).
- c. An adhesive composition based on a polysiloxane ([C09J 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09J 183/04](#), [C08L 83/04](#), [C08L 2666/34](#), [C08L 2666/54](#)

6. From April 2012, after the notation [C09J 4/00](#), classification concerning the monomer may be added, in the form of C-sets. The notation is selected from [C08F 210/00](#) to [C08F 246/00](#), [C08G 77/00](#) to [C08G 77/04](#) or [C08G 77/20](#) to [C08G 77/30](#).

Ex. 1: An adhesive based on methylmethacrylate monomer is classified in ([C09J 4/00](#), [C08F 220/00](#)).

Ex. 2: An adhesive based on a dialkoxysilane monomer compound is classified in ([C09J 4/00](#), [C08G 77/04](#)).

7. From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) class, and the minor components are characterised by Indexing Codes taken from [C08L](#) or [C08K](#) and they are linked or unlinked. The polymer in majority is always first in the C-set. List of indexing codes in the C-Sets: [C08L 1/00](#), [C08L 81/00](#), [C08L 83/00](#), [C08L 91/06](#), [C08L 95/00](#) or [C08L 2666/02](#) - [C08L 2666/08](#), [C08L 2666/14](#) - [C08L 2666/26](#).

Examples:

- a. An adhesive blend of 60 parts polyvinylchloride ([C09J 127/06](#)) and 40 parts polyamide is classified in ([C09J 127/06](#), [C08L 2666/20](#)), [C08L 77/00](#).

- b. An adhesive blend of 50 parts polyvinylchloride ([C09J 127/06](#)) and 50 parts polyamide ([C09J 177/00](#)) is classified in ([C09J 127/06](#), [C08L 2666/20](#)), ([C09J 177/00](#), [C08L 2666/04](#)), [C08L 77/00](#) and [C08L 27/06](#).
- c. An adhesive composition based on polyvinylchloride and containing CaCO<sub>3</sub> is classified according to [N: Note 4 of [C08K](#), i.e. in [C08K 3/26](#), [C09J 127/06](#). If this composition contains also a polyamide, then the classification will be ([C09J 127/06](#), [C08L 2666/20](#)) and [C08K 3/26](#).
- d. A composition based on a first polysiloxane ([C09J 183/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C09J 183/04](#), [C08L 83/00](#), [C08K 5/13](#), [C08K 3/36](#)) and [C08L 2205/02](#).

8. From April 2012 onwards, after the notation of groups [C09J 101/00](#) to [C09J 201/00](#)-, notations concerning the other constituents of the adhesive composition may be added, in the form of C-sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) -[C08L 2555/86](#) or [C08K](#) and they may be linked or unlinked: - [C08L 1/00](#) - [C08L 101/16](#) are linked. - [C08L 2201/00](#) - [C08L 2555/86](#) are unlinked. The polymer in majority is always first in the C-set.

Examples:

- a. An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#) (unlinked).
- b. An adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in group ([C09J 123/06](#), [C08L 27/06](#)).
- c. An adhesive containing 40 parts of polyethene and 40 parts of polyvinylchloride is classified in groups ([C09J 123/06](#)[C08L 27/06](#)) and ([C09J 127/06](#), [C08L 23/06](#)).
- d. An adhesive containing 90% of polysiloxane ([C09J 183/04](#)) further containing of polyester ([C08L 67/00](#)) and an alcohol is classified in ([C09J 183/04](#), [C08L 67/00](#), [C08K 5/05](#)).

#### WARNING

The following IPC group is not used in the CPC system: Subject matter covered by these groups is classified in the following CPC group: [C09J 163/02](#) covered by [C09J 163/00](#)

<b>C09J 4/00</b>	<b>Adhesives based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond; {adhesives, based on monomers of macromolecular compounds of groups <a href="#">C09J 183/00</a> to <a href="#">C09J 183/16</a>}</b>
<b>C09J 11/00</b>	<b>Features of adhesives not provided for in group <a href="#">C09J 9/00</a>-, e.g. additives</b>
<b>U C09J 109/00</b>	<b>Adhesives based on homopolymers or copolymers of conjugated diene hydrocarbons</b>
C09J 109/10	· Latex ( <a href="#">C09J 109/04</a> -, <a href="#">C09J 109/08</a> take precedence)
<b>C09J 115/00</b>	<b>Adhesives based on rubber derivatives (<a href="#">C09J 111/00</a>-, <a href="#">C09J 113/00</a> take precedence)</b>
<b>U C09J 125/00</b>	<b>Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring; Adhesives based on derivatives of such polymers</b>
U C09J 125/02	· Homopolymers or copolymers of hydrocarbons
U C09J 125/04	· · Homopolymers or copolymers of styrene
C09J 125/08	· · · Copolymers of styrene ( <a href="#">C09J 129/08</a> -, <a href="#">C09J 135/06</a> -, <a href="#">C09J 155/02</a> take precedence)

- U C09J 135/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical, and containing at least another carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Adhesives based on derivatives of such polymers
- C09J 135/02 · Homopolymers or copolymers of esters ([C09J 135/06](#), [C09J 135/08](#) take precedence)
- C09J 135/04 · Homopolymers or copolymers of nitriles ([C09J 135/06](#), [C09J 135/08](#) take precedence)
- C09J 137/00** Adhesives based on homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (based on polymers of cyclic esters of polyfunctional acids [C09J 131/00](#); based on polymers of cyclic anhydrides of unsaturated acids [C09J 135/00](#)); Adhesives based on derivatives of such polymers
- C09J 145/00** Adhesives based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic system; Adhesives based on derivatives of such polymers (based on polymers of cyclic esters of polyfunctional acids [C09J 131/00](#); based on polymers of cyclic anhydrides or imides [C09J 135/00](#))
- U C09J 151/00** Adhesives based on graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (based on ABS polymers [C09J 155/02](#)); Adhesives based on derivatives of such polymers
- C09J 151/003 · {grafted on to macromolecular compounds obtained by reactions only involving unsaturated carbon-to-carbon bonds ([C09J 151/04](#), [C09J 151/06](#) take precedence)}
- C09J 161/00** Adhesives based on condensation polymers of aldehydes or ketones (with polyalcohols [C09J 159/00](#); with polynitriles [C09J 177/00](#)); Adhesives based on derivatives of such polymers
- C09J 161/34 · Condensation polymers of aldehydes or ketones with monomers covered by at least two of the groups [C09J 161/04](#), [C09J 161/18](#) and [C09J 161/20](#)
- U C09J 163/00** Adhesives based on epoxy resins; Adhesives based on derivatives of epoxy resins
- C09J 163/10 · Epoxy resins modified by unsaturated compounds
- NOTE  
In groups [C09J 165/00](#) to [C09J 185/00](#), in the absence of an indication to the contrary, adhesives based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified according to the linkage present in excess.
- C09J 165/00** Adhesives based on macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain ([C09J 107/00](#) to [C09J 157/00](#), [C09J 161/00](#) take precedence); Adhesives based on derivatives of such polymers

- C09J 167/00** Adhesives based on polyesters obtained by reactions forming a carboxylic ester link in the main chain (based on polyester-amides [C09J 177/12](#); based on polyester-imides [C09J 179/08](#)); Adhesives based on derivatives of such polymers
- C09J 171/00** Adhesives based on polyethers obtained by reactions forming an ether link in the main chain (based on polyacetals [C09J 159/00](#); based on epoxy resins [C09J 163/00](#); based on polythioether-ethers [C09J 181/02](#); based on polyethersulfones [C09J 181/06](#)); Adhesives based on derivatives of such polymers
- C09J 177/00** Adhesives based on polyamides obtained by reactions forming a carboxylic amide link in the main chain (based on polyhydrazides [C09J 179/06](#); based on oC09Jn polyamide-imides [C09J 179/08](#)); Adhesives based on derivatives of such polymers
- U C09J 183/00** Adhesives based on macromolecular compounds obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon, with or without sulfur, nitrogen, oxygen, or carbon only; Adhesives based on derivatives of such polymers
- NOTE  
In this main group, from 01.09.2010 onwards, new documents are classified according to the following system. The adhesive is identified with the previous existing ECLA(+B) notation, e.g. [C09J 183/04](#) +B4S (for an adhesive containing two or more siloxanes), while the information as to which different polymers are present in the adhesive is identified with additional indexing codes, e.g. [C08G 77/12](#) and [C08G 77/20](#)
- C09J 183/10** - Block or graft copolymers containing polysiloxane sequences (obtained by polymerising a compound having a carbon-to-carbon double bond on to a polysiloxane [C09J 151/08](#), [C09J 153/00](#))
- C09J 189/00 - C09J 201/00** Adhesives based on natural macromolecular compounds or on derivatives thereof (based on polysaccharides [C09J 101/00](#) to [C09J 105/00](#); based on natural rubber [C09J 107/00](#))
- C09J 191/00** Adhesives based on oils, fats or waxes; Adhesives based on derivatives thereof (polishing compositions, ski waxes [C09G](#); soaps, detergent compositions [C11D](#))
- U C09J 197/00** Adhesives based on lignin-containing materials
- C09J 197/002** - {Peat, lignite, coal (briquettes [C10L 5/00](#); working-up peat; ceramic products based on carbon or carbides)}

**Project: N/A (C09K)**

- U C09K 3/00** **Materials not provided for elsewhere**

NOTE

When classifying in groups [C09K 3/10](#) to [C09K 3/1028](#) the properties and uses of the material can be further indexed by using indexing codes chosen from [C09K 2003/1034](#) to [C09K 2003/1096](#) and the chemical nature of the materials can be further indexed by using indexing codes chosen from [C09K 2200/00](#) to [C09K 2200/0697](#)

- C09K 3/14
- Anti-slip materials; Abrasives {(products specifically intended for the fabrication of abrasive tools, blocks or papers, or for operations of the kind of sand-blasting and barrelling [B24B 31/14](#)-, [B24C 1/00](#)-; polishing compositions containing abrasive or grinding agents [C09G 1/02](#)-; polishing of semi-conductors [H01L](#); friction compositions for brakes or clutches [F16D 69/02](#)}}
- NOTE  
In this group, boron and silicon are considered as being metals. Likewise for associations of carbon with metals, e.g. carbides.
- U C09K 5/00**      **Heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants; Materials for the production of heat or cold by chemical reactions other than by combustion**
- C09K 5/02
- Materials undergoing a change of physical state when used ([C09K 5/16](#)-, [C09K 5/20](#) take precedence)
- C09K 5/04
- • the change of state being from liquid to vapour or vice-versa
- NOTE  
When classifying in groups [C09K 5/042](#)-, [C09K 5/044](#) and [C09K 5/045](#) the chemical nature of the material can be further indexed by using indexing codes chosen from [C09K 2205/00](#) to [C09K 2205/48](#)
- C09K 5/08
- Materials not undergoing a change of physical state when used ([C09K 5/16](#)-, [C09K 5/20](#) take precedence)
- WARNING  
The subgroups of [C09K 5/08](#) might be incomplete as some of the patent documents classified in [C09K 5/08](#) might need reclassification to one or more of groups [C09K 5/10](#) to [C09K 5/14](#)
- C09K 5/20
- Antifreeze additives therefor, e.g. for radiator liquids (for application to surfaces [C09K 3/18](#)-; inhibiting corrosion by liquids [C23F 11/00](#))
- U C09K 8/00**      **Compositions for drilling of boreholes or wells; Compositions for treating boreholes or wells, e.g. for completion or for remedial operations**
- NOTE  
In groups [C09K 8/00](#) to [C09K 8/94](#) it is desirable to add indexing codes for aspects relating to compositions for drilling or treating boreholes or wells. The indexing codes are chosen from groups [C09K 2208/00](#) to [C09K 2208/32](#)
- C09K 8/56
- Compositions for consolidating loose sand or the like around wells without excessively decreasing the permeability thereof (compositions for plastering borehole walls [C09K 8/50](#)-; {-Soil-conditioning materials or soil-stabilising materials in general [C09K 17/00](#)})
- U C09K 8/60**
- Compositions for stimulating production by acting on the underground formation
- C09K 8/84
- • Compositions based on water or polar solvents ([C09K 8/66](#)-, [C09K 8/82](#) take precedence)

**C09K 9/00**

Tenebrescent materials, i.e. materials for which the range of wavelength for energy absorption is changed as result of excitation by some form of energy ({liquid crystal materials [C09K 19/00](#); photochromic glass [C03C 4/06](#); in thermometers [G01K 11/12](#); in photochromic filters [G02B 5/23](#); in optical modulation devices [G02F 1/00](#)}; photosensitive materials for photographic purposes [G03C](#); {-in cathodochromic screens [H01J 29/14](#)})

NOTE

When classifying in groups [C09K 9/02](#) the chemical nature of the tenebrescent material can be further indexed by using indexing codes chosen from [C09K 2211/00](#) to [C09K 2211/188](#)

**U C09K 11/00**

**Luminescent, e.g. electroluminescent, chemiluminescent materials**

C09K 11/08

- containing inorganic luminescent materials

NOTES

1. In groups [C09K 11/08](#) to [C09K 11/897](#), in the absence of an indication to the contrary, classification of materials is made in the last appropriate place
2. { In this group, magnesium is considered as an alkaline earth metal }

WARNING

Groups [C09K 11/0805](#) to [C09K 11/0894](#), with the exception of [C09K 11/0883](#) for classifying nitrides, are no longer used for classification of new documents. The backlog of this group is being continuously reclassified to subgroups [C09K 11/54](#) to [C09K 11/897](#)

C09K 11/0827

- {Halogenides ([C09K 11/0805](#), [C09K 11/0838](#) to [C09K 11/0894](#) take precedence)}

U C09K 11/64  
C09K 11/644

- containing aluminium
- • {Halogenides ([C09K 11/641](#), [C09K 11/646](#) to [C09K 11/648](#) take precedence)}

U C09K 11/66  
C09K 11/664

- containing germanium, tin or lead
- • {Halogenides ([C09K 11/661](#), [C09K 11/666](#) to [C09K 11/668](#) take precedence)}

U C09K 11/67  
C09K 11/674

- containing refractory metals
- • {Halogenides ([C09K 11/671](#), [C09K 11/676](#) to [C09K 11/679](#) take precedence)}

U C09K 11/70  
C09K 11/705

- containing phosphorus
- • Halogenides ([C09K 11/701](#), [C09K 11/706](#) and [C09K 11/708](#) take precedence)

U C09K 11/74  
C09K 11/7428

- containing arsenic, antimony or bismuth
- • {Halogenides ([C09K 11/7407](#), [C09K 11/7442](#) to [C09K 11/7492](#) take precedence)}

U C09K 11/75  
C09K 11/755

- containing antimony
- • • {Halogenides ([C09K 11/751](#), [C09K 11/757](#) and [C09K 11/758](#) take precedence)}

U C09K 11/77  
C09K 11/7704

- containing rare earth metals
- • {Halogenides ([C09K 11/7701](#), [C09K 11/7706](#) to [C09K 11/7714](#) take precedence)}

U C09K 11/7715  
C09K 11/7719

- containing cerium
- • • {Halogenides ([C09K 11/7716](#), [C09K 11/7721](#) to [C09K 11/7727](#) take precedence)}

- U C09K 11/7743 . . . {containing terbium}
- C09K 11/7747 . . . . {Halogenides ([C09K 11/7744](#)-, [C09K 11/7749](#) to [C09K 11/7755](#) take precedence)}
- U C09K 11/7759 . . . {containing samarium}
- C09K 11/7762 . . . . {Halogenides ([C09K 11/776](#)-, [C09K 11/7764](#) and [C09K 11/7765](#) take precedence)}
- C09K 11/7766 . . . {containing two or more rare earth metals} (containing europium [C09K 11/7783](#))}
- C09K 11/7772 . . . . {Halogenides ([C09K 11/7767](#)-, [C09K 11/7774](#) to [C09K 11/7782](#) take precedence)}
- U C09K 11/7783 . . . {containing two or more rare earth metals one of which being europium}
- U C09K 11/7784 . . . . {Chalcogenides}
- C09K 11/7787 . . . . {Oxides ([C09K 11/7785](#)-, [C09K 11/7786](#) take precedence)}
- C09K 11/779 . . . . {Halogenides ([C09K 11/7784](#)-, [C09K 11/7792](#) to [C09K 11/7798](#) take precedence [C09K 11/7784](#), [C09K 11/7792](#) to [C09K 11/7798](#) take precedence)}

**C09K 13/00** Etching, surface-brightening or pickling compositions (for glass [C03C 15/00](#)-, {[C03C 25/66](#)}; for mortars, concrete, artificial or natural stone or ceramics [C04B 41/5338](#)); for metallic material [C23F](#)-, [C23G 1/00](#)-, [C25F 1/00](#);-; {for semi-conductors [H01L](#)})

NOTE

In groups [C09K 13/02](#) to [C09K 13/12](#)-, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

**C09K 15/00** Anti-oxidant composition; Compositions inhibiting chemical change (for use in well-specified applications, see the relevant places, e.g. in etching or pickling compositions [C09K 13/00](#)-, [C23G](#)), in foodstuffs [A21D](#)-, [A23](#)-, {in association with organic compounds [C07C](#)-, [C07D](#)}, in macromolecular compositions [C08](#);-; in liquid fuels or lubricants [C10](#);-; in fats, fatty substances, fatty oils or waxes [C11B 5/00](#);-; in detergents [C11D](#);-; {coating or impregnating carbon or graphite based bodies to protect them from oxidation [C04B 41/45](#)}; corrosion inhibiting compositions for metallic material [C23F 11/00](#))

NOTE

In groups [C09K 15/02](#) to [C09K 15/34](#)-, in the absence of an indication to the contrary, a composition is classified in the last appropriate place.

**C09K 17/00** Soil-conditioning materials or soil-stabilising materials (specially adapted for boreholes or wells [C09K 8/00](#);-; fertilisers [C05](#);-; consolidating by placing solidifying or pore-filling substances in the soil [E02D 3/12](#))

NOTES

1. This group covers mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their soil-conditioning or soil-stabilising activity.
2. This group does not cover mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their fertilising activity which are covered by subclass [C05G](#)-.
3. For the purpose of classification in this group, the presence of fertilisers in the composition is not taken into account.
4. In groups [C09K 17/02](#) to [C09K 17/50](#)-, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

**C09K 19/00****Liquid crystal materials**NOTES

1. In groups [C09K 19/02](#) to [C09K 19/60](#), { with the exception of groups [C09K 19/0208](#) to [C09K 19/0283](#) }, in the absence of an indication to the contrary, materials are classified in the last appropriate place.
2. Mixtures containing two or more liquid crystal compounds covered individually by the same one of groups [C09K 19/04](#) to [C09K 19/40](#) are classified only in that group.
3. If liquid crystal components of the mixtures classified in groups [C09K 19/42](#) to [C09K 19/50](#) are of importance as such, they should also be classified according to the compounds in groups [C09K 19/04](#) to [C09K 19/40](#).

**C09K 21/00****Fireproofing materials (for use in a particular application, see the relevant places, e.g. fireproofing of wood [B27K](#), of polymers [C08](#), of textiles [D06M](#), of paper [D21H](#); fireproof paints [C09D 5/18](#))**NOTE

In groups [C09K 21/02](#) to [C09K 21/14](#), in the absence of an indication to the contrary, materials are classified in the last appropriate place.

**Project: N/A (C10G)****C10G 3/00****Production of liquid hydrocarbon mixtures from oxygen-containing or organic materials, e.g. fatty oils, fatty acids (production from non-melting solid oxygen-containing carbonaceous materials [C10G 1/00](#); preparation of individual hydrocarbons or mixtures thereof of definite or specified contribution [C07C](#))**WARNINGS

1. Groups [C10G 3/40](#) to [C10G 3/62](#) are not complete pending a reorganization. See also [C10G 3/00](#)
2. Groups [C10G 3/40](#) to [C10G 3/62](#) do not correspond to former or current IPC groups.  
Concordance CPC : IPC for these groups is as follows: - [C10G 3/40](#) - [C10G 3/62](#) : [C10G 3/00](#)

**U C10G 11/00****Catalytic cracking, in the absence of hydrogen, of hydrocarbon oils (cracking in direct contact with molten metals or salts [C10G 9/34](#))**

## U C10G 11/14

- with preheated moving solid catalysts

## U C10G 11/18

- • according to the "fluidised-bed" technique

## C10G 11/185

- • • {Energy recovery from regenerator effluent gases (using steam turbines, see [F01K 23/064](#); using gas turbines, see [F01K 25/14](#); the combined use of gas and steam turbines, see [F01K 3/185](#))}

**C10G 21/00****Refining of hydrocarbon oils in the absence of hydrogen, by extraction with selective solvents ([C10G 17/00](#), [C10G 19/00](#) take precedence; dewaxing oils [C10G 73/02](#))****C10G 45/00****Refining of hydrocarbon oils using hydrogen or hydrogen-generating compounds**NOTE

Treatment of hydrocarbon oils in the presence of hydrogen-generating compounds not provided for in a single one of groups [C10G 45/02](#), [C10G 45/32](#), [C10G 45/44](#) or [C10G 45/58](#) is provided for in group [C10G 49/00](#).

- C10G 49/00** Treatment of hydrocarbon oils in the presence of hydrogen or hydrogen-generating compounds, not provided for in a single one of the groups [C10G 45/02](#), [C10G 45/32](#), [C10G 45/44](#), [C10G 45/58](#) or [C10G 47/00](#)
- C10G 63/00** Treatment of naphtha by at least one reforming process and at least one other conversion process ([C10G 59/00](#), [C10G 61/00](#) take precedence)
- C10G 70/00** Working-up undefined normally gaseous mixtures obtained by processes covered by groups [C10G 9/00](#), [C10G 11/00](#), [C10G 15/00](#), [C10G 47/00](#), [C10G 51/00](#)
- C10G 71/00** Treatment by methods not otherwise provided for of hydrocarbon oils or fatty oils for lubricating purposes (by Fischer-Tropsch [C07C 1/00](#); lubricating compositions [C10M](#))
- C10G 75/00** Inhibiting corrosion or fouling in apparatus for treatment or conversion of hydrocarbon oils, in general ([C10G 7/10](#), [C10G 9/16](#) take precedence; protection of pipes against corrosion or incrustation [F16L 58/00](#))

**Project: N/A (C10J)**

- C10J** PRODUCTION OF PRODUCER GAS, WATER-GAS, SYNTHESIS GAS FROM SOLID CARBONACEOUS MATERIAL, OR MIXTURES CONTAINING THESE GASES (synthesis gas from liquid or gaseous hydrocarbons [C01B](#); underground gasification of minerals [E21B 43/295](#)); CARBURETTING AIR OR OTHER GASES
- U C10J 3/00** Production of combustible gases containing carbon monoxide from solid carbonaceous fuels (destructive distillation processes [C10B](#))
- C10J 3/46
- Gasification of granular or pulverulent flues in suspension
- WARNING  
Groups [C10J 3/463](#), [C10J 3/466](#), [C10J 3/482](#), [C10J 3/485](#), [C10J 3/503](#), [C10J 3/506](#), [C10J 3/523](#) and [C10J 3/526](#) are not complete pending a reorganisation. See also [C10J 3/46](#)
- C10J 3/57
- Gasification using molten salts or metals ([C10J 3/02](#), [C10J 3/46](#) take precedence)
- U C10J 2300/00** Details of gasification processes
- U C10J 2300/16
- Integration of gasification processes with another plant or parts within the plant
- U C10J 2300/164
- • with conversion of synthesis gas
- U C10J 2300/1643
- • • Conversion of synthesis gas to energy
- C10J 2300/165
- • • integrated with a gas turbine or gas motor (gas turbine plants provided with a gas producer [F02C 3/28](#); engines using solid fuels [F02B 43/08](#))

**Project: N/A (C10K)**

- U C10K 1/00** Purifying combustible gases containing carbon monoxide (isolation of hydrogen from mixtures containing hydrogen and carbon monoxide [C01B 3/50](#))
- C10K 1/20
- by treating with solids; Regenerating spent purifying masses {(separation by adsorption [B01D 53/02](#); separation by chemical reaction [B01D 53/34](#); refining of hydrocarbon oils with acids [C10G 17/02](#), [C10G 27/02](#), [C10G 29/12](#))}
- U C10K 3/00** Modifying the chemical composition of combustible gases containing carbon monoxide to produce an improved fuel, e.g. one of different calorific value, which may be free from carbon monoxide
- U C10K 3/02
- by catalytic treatment

C10K 3/04

- • reducing the carbon monoxide content {-e.g. water-gas shift [WGS]}

**Project: N/A (C10L)****C10L**

**FUELS NOT OTHERWISE PROVIDED FOR (fuels for generating pressure gas, e.g. for rockets [C06D 5/00](#); candles [C11C](#); nuclear fuel [G21C 3/00](#)); NATURAL GAS; SYNTHETIC NATURAL GAS OBTAINED BY PROCESSES NOT COVERED BY SUBCLASSES [C10G](#), [C10K](#); LIQUEFIED PETROLEUM GAS; ADDING MATERIALS TO FUELS OR FIRES TO REDUCE SMOKE OR UNDESIRABLE DEPOSITS OR TO FACILITATE SOOT REMOVAL; FIRELIGHTERS**

NOTE

In subclass [C10L](#) it is desirable to give indexing codes for information about components of solid, liquid and gaseous fuels or firelighters, their additives and constituents and their preparation and use. The indexing codes are taken from [C10L 2200/00](#) to [C10L 2290/60](#)

**U C10L 1/00****Liquid carbonaceous fuels**

U C10L 1/10

- containing additives

C10L 1/106

- • {mixtures of inorganic compounds with organic macromolecular compounds}

NOTES

1. In groups [C10L 1/12](#) to [C10L 1/30](#) {[C10L 1/308](#)}, in the absence of an indication to the contrary, a compound is always classified in the last appropriate place.
2. A metal salt or an ammonium salt of a compound is classified as that compound, e.g. a chromium sulfonate is classified as a sulfonate in group [C10L 1/24](#) and not in group [C10L 1/30](#).
3. When classifying in this group, it is desirable to classify the individual additional components using Combination Sets with symbols chosen from groups [C10L 1/12](#) to [C10L 1/308](#)
4. Mixtures of additives are classified in the corresponding main group. Individual additives can be classified using Combination Sets according to the Note above
5. When several alternatives for the same individual additive are mentioned, e.g. as a Markush-formula, classification may be done in the corresponding main group only, the alternatives being classified using Combination Sets, according to the Note above.
6. Documents classified until April 2003, have been classified with Combination Sets as explained in the Notes above, however using symbols chosen from groups [C10L 1/10](#) to [C10L 1/308](#).

U C10L 1/14

- • Organic compounds

U C10L 1/18

- • • Containing oxygen

C10L 1/182

- • • • containing hydroxy groups; Salts thereof {([C10L 1/1802](#), [C10L 1/1805](#), [C10L 1/1808](#), [C10L 1/1811](#), [C10L 1/1814](#), [C10L 1/1817](#) take precedence)}

C10L 1/183

- • • • • at least one hydroxy group bound to an aromatic carbon atom {([C10L 1/1802](#), [C10L 1/1805](#), [C10L 1/1808](#), [C10L 1/1811](#), [C10L 1/1814](#), [C10L 1/1817](#), [C10L 1/1828](#) take precedence)}

C10L 1/1832

- • • • • {mono-hydroxy ([C10L 1/1802](#), [C10L 1/1805](#), [C10L 1/1808](#), [C10L 1/1811](#), [C10L 1/1814](#), [C10L 1/1817](#), [C10L 1/1828](#) take precedence)}

- C10L 1/1835 . . . . . {having at least two hydroxy substituted non condensed benzene rings ([C10L 1/1802](#)-, [C10L 1/1805](#)-, [C10L 1/1808](#)-, [C10L 1/1811](#)-, [C10L 1/1814](#)-, [C10L 1/1817](#)-, [C10L 1/1828](#) take precedence)}
- C10L 1/1837 . . . . . {hydroxy attached to a condensed aromatic ring system ([C10L 1/1802](#)-, [C10L 1/1805](#)-, [C10L 1/1808](#)-, [C10L 1/1811](#)-, [C10L 1/1814](#)-, [C10L 1/1817](#)-, [C10L 1/1828](#) take precedence)}
- C10L 1/185 . . . . Ethers; Acetals; Ketals; Aldehydes; Ketones {([C10L 1/1802](#)-, [C10L 1/1805](#)-, [C10L 1/1808](#)-, [C10L 1/1811](#)-, [C10L 1/1814](#)-, [C10L 1/1817](#) take precedence)}
- C10L 1/188 . . . . Carboxylic acids; {metal} salts thereof {([C10L 1/1802](#)-, [C10L 1/1805](#)-, [C10L 1/1808](#)-, [C10L 1/1811](#)-, [C10L 1/1814](#)-, [C10L 1/1817](#) take precedence)}
- C10L 1/189 . . . . . having at least one carboxyl group bound to an aromatic carbon atom {([C10L 1/1802](#)-, [C10L 1/1805](#)-, [C10L 1/1808](#)-, [C10L 1/1811](#)-, [C10L 1/1814](#)-, [C10L 1/1817](#)-, [C10L 1/1885](#)-, [C10L 1/1886](#)-, [C10L 1/1888](#) take precedence)}
- C10L 1/1895 . . . . . {polycarboxylic acid ([C10L 1/1802](#)-, [C10L 1/1805](#)-, [C10L 1/1808](#)-, [C10L 1/1811](#)-, [C10L 1/1814](#)-, [C10L 1/1817](#)-, [C10L 1/1885](#)-, [C10L 1/1886](#)-, [C10L 1/1888](#) take precedence)}
- C10L 1/19 . . . . Esters {ester radical containing compounds; ester ethers; carbonic acid esters ([C10L 1/1802](#)-, [C10L 1/1805](#)-, [C10L 1/1808](#)-, [C10L 1/1811](#)-, [C10L 1/1814](#)-, [C10L 1/1817](#) take precedence)}
- C10L 1/192 . . . . {Macromolecular compounds} ([C10L 1/1814](#)-, [C10L 1/1817](#) take precedence)
- U C10L 1/22 . . . containing nitrogen
- U C10L 1/222 . . . . containing at least one carbon-to-nitrogen single bond {([C10L 1/221](#) takes precedence)}
- C10L 1/223 . . . . . having at least one amino group bound to an aromatic carbon atom {([C10L 1/221](#)-, [C10L 1/2227](#) take precedence)}
- C10L 1/2235 . . . . . {hydroxy containing ([C10L 1/221](#)-, [C10L 1/2227](#) take precedence)}
- C10L 1/224 . . . . . Amides; Imides {carboxylic acid amides, imides ([C10L 1/221](#)-, [C10L 1/2227](#) take precedence)}
- C10L 1/228 . . . . containing at least one carbon-to-nitrogen double bond, e.g. guanidines, hydrazones, semicarbazones, imines; containing at least one carbon-to-nitrogen triple bond, e.g. nitriles {([C10L 1/221](#)-, [C10L 1/226](#) take precedence)}
- C10L 1/2283 . . . . . {containing one or more carbon to nitrogen double bonds, e.g. guanidine, hydrazone, semi-carbazone, azomethine ([C10L 1/221](#)-, [C10L 1/226](#) take precedence)}
- C10L 1/2286 . . . . . {containing one or more carbon to nitrogen triple bonds, e.g. nitriles ([C10L 1/221](#)-, [C10L 1/226](#) take precedence)}
- C10L 3/00 Gaseous fuels; Natural gas; Synthetic natural gas obtained by processes not covered by subclass [C10G](#)-, [C10K](#); Liquefied petroleum gas**
- C10L 3/06 . Natural gas; Synthetic natural gas obtained by processes not covered by [C10G](#)-, [C10K 3/02](#) or [C10K 3/04](#) {(liquefying by pressure and cold treatment [F25J](#))}
- U C10L 5/00 Solid fuels (produced by solidifying fluid fuels [C10L 7/00](#))**
- U C10L 5/40 . essentially based on materials of non-mineral origin
- C10L 5/46 . . on sewage, house, or town refuse {([C10L 5/403](#)-, [C10L 5/406](#) take precedence)}

C10L 5/48

- on industrial residues and waste materials ({[C10L 5/403](#), [C10L 5/406](#) take precedence})

C10L 10/00

**Use of additives to fuels or fires for particular purposes (additives for liquid carbonaceous fuels characterised by their chemical nature [C10L 1/10](#); using binders for briquetting solid fuels [C10L 5/10](#); using additives to improve the combustion of solid fuels [C10L 9/10](#))**

WARNING

IPC8 subgroups [C10L 10/00](#), introduced in the CPC scheme in June 2006, might be temporarily incomplete as a number of documents presently classified under the main group needs reclassification to these IPC subgroups

**Project: N/A (C10M)**

C10M

**LUBRICATING COMPOSITIONS (well drilling compositions [C09K 8/02](#)); USE OF CHEMICAL SUBSTANCES EITHER ALONE OR AS LUBRICATING INGREDIENTS IN A LUBRICATING COMPOSITION (lubricants for medical use [A61](#)); mould release, i.e. separating, agents for metals [B22C 3/00](#), for plastics or substances in a plastic state, in general [B29C 33/56](#), for glass [C03B 40/02](#); use of particular substances in particular apparatus or conditions, see [F16N](#) or the relevant groups for the application, e.g. [A21D 8/08](#), [B21C 9/00](#), [H01B 3/18](#); immersion oils for microscopy [G02B 21/33](#))**

NOTES

- In this subclass, the following terms are used with the meanings indicated:
  - "lubricant" or "lubricating composition" includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
  - "aliphatic" includes "cycloaliphatic".
- In respect of the classification of mixtures, attention is drawn to Note (4) (e) below.
- In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place. Thus, a compound having an aromatic ring is classified as aromatic regardless of whether the substituent(s) of interest are on the ring or on an aliphatic part of the molecule.
- In this subclass:
  - metal or ammonium salts of a compound are classified as that compound;
  - salts or adducts formed between two or more organic compounds are classified according to all compounds forming the salt or adduct, if of interest;
  - a specified compound, e.g. phenols, acids, substituted by a macromolecular hydrocarbon radical is classified as that compound;
  - base-materials or thickeners or additives consisting of a mixture for which no specific main group is provided are classified in the most indented group covering all essential constituents of the mixture, for example,
    - a base-material mixture of ketone and amide - group [C10M 105/00](#)
    - a base-material mixture of ketone and ether - group [C10M 105/08](#)
    - an additive mixture of long and short chain esters - group [C10M 129/00](#)
    - an additive mixture of short chain aliphatic and aromatic carboxylic acids- group [C10M 129/26](#);
  - except for aqueous lubricating compositions containing more than 10% water, which are classified separately, classification is made according to the type of ingredient or mixture of types of ingredient (base-material, thickener or additive) which characterises the composition. Attention is drawn to the fact that a mixture of essential ingredients characterised by only one of its components, rather than by the mixture as a whole, is not classified as a mixture, e.g. a lubricating composition consisting of:

- a known base-material and a new additive is classified only in the "additive" part of the classification scheme;
- a known base-material with both a thickener and a further additive as essential ingredients, which may be individually classified as a mixture of thickener and additive;
- known base-material with a combination of additives as essential ingredients, which may be individually known or not, is classified in the appropriate place for the additive mixture.

5. In this subclass, it is desirable to add the indexing codes of:

- subclass [C10M](#), relating to the chemical constitution of individual compounds of the lubricating compositions;
- subclass [C10N](#), relating to physico-chemical aspects of the lubricating compositions or of their compounding ingredients.

For more information about the way of allocating these indexing codes, see the notes after the titles of the respective subclasses.

6. In this subclass, until May 2003, indexing codes were added, relating to:

- each of the essential ingredients of a mixture. However, in the case of an aqueous lubricating composition covered by group [C10M 173/00](#), the presence of water is not indicated;
- each of the essential reactants of a reaction product covered by groups [C10M 109/02](#), [C10M 121/04](#) or [C10M 159/12](#)

The indexing codes, which are chosen from groups [C10M 101/00](#) to [C10M 109/00](#), [C10M 113/00](#) to [C10M 121/00](#), [C10M 125/00](#) to [C10M 139/00](#), [C10M 143/00](#) to [C10M 155/00](#), [C10M 159/00](#) or [C10M 163/00](#) to [C10M 167/00](#), were given using Combination Sets.

7. In this subclass, until May 2003, the indexing codes of subclass [C10N](#) were added.

Documents classified with Combination Sets according to internal Notes 2), 3) and 5) are in the state of being reclassified according to Note 1).

#### WARNING

The following groups are no longer used for the classification of new documents from January, 1978:

- [C10M 1/00](#) to [C10M 7/00](#)

The backlog of these groups is continuously being reclassified in groups [C10M 101/00](#) to [C10M 177/00](#).

<b>C10M 111/00</b>	<b>Lubrication compositions characterised by the base-material being a mixture of two or more compounds covered by more than one of the main groups <a href="#">C10M 101/00</a> to <a href="#">C10M 109/00</a>, each of these compounds being essential</b>
<b>C10M 123/00</b>	<b>Lubricating compositions characterised by the thickener being a mixture of two or more compounds covered by more than one of the main groups <a href="#">C10M 113/00</a> to <a href="#">C10M 121/00</a>, each of these compounds being essential (inorganic materials coated with organic compounds <a href="#">C10M 113/16</a>)</b>
<b>C10M 141/00</b>	<b>Lubricating compositions characterised by the additive being a mixture of two or more compounds covered by more than one of the main groups <a href="#">C10M 125/00</a> to <a href="#">C10M 139/00</a>, each of these compounds being essential</b>
<b>C10M 157/00</b>	<b>Lubricating compositions characterised by the additive being a mixture of two or more macromolecular compounds covered by more than one of the main groups <a href="#">C10M 143/00</a> to <a href="#">C10M 155/00</a>, each of these compounds being essential</b>

- C10M 165/00** Lubricating compositions characterised by the additive being a mixture of a macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential
- NOTE  
{ Compositions containing compounds covered by [C10M 159/005](#)-, as compounds of unknown or incompletely defined constitution are classified in [C10M 157/00](#)}
- C10M 167/00** Lubricating compositions characterised by the additive being a mixture of a macromolecular compound, a non-macromolecular compound and a compound of unknown or incompletely defined constitution, each of these compounds being essential
- NOTE  
{ Compositions containing compounds covered by [C10M 159/005](#)-, as compounds of unknown or incompletely defined constitution are classified in [C10M 161/00](#)}
- C10M 171/00** Lubricating compositions characterised by purely physical criteria, e.g. containing as base-material, thickener or additive, ingredients which are characterised exclusively by their numerically specified physical properties, i.e. containing ingredients which are physically well-defined but for which the chemical nature is either unspecified or only very vaguely indicated (chemically defined ingredients [C10M 101/00](#) to [C10M 169/00](#);-; petroleum fractions [C10M 101/02](#)-, [C10M 121/02](#)-, [C10M 159/04](#))
- C10M 175/00** Working-up used lubricants to recover useful products {(destructive distillation [C10B](#); extraction and elimination of PCBs [C10G 7/006](#)-, [C10G 21/006](#)-, [C10G 25/006](#);-; combustion processes [F23G](#); Filtration, filters in general [B01D](#)); Cleaning (in a mechanical way [B08B](#); integrated processes [C23](#); solid waste [B09B](#))}
- U C10M 2201/00** Inorganic compounds or elements as ingredients in lubricant compositions  
C10M 2201/08
- Inorganic acids or salts thereof (of phosphorus [C10M 2201/085](#)-, of chromium [C10M 2201/086](#)-, of boron [C10M 2201/087](#);-; metal carbonates or bicarbonates [C10M 2201/062](#))
- C10M 2205/00** Organic macromolecular hydrocarbon compounds or fractions, whether or not modified by oxidation as ingredients in lubricant compositions
- NOTE  
Copolymers are indexed with the symbol for the main monomer always being present, (e.g. [C10M 2205/026](#)-, [C10M 2205/022](#) ) according to the last place rule, followed by the symbol of the other monomers, (e.g. [C10M 2205/022](#)-, [C10M 2205/00](#) )
- U C10M 2209/00** Organic macromolecular compounds containing oxygen as ingredients in lubricant compositions (oxidised hydrocarbons [C10M 2205/12](#))
- U C10M 2209/10** • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- U C10M 2209/103** • • Polyethers, i.e. containing di- or higher polyoxyalkylene groups  
C10M 2209/108 • • • etherified
- NOTE  
When applying indexing code [C10M 2209/108](#)-, it should be linked to the appropriate code for identifying the alkylene oxide involved, chosen from groups [C10M 2209/104](#) to [C10M 2209/107](#) and by using alpha-numerical order in the combination.

Example: [C10M 2209/107](#) +  
[C10M 2209/108](#)

C10M 2209/109 . . . esterified

NOTE

When applying indexing code [C10M 2209/109](#), it should be linked to the appropriate code for identifying the alkylene oxide involved, chosen from groups [C10M 2209/104](#) to [C10M 2209/107](#) and by using alpha-numerical order in the combination.

Example: [C10M 2209/107](#) +  
[C10M 2209/109](#)

**C10M 2227/00** **Organic non-macromolecular compounds containing atoms of elements not provided for in groups [C10M 2203/00](#), [C10M 2207/00](#), [C10M 2211/00](#), [C10M 2215/00](#), [C10M 2219/00](#) or [C10M 2223/00](#) as ingredients in lubricant compositions**

**C10M 2229/00** **Organic macromolecular compounds containing atoms of elements not provided for in groups [C10M 2205/00](#), [C10M 2209/00](#), [C10M 2213/00](#), [C10M 2217/00](#), [C10M 2221/00](#) or [C10M 2225/00](#) as ingredients in lubricant compositions**

**Project: N/A (C11B)**

**C11B 5/00** **Preserving by using additives, e.g. anti-oxidants**

NOTE

In groups [C11B 5/0007](#) to [C11B 5/0092](#), in the absence of an indication to the contrary, a composition is classified in the last appropriate place

**C11B 7/00** **Separation of mixtures of fats or fatty oils into their constituents, e.g. saturated oils from unsaturated oils**

NOTE

In groups [C11B 7/0008](#) to [C11B 7/0091](#), in the absence of an indication to the contrary an invention is classified in the last appropriate place

C11B 7/0008 . {by differences of solubilities, e.g. by extraction, by separation from a solution by means of anti-solvents (addition of a minor amount of solvent intended to lower the melting point [C11B 7/0083](#), [C11B 7/0091](#))}

**C11B 11/00** **Recovery or refining of other fatty substances, e.g. lanolin, waxes (synthetic waxes [C07](#), [C08](#); mineral waxes [C10G](#))**

**C11B 13/00** **Recovery of fats, fatty oils, or fatty acids from waste materials (mechanical separation from waste water [C02F](#), [E03F](#))**

**Project: N/A (C11D)**

**U C11D 1/00** **Detergent compositions based essentially on surface-active compounds; Use of these compounds as a detergent**

NOTE

In groups [C11D 1/02](#) to [C11D 1/94](#), in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

U C11D 1/38 . Cationic compounds {([C11D 1/002](#), [C11D 1/004](#), [C11D 1/008](#) take precedence)}

- C11D 1/52
- Carboxylic amides, alkylolamides or imides {-or their condensation products with alkylene oxides}
- WARNING  
Until September 2008, when classification was made, group [C11D 3/07](#) took precedence over group [C11D 1/52](#)
- U C11D 1/66
- Non-ionic compounds {([C11D 1/002](#), [C11D 1/004](#), [C11D 1/008](#) take precedence)}
- C11D 1/722
- Ethers of polyoxyalkylene glycols having mixed oxyalkylene groups; {-Polyalkoxylated fatty alcohols or polyalkoxylated alkylaryl alcohols with mixed oxyalkylene groups ([C11D 1/721](#) takes precedence)}
- U C11D 3/00
- Other compounding ingredients of detergent compositions covered in group [C11D 1/00](#)**
- NOTE  
Documents classified in group [C11D 3/0005](#) are also classified in other groups of subclass [C11D](#) according to the chemical nature of the compounds as such
- U C11D 3/02
- Inorganic compounds; {Elemental compounds}
- U C11D 3/04
- Water-soluble compounds
- C11D 3/10
- Carbonates; {-Bicarbonates}
- U C11D 3/16
- Organic compounds
- U C11D 3/26
- containing nitrogen {([C11D 3/162](#), [C11D 3/164](#), [C11D 3/166](#), [C11D 3/168](#) take precedence)}
- C11D 3/30
- Amines; Substituted amines; {-Quaternized amines}

**Project: N/A (C12C)****C12C**

**BREWING OF BEER (cleaning of raw materials [A23N](#); pitching and depitching machines, cellar tools [C12L](#); propagating yeasts [C12N 1/14](#); non-beverage ethanolic fermentation [C12P 7/06](#))**

**Project: N/A (C12N)****C12N**

**MICRO-ORGANISMS OR ENZYMES; COMPOSITIONS THEREOF (biocides, pest repellants or attractants, or plant growth regulators, containing micro-organisms, viruses, microbial fungi, enzymes, fermentates or substances produced by or extracted from micro-organisms or animal material [A01N 63/00](#); food compositions [A21](#), [A23](#); medicinal preparations [A61K](#); chemical aspects of, or use of materials for, bandages, dressings, absorbent pads or surgical articles [A61L](#); fertilisers [C05](#)); PROPAGATING, PRESERVING OR MAINTAINING MICRO-ORGANISMS (preservation of living parts of humans or animals [A01N 1/02](#)); MUTATION OR GENETIC ENGINEERING; CULTURE MEDIA (micro-biological testing media [C12Q](#))**

NOTES

1. Documents relating to the use of vectors or hosts for the preparation of specific peptides, e.g. enzymes, are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes.
2. Attention is drawn to Notes (1) to (3) following the title of Class [C12](#).
3. When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

C12N 1/11 covered by [C12N 15/79](#)  
C12N 1/13 covered by [C12N 15/79](#)  
C12N 1/15 covered by [C12N 15/80](#)  
C12N 1/19 covered by [C12N 15/81](#)  
C12N 1/21 covered by [C12N 15/74](#)  
C12N 5/02 covered by [C12N 5/00](#), [C12N 5/04](#) to [C12N 5/166](#)  
C12N 5/07 - C12N 5/095 covered by [C12N 5/06](#) and  
subgroups  
C12N 5/18 - C12N 5/28 covered by [C12N 5/16](#) and  
subgroups  
C12N 5/18 covered by [C12N 5/16](#)  
C12N 5/20 covered by [C12N 5/163](#)  
C12N 5/22 covered by [C12N 5/16](#)  
C12N 5/24 covered by [C12N 5/163](#)  
C12N 5/26 covered by [C12N 5/166](#)  
C12N 5/28 covered by [C12N 5/166](#)  
C12N 7/01 covered by [C12N 7/00](#)  
C12N 9/26 covered by [C12N 9/2408](#)  
C12N 9/38 covered by [C12N 9/2468](#)  
C12N 9/42 covered by [C12N 9/2434](#)  
C12N 9/44 covered by [C12N 9/2451](#)  
C12N 9/70 covered by [C07K 14/3153](#)  
C12N 15/05 covered by [C12N 5/14](#)  
C12N 15/06 covered by [C12N 5/16](#)  
C12N 15/07 covered by [C12N 5/16](#)  
C12N 15/08 covered by [C12N 5/166](#)  
C12N 15/12 covered by [C07K 14/435](#)  
C12N 15/13 covered by [C07K 16/00](#)  
C12N 15/14 covered by [C07K 14/765](#)  
C12N 15/15 covered by [C07K 14/81](#)  
C12N 15/16 covered by [C07K 14/575](#)  
C12N 15/17 covered by [C07K 14/62](#)  
C12N 15/18 covered by [C07K 14/61](#)  
C12N 15/19 covered by [C07K 14/52](#)  
C12N 15/20 covered by [C07K 14/555](#)  
C12N 15/21 covered by [C07K 14/56](#)  
C12N 15/22 covered by [C07K 14/565](#)  
C12N 15/23 covered by [C07K 14/57](#)  
C12N 15/24 covered by [C07K 14/54](#)  
C12N 15/25 covered by [C07K 14/545](#)  
C12N 15/26 covered by [C07K 14/55](#)  
C12N 15/27 covered by [C07K 14/53](#)  
C12N 15/28 covered by [C07K 14/525](#)  
C12N 15/29 covered by [C07K 14/415](#)  
C12N 15/30 covered by [C07K 14/44](#)  
C12N 15/31 covered by [C07K 14/195](#), [C07K 14/005](#)  
C12N 15/32 covered by [C07K 14/325](#)  
C12N 15/33 covered by [C07K 14/005](#)  
C12N 15/34 covered by [C07K 14/01](#)  
C12N 15/35 covered by [C07K 14/015](#)  
C12N 15/36 covered by [C07K 14/02](#)  
C12N 15/37 covered by [C07K 14/025](#)  
C12N 15/38 covered by [C07K 14/03](#)  
C12N 15/39 covered by [C07K 14/065](#)  
C12N 15/40 covered by [C07K 14/08](#)  
C12N 15/41 covered by [C07K 14/085](#)  
C12N 15/42 covered by [C07K 14/09](#)  
C12N 15/43 covered by [C07K 14/105](#)

C12N 15/44 covered by [C07K 14/11](#)  
C12N 15/45 covered by [C07K 14/115](#)  
C12N 15/46 covered by [C07K 14/14](#)  
C12N 15/47 covered by [C07K 14/145](#)  
C12N 15/48 covered by [C07K 14/15](#)  
C12N 15/49 covered by [C07K 14/155](#)  
C12N 15/50 covered by [C07K 14/165](#)  
C12N 15/51 covered by [C07K 14/02](#), [C07K 14/10](#), [C07K 14/18](#)  
C12N 15/53 covered by [C12N 9/02](#)  
C12N 15/54 covered by [C12N 9/10](#)  
C12N 15/55 covered by [C12N 9/14](#)  
C12N 15/56 covered by [C12N 9/24](#)  
C12N 15/57 covered by [C12N 9/48](#)  
C12N 15/58 covered by [C12N 9/6456](#)  
C12N 15/59 covered by [C12N 9/6483](#)  
C12N 15/60 covered by [C12N 9/88](#)  
C12N 15/61 covered by [C12N 9/90](#)  
C12N 15/83 covered by [C12N 15/82](#)  
C12N 15/84 covered by [C12N 15/82](#)

**C12N 1/00** **Micro-organisms, e.g. protozoa; Compositions thereof (medicinal preparations containing material from micro-organisms [A61K 35/66](#); preparing medicinal bacterial antigen or antibody compositions, e.g. bacterial vaccines [A61K 39/00](#)); Processes of propagating, maintaining or preserving micro-organisms or compositions thereof; Processes of preparing or isolating a composition containing a micro-organism; Culture media therefor**

C12N 1/12 · Unicellular algae; Culture media therefor (culture of multi-cellular plants [A01G](#); as new plants [A01H 13/00](#))

C12N 1/14 · Fungi (culture of mushrooms [A01G 1/04](#); as new plants per se [A01H 15/00](#); {-fungi per se [C12R 1/645](#) to [C12R 1/885](#)}) Culture media therefor

**U C12N 5/00** **Undifferentiated human, animal or plant cells, e.g. cell lines; Tissues; Cultivation or maintenance thereof; Culture media therefor; (plant reproduction by tissue culture techniques [A01H 4/00](#))**

NOTE

In this group, the following words are used with the meanings indicated:

- a "totipotent" cell can differentiate into all somatic lineages (ectoderm, mesoderm, endoderm), the germ line and extra-embryonic tissues such as the placenta;
- a "pluripotent" cell is a somatic stem cell which can differentiate into cells of at least two of the three somatic lineages (ectoderm, mesoderm, endoderm);
- a "multipotent" cell is restricted to one lineage;
- "progenitor" and "precursor" cells are further restricted within the lineage. If not explicitly foreseen, totipotent cells are classified with pluripotent cells. Multipotent cells should not be classified with pluripotent cells. Unless provided for otherwise, committed progenitors are classified with their progeny.

U C12N 5/06 · Animal cells or tissues; {Human cells or tissues (preservation of living cells or tissues [A01N 1/02](#)); Not used, see subgroups}

NOTE

In this group, the following words are used with the meanings indicated:

- a "totipotent" cell can differentiate into all somatic lineages (ectoderm, mesoderm, endoderm), the germ line and extra-embryonic tissues such as the placenta;

- a "pluripotent" cell is a somatic stem cell which can differentiate into cells of at least two of the three somatic lineages (ectoderm, mesoderm, endoderm);
- a "multipotent" cell is restricted to one lineage.

"Progenitor" and "precursor" cells are further restricted within the lineage. If not explicitly foreseen, totipotent cells are classified with pluripotent cells. Multipotent cells should not be classified with pluripotent cells

U C12N 5/0602

- {Vertebrate cells}

NOTE

Three-dimensional culture, tissue culture or organ culture are classified with the corresponding cells, if not specially provided for

U C12N 5/0603

- • {Embryonic cells (production of embryos, nuclear transfer [A01K 67/027](#)); Embryoid bodies}

C12N 5/0606

- • • {Pluripotent embryonic cells, e.g. embryonic stem cells [ES] (embryonic germ cells [C12N 5/0611](#)-, induced pluripotent stem cells [C12N 5/0696](#))}

C12N 5/0607

- • • {Non-embryonic pluripotent stem cells, e.g. MASC} (induced pluripotent stem cells [C12N 5/0696](#))}

C12N 5/0613

- • • {Cells from endocrine organs (pancreas [C12N 5/0676](#)-, gonads [C12N 5/0681](#))}

U C12N 5/0652

- • • {Cells of skeletal and connective tissues; Mesenchyme}

C12N 5/0669

- • • • {Bone marrow stromal cells; Whole bone marrow (isolated stem cells from bone marrow [C12N 5/0647](#)-, [C12N 5/0663](#))}

**C12N 9/00**

**Enzymes; Proenzymes; Compositions thereof (preparations containing enzymes for cleaning teeth [A61K 8/66](#)-, [A61Q 11/00](#)-, medicinal preparations containing enzymes or pro-enzymes [A61K 38/43](#)-, enzyme containing detergent compositions [C11D](#)-, {enzymes with nucleic acid structure, e.g. ribozymes, [C12N 15/113](#)}); Processes for preparing, activating, inhibiting, separating or purifying enzymes (preparation of malt [C12C 1/00](#))**

NOTE

Enzymes are generally categorized below according to the "Nomenclature and Classification of Enzymes" of the International Commission on Enzymes. Where appropriate, this designation appears in the groups below in parenthesis.

**C12N 15/00**

**Mutation or genetic engineering; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification; Use of hosts therefor (mutants or genetically engineered micro-organisms, per se [C12N 1/00](#)-, [C12N 5/00](#)-, [C12N 7/00](#)-, new plants per se [A01H](#)-, plant reproduction by tissue culture techniques [A01H 4/00](#)-, new animals per se [A01K 67/00](#)-, use of medicinal preparations containing genetic material which is inserted into cells of the living body to treat genetic diseases, gene therapy [A61K 48/00](#))**

C12N 15/02

- Preparation of hybrid cells by fusion of two or more cells, e.g. protoplast fusion {(monoclonal antibodies [C07K 16/00](#)-, apparatus for cell fusion [C12M](#))}

U C12N 15/09

- Recombinant DNA-technology

C12N 15/10

- • Processes for the isolation, preparation or purification of DNA or RNA (chemical preparation of DNA or RNA [C07H 21/00](#)-, preparation of non-structural polynucleotides from micro-organisms or with enzymes [C12P 19/34](#))

NOTE

After the symbol [C12N 15/10](#) to [C12N 15/1096](#), and separated therefrom by a + sign, it is desirable to add the indexing codes selected from groups [C12Q 2500/00](#) to [C12Q 2565/634](#)-, relating to relevant technical features of

the invention. When more than one indexing code is selected, the different codes are separated by a + sign. Example : [C12N 15/1037](#) + [C12Q 2537/125](#) + [C12Q 2521/537](#)

- U C12N 15/11
- DNA or RNA fragments; Modified forms thereof (DNA or RNA not used in recombinant technology, [C07H 21/00](#)); {Non-coding nucleic acids having a biological activity}
- NOTE
- Documents relating to DNA or its corresponding RNA and their use in recombinant DNA technology or the preparation of specific peptides, e.g. enzymes, are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in recombinant technology. Groups [C12N 15/11](#) to [C12N 15/117](#) cover also the use of non-coding nucleic acids as active ingredients in medicinal preparations. The [C12N 2303/00](#) ICO scheme has to be applied to these groups. When documents classifiable in one or more subgroups disclose general principles of the technology applicable to the whole field, classification is also made in group [C12N 15/111](#)
- U C12N 15/113
- • Non-coding nucleic acids modulating the expression of genes, e.g. antisense oligonucleotides; {Antisense DNA or RNA; Triplex-forming oligonucleotides; Catalytic nucleic acids, e.g. ribozymes; Nucleic acids used in co-suppression or gene silencing (when used in plants [C12N 15/8218](#))}
- C12N 15/1137
- • • {against enzymes (viral enzymes [C12N 15/1131](#); receptors [C12N 15/1138](#))}
- C12N 15/115
- • • Aptamers, i.e. nucleic acids binding a target molecule specifically and with high affinity without hybridising therewith; {Nucleic acids binding to non-nucleic acids, e.g. aptamers}
- NOTE
- Aptamers fused to compounds which are already classified in groups [C12N 15/11](#) to [C12N 15/117](#), are classified with the corresponding compound
- U **C12N 2500/00**
- Specific components of cell culture medium**
- C12N 2500/30
- Organic components (metal chelators [C12N 2500/10](#); calcitonin [C12N 2500/14](#); transferrin [C12N 2500/24](#))
- C12N 2500/40
- • Nucleotides, nucleosides, bases (cyclic nucleotides [C12N 2501/01](#); anti-neoplastic drugs [C12N 2501/06](#))
- U **C12N 2501/00**
- Active agents used in cell culture processes, e.g. differentiation**
- NOTE
- Whenever possible, indexation is done by signalling pathway and not by chemical structure, e.g. the group of a protein covers not only peptide analogs of it and the corresponding nucleic acids, as in [C07K 14/00](#), but also antibodies, anti-idiotypic antibodies, non-peptide ligands of the receptor, the receptor itself, antibodies against the receptor or inhibitors of the conversion enzyme which processes the protein precursor. Unless otherwise provided for, ligands and substrates take precedence over receptors and enzymes.
- U C12N 2501/30
- Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [C12N 2501/85](#))
- C12N 2501/33
- • Insulin (together with transferrin [C12N 2500/25](#); Insulin-like growth factors [C12N 2501/105](#))

**U C12N 2506/00 Differentiation of animal cells from one lineage to another; Differentiation of pluripotent cells**NOTE

This scheme indexes the starting point of a differentiation process and is used in combination with classification in [C12N 5/06](#) for the end product. Differentiation of a restricted progenitor cell into its expected progeny is not indexed. Differentiation of totipotent cells and dedifferentiation are always indexed.

C12N 2506/30

· from cancer cells, e.g. reversion of tumour cells

NOTE

Unless the tumourigenic phenotype is totally reversed, the end product is still classified under [C12N 5/0693](#).

**Project: N/A (C12P)**

C12P

**FERMENTATION OR ENZYME-USING PROCESSES TO SYNTHESISE A DESIRED CHEMICAL COMPOUND OR COMPOSITION OR TO SEPARATE OPTICAL ISOMERS FROM A RACEMIC MIXTURE {(brewing of beer [C12C](#); producing vinegar [C12J](#); producing specific peptides or proteins [C07K](#); producing enzymes [C12N 9/00](#); DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification [C12N 15/00](#); measuring or testing processes involving enzymes or micro-organisms [C12Q](#); measuring or testing processes involving nucleic acid amplification reactions [C12Q 1/6844](#); fermentation processes to form a food composition, [A21](#) or [A23](#); compounds in general, see the relevant compound class, e.g. [C01](#), [C07](#))}**

NOTES

1. This subclass covers the production of compounds or compositions by biochemical transformation of matter performed by using enzymes or micro-organisms, wherein micro-organisms are defined as any single-celled organisms, including bacteria, fungi, yeast or microalgae, or plant or mammalian cells in the form of cell cultures.

2. In this subclass, documents are primarily classified according to the compounds produced. In addition, if appropriate, classification according to the method or biocatalyst used to produce the compound is made.

3. Classification in groups [C12P 19/14](#) - [C12P 19/24](#), [C12P 39/00](#), [C12P 41/00](#) - [C12P 41/009](#) should only be made together with the corresponding product groups

WARNING

The following IPC groups are not used in the CPC scheme. Subject-matter covered by these groups is classified in the following CPC groups:

-	<a href="#">C12P 21/04</a>	covered by	<a href="#">C07K 7/50</a>
-	<a href="#">C12P 21/08</a>	covered by	<a href="#">C07K 16/00</a>

C12P 1/00

**Preparation of compounds or compositions, not provided for in groups [C12P 3/00](#) to [C12P 39/00](#), by using micro-organisms or enzymes**

NOTES

1. This group is used for the classification of documents relating to the production of compounds of unknown structure

2. When classifying in this group, classification should be made also in [C12R](#)

C12P 15/00

**Preparation of compounds containing at least three condensed carbocyclic rings {(Gibbanes [C12P 27/00](#); naphthalenes [C12P 29/00](#))}**

- U C12P 17/00 Preparation of heterocyclic carbon compounds with only O, N, S, Se or Te as ring hetero atoms (C12P 13/04 to C12P 13/24 take precedence)**
- C12P 17/16 · containing two or more hetero rings {(Thiamine open chain analogs [C12P 17/167](#)-; i.e. not condensed among themselves or through a common carbocyclic ring system)}
- U C12P 17/18** · containing at least two hetero rings condensed among themselves or condensed with a common carbocyclic ring system, e.g. rifamycin, {(e.g. Rifamycin [C12P 17/189](#))}
- C12P 17/185 · · {Heterocyclic compounds containing sulfur atoms as ring hetero atoms in the condensed system}{-cepam nucleus [C12P 35/00](#); penam nucleus [C12P 37/00](#)}
- C12P 19/00 Preparation of compounds containing saccharide radicals (keto-aldehydic acids [C12P 7/58](#))**
- NOTE  
Attention is drawn to the term "saccharide radical" in the first Note following the title of subclass [C07H](#)-.
- C12P 19/44 · Preparation of O-glycosides, e.g. glucosides {(Polysaccharides and not substituted disaccharides [C12P 19/04](#)-, [C12P 19/12](#))}
- C12P 33/00 Preparation of steroids**
- NOTES
1. Attention is drawn to the definition of steroids in the note following the title of subclass [C07J](#)-.
  2. In groups [C12P 33/02](#) to [C12P 33/20](#)-, the terms "acting", "forming", "hydroxylating", "dehydroxylating" and "dehydrogenating" refer to the action of a micro-organism or enzyme rather than other chemical action.

**Project: N/A (C12Q)****C12Q****MEASURING OR TESTING PROCESSES INVOLVING ENZYMES OR MICRO-ORGANISMS (immunoassay [G01N 33/53](#)); COMPOSITIONS OR TEST PAPERS THEREFOR; PROCESSES OF PREPARING SUCH COMPOSITIONS; CONDITION RESPONSIVE CONTROL IN MICROBIOLOGICAL OR ENZYMOLOGICAL PROCESSES**NOTES

1. This subclass does not cover the observation of the progress or of the result of processes specified in this subclass by any of the methods specified in groups [G01N 3/00](#) to [G01N 29/00](#)-, which is covered by subclass [G01N](#).
2. In this subclass, the following expression is used with the meaning indicated: "involving", when used in relation to a substance, includes the testing for the substance as well as employing the substance as a determinant or reactant in a test for a different substance.
3. Attention is drawn to Notes (1) to (3) following the title of class [C12](#).
4. In this subclass, test media are classified in the appropriate group for the relevant test process.
5. Documents describing the use of an electrode for analysis of a specific analyte are classified in [C12Q 1/001](#) or subgroups and not according to the last place rule
6. Documents relating to new peptides, e.g. enzymes, or new DNA or its corresponding mRNA, encoding for the peptides, and their use in measuring or testing processes are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in diagnostics. However where the new nucleic acids are principally used in

diagnostic processes, e.g. PCR, hybridisation reactions, the documents are also classified in group [C12Q 1/68](#)

7. When classifying in groups [C12Q 1/68](#) to [C12Q 1/70](#) it is desirable to classify with symbols from groups [C12Q 2500/00](#) to [C12Q 2565/634](#), relating to relevant technical features of the invention, using Combination Sets.

8. In groups [C12Q 1/6876](#) - [C12Q 1/6895](#) and [C12Q 1/70](#) - [C12Q 1/708](#) it is desirable to add the indexing codes [C12Q 2600/00](#) to [C12Q 2600/178](#) which reflect the use of the product in combination with the virus groups only if the application refers to products.

- U C12Q 1/00** **Measuring or testing processes involving enzymes, {nucleic acids} or micro-organisms (measuring or testing apparatus with condition measuring or sensing means, e.g. colony counters [C12M 1/34](#)); Compositions therefor; Processes of preparing such compositions**
- C12Q 1/25
    - involving enzymes not classifiable in groups [C12Q 1/26](#) {to [C12Q 1/66](#)}
  - C12Q 1/68
    - involving nucleic acids
- NOTE**  
In subgroups of [C12Q 1/68](#), classification is made according to the most relevant feature rather than according to the last-place-rule
- C12Q 3/00** **Condition responsive control processes (apparatus therefor [C12M 1/36](#); controlling or regulating in general [G05](#))**
- C12Q 2304/00** **Chemical means of detecting micro-organisms (hydrolase substrates [C12Q 2334/00](#), peptidase substrates [C12Q 2337/00](#))**
- U C12Q 2533/00** **{Reactions characterised by the enzymatic reaction principle used}**
- U C12Q 2533/10
    - the purpose being to increase the length of an oligonucleotide strand (ligase detection reaction, LDR [C12Q 2561/125](#))
  - C12Q 2533/101
    - • Primer extension (see also codes [C12Q 2535/125](#), [C12Q 2565/537](#))
  - C12Q 2533/107
    - • Probe/oligonucleotide ligation (Not used with code [C12Q 2531/137](#), [C12Q 2561/125](#))
- U C12Q 2545/00** **{Reactions characterised by their quantitative nature}**
- U C12Q 2545/10
    - the purpose being quantitative analysis (Not used)
  - C12Q 2545/114
    - • involving a quantitation step (not to be used with [C12Q 2545/101](#), [C12Q 2545/107](#), [C12Q 2545/113](#))

**Project: N/A (C12R)**

- U C12R 1/00** **Processes using micro-organisms**
- U C12R 1/01
    - using bacteria or actinomycetales
  - C12R 1/46
    - • Streptococcus; {-Enterococcus; Lactococcus}

**Project: N/A (C12Y)**

- U C12Y 101/00** **Oxidoreductases acting on the CH-OH group of donors (1.1)**
- U C12Y 101/01
    - with NAD+ or NADP+ as acceptor (1.1.1)
  - C12Y 101/01005
    - • Acetoin dehydrogenase (1.1.1.5) ([C12Y 101/01303](#), [C12Y 101/01304](#) takes precedence)
  - C12Y 101/01182
    - • Fenchol dehydrogenase (1.1.1.182) ([C12Y 101/01198](#), [C12Y 101/01227](#), [C12Y 101/01228](#) take precedence)
  - U C12Y 101/99
    - with other acceptors (1.1.99)

- C12Y 101/99008
- • Alcohol dehydrogenase (acceptor) (1.1.99.8) ([C12Y 101/02007](#)-, [C12Y 101/02008](#) take precedence)
- U C12Y 102/00 Oxidoreductases acting on the aldehyde or oxo group of donors (1.2)**
- U C12Y 102/01
- with NAD+ or NADP+ as acceptor (1.2.1)
- C12Y 102/01001
- • Formaldehyde dehydrogenase (glutathione) (1.2.1.1) ([C12Y 101/01284](#)-, [C12Y 404/01022](#) take precedence)
- U C12Y 113/00 Oxidoreductases acting on single donors with incorporation of molecular oxygen (oxygenases) (1.13)**
- U C12Y 113/11
- with incorporation of two atoms of oxygen (1.13.11)
- C12Y 113/11044
- • Linoleate diol synthase (1.13.11.44) ([C12Y 113/1106](#)-, [C12Y 504/04006](#) take precedence)
- U C12Y 201/00 Transferases transferring one-carbon groups (2.1)**
- U C12Y 201/01
- Methyltransferases (2.1.1)
- C12Y 201/01024
- • Protein-gamma-glutamate O-methyltransferase (2.1.1.24) ([C12Y 201/01077](#)-, [C12Y 201/0108](#)-, [C12Y 201/011](#) take precedence)
- C12Y 201/01031
- • tRNA (guanine-N1-)-methyltransferase (2.1.1.31) ([C12Y 201/01221](#)-, [C12Y 201/01228](#) take precedence)
- C12Y 201/01051
- • rRNA (guanine-N1-)-methyltransferase (2.1.1.51) ([C12Y 201/01187](#)-, [C12Y 201/01188](#) take precedence)
- C12Y 201/01194
- • 23S rRNA (adenine2503-C2,C8)-dimethyltransferase (2.1.1.194) ([C12Y 201/01192](#)-, [C12Y 201/01224](#) take precedence)
- U C12Y 204/00 Glycosyltransferases (2.4)**
- U C12Y 204/01
- Hexosyltransferases (2.4.1)
- C12Y 204/01051
- • UDP-N-acetylglucosamine-glycoprotein N-acetylglucosaminyltransferase (2.4.1.51) ([C12Y 204/01101](#)-, [C12Y 204/01143](#) - [C12Y 204/01145](#) take precedence)
- U C12Y 205/00 Transferases transferring alkyl or aryl groups, other than methyl groups (2.5)**
- U C12Y 205/01
- transferring alkyl or aryl groups, other than methyl groups (2.5.1)
- C12Y 205/01011
- • Trans-octaprenyltranstransferase (2.5.1.11) ([C12Y 205/01084](#)-, [C12Y 205/01085](#) take precedence)
- C12Y 205/01033
- • Trans-pentaprenyltranstransferase (2.5.1.33) ([C12Y 205/01082](#)-, [C12Y 205/01083](#) take precedence)
- C12Y 205/01064
- • 2-Succinyl-6-hydroxy-2,4-cyclohexadiene-1-carboxylate synthase (2.5.1.64) ([C12Y 202/01009](#)-, [C12Y 402/9902](#) take precedence)
- U C12Y 207/00 Transferases transferring phosphorus-containing groups (2.7)**
- U C12Y 207/01
- Phosphotransferases with an alcohol group as acceptor (2.7.1)
- C12Y 207/01037
- • Protein kinase (2.7.1.37) ([C12Y 207/11001](#)-, [C12Y 207/11008](#) - [C12Y 207/11013](#)-, [C12Y 207/11021](#)-, [C12Y 207/11022](#)-, [C12Y 207/11024](#)-, [C12Y 207/11025](#)-, [C12Y 207/1103](#) or [C12Y 207/12001](#) takes precedence)
- C12Y 207/01112
- • Protein-tyrosine kinase (2.7.1.112) ([C12Y 207/10001](#)-, [C12Y 207/10002](#) take precedence)
- U C12Y 301/00 Hydrolases acting on ester bonds (3.1)**
- U C12Y 301/01
- Carboxylic ester hydrolases (3.1.1)
- C12Y 301/01016
- • 4-Carboxymethyl-4-hydroxyisocrotonolactonase (3.1.1.16) ([C12Y 301/01024](#)-, [C12Y 503/03004](#) take precedence)

- C12Y 301/01021 · · Retinyl-palmitate esterase (3.1.1.21) ([C12Y 301/01001](#)-, [C12Y 301/01003](#) take precedence)
- U C12Y 304/00 Hydrolases acting on peptide bonds i.e. peptidases (3.4)**
- U C12Y 304/13 · Dipeptidases (3.4.13)
- C12Y 304/13003 · · Xaa-His dipeptidase (3.4.13.3) ([C12Y 304/13018](#)-, [C12Y 304/1302](#) take precedence)
- U C12Y 304/14 · Dipeptidyl-peptidases and tripeptidyl-peptidases (3.4.14)
- C12Y 304/14008 · · Tripeptidyl peptidase (3.4.14.8) ([C12Y 304/14009](#)-, [C12Y 304/1401](#) take precedence)
- U C12Y 304/16 · Serine-type carboxypeptidases (3.4.16)
- C12Y 304/16001 · · Serine carboxypeptidase (3.4.16.1) ([C12Y 304/16005](#)-, [C12Y 304/16006](#) take precedence)
- U C12Y 304/21 · Serine endopeptidases (3.4.21)
- C12Y 304/21008 · · Kallikrein (3.4.21.8) ([C12Y 304/21034](#)-, [C12Y 304/21035](#) take precedence)
- U C12Y 304/22 · Cysteine endopeptidases (3.4.22)
- C12Y 304/22017 · · Calpain (3.4.22.17) ([C12Y 304/22052](#)-, [C12Y 304/22053](#) take precedence)
- U C12Y 304/24 · Metalloendopeptidases (3.4.24)
- C12Y 304/24004 · · Microbial metalloproteinases (3.4.24.4) ([C12Y 304/24025](#) - [C12Y 304/24032](#)-, [C12Y 304/24039](#) or [C12Y 304/2404](#) takes precedence)
- C12Y 304/24005 · · Lens neutral proteinase (3.4.24.5) ([C12Y 304/22052](#)-, [C12Y 304/22053](#)-, [C12Y 304/25001](#) take precedence)
- U C12Y 401/00 Carbon-carbon lyases (4.1)**
- U C12Y 401/02 · Aldehyde-lyases (4.1.2)
- C12Y 401/02037 · · Hydroxynitrilase (4.1.2.37) ([C12Y 401/02046](#)-, [C12Y 401/02047](#) take precedence)
- U C12Y 402/00 Carbon-oxygen lyases (4.2)**
- U C12Y 402/99 · Other carbon-oxygen lyases (4.2.99)
- C12Y 402/99006 · · Chondroitin sulfate lyase (4.2.99.6) ([C12Y 402/02005](#)-, [C12Y 402/0202](#)-, [C12Y 402/02021](#) take precedence)
- U C12Y 502/00 Cis-trans-isomerases (5.2)**
- U C12Y 502/01 · Cis-trans-Isomerases (5.2.1)
- C12Y 502/01003 · · Retinal isomerase (5.2.1.3) ([C12Y 101/013](#)-, [C12Y 101/01315](#)-, [C12Y 203/01135](#)-, [C12Y 301/01064](#) take precedence)

**Project: N/A (C13B)****C13B**

**PRODUCTION OF SUCROSE; APPARATUS SPECIALLY ADAPTED THEREFOR (chemically synthesised sugars or sugar derivatives [C07H](#)-, fermentation or enzyme-using processes for preparing compounds containing saccharide radicals [C12P 19/00](#))**

**NOTE**

In this subclass, the following terms or expressions are used with the meanings indicated :

- “sugar” is used in its non-scientific meaning and refers to sucrose, also called “table sugar” or saccharose”, a white crystalline disaccharide;
- “sugar juices” are solutions of sugar, essentially comprising sucrose, which are derived from different plants, e.g. beet, cane or maple;
- “syrups” are highly concentrated sugar juices.

**C13B 30/00** Crystallisation; Crystallising apparatus; Separating crystals from mother liquors; {-Evaporating or boiling sugar juice}

**Project: N/A (C13K)**

**C13K** SACCHARIDES, OTHER THAN SUCROSE, OBTAINED FROM NATURAL SOURCES OR BY HYDROLYSIS OF NATURALLY OCCURRING DI-, OLIGO- OR POLYSACCHARIDES (chemically synthesised sugars or sugar derivatives [C07H](#)-; polysaccharides, e.g. starch, derivatives thereof [C08B](#)-; malt [C12C](#)-; fermentation or enzyme-using processes for preparing compounds containing saccharide radicals [C12P 19/00](#))

**U C13K 13/00** Sugars not otherwise provided for in class [C12](#)  
 C13K 13/007 · {Separation of sugars provided for in subclass [C13K](#) ([C13K 3/00](#) takes precedence)}

**Project: N/A (C21C)**

**C21C 7/00** Treating molten ferrous alloys, e.g. steel, not covered by groups [C21C 1/00](#) to [C21C 5/00](#) (treating molten metals during moulding [B22D 1/00](#), [B22D 27/00](#); remelting ferrous metals [C22B](#))

**Project: N/A (C21D)**

**C21D** MODIFYING THE PHYSICAL STRUCTURE OF FERROUS METALS; GENERAL DEVICES FOR HEAT TREATMENT OF FERROUS OR NON-FERROUS METALS OR ALLOYS; MAKING METAL MALLEABLE BY DECARBURISATION, TEMPERING OR OTHER TREATMENTS (cementation by diffusion processes [C23C](#); surface treatment of metallic material involving at least one process provided for in class [C23](#) and at least one process covered by this subclass, [C23F 17/00](#); unidirectional solidification of eutectic materials or unidirectional demixing of eutectoid materials [C30B](#))

**C21D 1/00** General methods or devices for heat treatments, e.g. annealing, hardening, quenching, tempering (furnaces in general [F27](#)-; electric heating per se [H05B](#))

**C21D 1/74** · Methods of treatment in inert gas, controlled atmosphere, vacuum, or pulverulent material (production of gases [C01](#)-, [C10](#))

**C21D 1/82** · Descaling by thermal stresses (mechanically [B21](#)-, [B23](#)-; chemically [C23](#)-; electrolytically [C25F](#))

**C21D 3/00** Diffusion processes for extraction of non-metals; Furnaces therefor (local protective coatings [C21D 1/72](#)-; furnaces in general [F27](#))

**C21D 7/00** Modifying the physical properties of iron or steel by deformation (apparatus for mechanical working of metal [B21](#)-, [B23](#)-, [B24](#))

**Project: N/A (C22B)**

**U C22B 3/00** Extraction of metal compounds from ores or concentrates by wet processes

NOTE

This group covers methods directed to the extraction of three or more metals. For the recovery of one or two metals, see the other groups of this subclass concerning these metals

- U C22B 3/0004 · {Treatment or purification of solutions, e.g. obtained by leaching ([C22B 3/04](#) takes precedence)}
- WARNING  
Not used, see subgroups
- U C22B 3/0005 · · {by liquid-liquid extraction using organic compounds, e.g. acyclic or carbocyclic compounds, heterocyclic compounds, organo- metallic compounds, alcohols, ethers, or the like ([C22B 3/205](#) takes precedence)}
- C22B 3/0035 · · · {using heterocyclic compounds ([C22B 3/0018](#)-, [C22B 3/002](#) and [C22B 3/0031](#) take precedence)}
- C22B 4/00 Electrothermal treatment of ores or metallurgical products for obtaining metals or alloys (obtaining iron or steel [C21B](#)-, [C21C](#))**
- C22B 4/005 · {using plasma jets (smelting, remelting, refining of metals using a plasma as heat source [C22B 9/22](#)-, Generating or handling plasma in general [H05H 1/00](#)-, Gas-filled discharge tubes for processing materials in general [H01J 37/32](#))}
- C22B 4/08 · Apparatus ({[C22B 4/005](#) takes precedence; } electric heating elements [H05B](#))
- C22B 7/00 Working up raw materials other than ores, e.g. scrap, to produce non-ferrous metals and compounds thereof; {Methods of a general interest or applied to the winning of more than two metals (briquetting of scrap [C22B 1/248](#)-, preliminary treatment of scrap [C22B 1/005](#))}**
- U C22B 9/00 General processes of refining or remelting of metals; Apparatus for electroslag or arc remelting of metals**
- C22B 9/02 · Refining by liquating, filtering, centrifuging, distilling, or supersonic wave action {including acoustic waves; ([C22B 9/003](#)-, [C22B 9/006](#)-, [C22B 9/05](#)-, [C22B 9/22](#) take precedence)}
- U C22B 9/16 · Remelting metals (liquating [C22B 9/02](#))
- U C22B 9/22 · · With heating by wave energy or particle radiation {(by acoustic waves [C22B 9/026](#))}
- C22B 9/226 · · · {by electric discharge, e.g. plasma ([C22B 9/20](#) takes precedence; apparatus therefor [H01J](#)-, [H05B](#)-, [H05H](#)-, chemical reactions with metals in a plasma [C22B 4/005](#))}
- U C22B 11/00 Obtaining noble metals**
- C22B 11/04 · by wet processes {([C22B 3/16](#) takes precedence; treatment or purification of solutions by liquid-liquid extraction [C22B 3/0005](#)-, by ion exchange or by adsorption [C22B 3/00](#)-, [C01G](#); [C22B 3/16](#)-, [C22B 3/0005](#))}
- U C22B 21/00 Obtaining aluminium**
- C22B 21/0015 · {by wet processes ([C22B 21/02](#)-, [C22B 21/04](#) and [C22B 21/06](#) take precedence)}
- C22B 21/0038 · {by other processes (electrolysis [C25C](#)-, [C22B 21/02](#) and [C22B 21/04](#) take precedence)}
- C22B 21/0069 · · {from scrap, skimmings or any secondary source aluminium e.g. recovery of alloy constituents ([C22B 21/0046](#)-, [C22B 21/0053](#) and [C22B 21/0092](#) take precedence)}
- C22B 21/0084 · {melting and handling molten aluminium ([C22B 21/02](#)-, [C22B 21/04](#) and [C22B 21/06](#) take precedence)}
- U C22B 21/06 · refining {(electrolytic refining [C25C](#); [C22B 21/0046](#), [C22B 21/0061](#) take precedence)}
- C22B 21/062 · · {using salt or fluxing agents ([C22B 21/064](#)-, [C22B 21/066](#)-, and [C22B 21/068](#) take precedence)}

- U C22B 30/00** **Obtaining antimony, arsenic or bismuth**  
 C22B 30/04 · Obtaining arsenic {([C22B 3/16](#)-, [C22B 3/0005](#) and [C22B 3/0098](#) take precedence)}
- U C22B 34/00** **Obtaining refractory metals**  
 U C22B 34/10 · Obtaining titanium, zirconium or hafnium  
 C22B 34/12 · · Obtaining titanium; {or titanium compounds from ores or scrap by metallurgical processing; preparation of titanium compounds from other titanium compounds see [C01G 23/00](#) to [C01G 23/08](#)}  
 C22B 34/14 · · Obtaining zirconium or hafnium {(Treatment or purification of solutions by liquid-liquid extraction, by ion exchange or by adsorption [C22B 3/00](#)-, [C01G 25/003](#)-, [C01G 27/003](#))}
- U C22B 34/30 · Obtaining chromium, molybdenum or tungsten  
 C22B 34/34 · · Obtaining molybdenum {([C22B 3/0005](#)-, [C22B 3/0098](#) and [C01G 39/003](#) take precedence; from catalyst or superalloy scrap : see also [C22B 7/00](#))}
- U C22B 60/00** **Obtaining metals of atomic number 87 or higher, i.e. radioactive metals**  
 U C22B 60/02 · Obtaining thorium, uranium, or other actinides  
 U C22B 60/0204 · · {obtaining uranium}  
 U C22B 60/0217 · · · {by wet processes}  
 U C22B 60/0252 · · · · {treatment or purification of solutions or of liquors or of slurries ([C22B 60/0221](#) takes precedence)}  
 C22B 60/0278 · · · · {by chemical methods ([C22B 60/0256](#)-, [C22B 60/026](#)-, or [C22B 60/0265](#) take precedence)}

**Project: N/A (C22C)**

- C22C 26/00** **Alloys containing diamond {or cubic or wurtzitic boron nitride, fullerenes or carbon nanotubes}**
- U C22C 38/00** **Ferrous alloys, e.g. steel alloys (cast-iron alloys [C22C 37/00](#))**  
 C22C 38/08 · containing nickel {(~~C22C 38/105 takes precedence~~[C22C 38/105 takes precedence](#))}

**Project: N/A (C23C)****C23C**

**COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; SURFACE TREATMENT OF METALLIC MATERIAL BY DIFFUSION INTO THE SURFACE, BY CHEMICAL CONVERSION OR SUBSTITUTION; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL (applying liquids or other fluent materials to surfaces in general [B05](#); making metal-coated products by extrusion [B21C 23/22](#); covering with metal by connecting pre-existing layers to articles, see the relevant places, e.g. [B21D 39/00](#)-, [B23K](#); working of metal by the action of a high concentration of electric current on a workpiece using an electrode [B23H](#); metallising of glass [C03C](#); metallising mortars, concrete, artificial stone, ceramics or natural stone [C04B 41/00](#);- paints varnishes, laquers [C09D](#); enamelling of, or applying a vitreous layer to, metals [C23D](#); inhibiting corrosion of metallic material or incrustation in general [C23F](#); single-crystal film growth [C30B](#); manufacture of semiconductor devices [H01L](#); manufacture of printed circuits [H05K](#))**

**NOTE**

In this subclass, an operation is considered as pre-treatment or after-treatment when it is specially adapted for, but quite distinct from, the coating process

concerned and constitutes an independent operation. If an operation results in the formation of a permanent sub- or upper layer, it is not considered as pre-treatment or after-treatment and is classified as a multi-coating process.

**WARNINGS**

1. Groups [C23C 28/30](#) to [C23C 28/44](#) do not correspond to former or current IPC-groups. Concordance CPC : IPC for these groups is as follows - [C23C 28/30](#) - [C23C 28/44](#) : [C23C 28/00](#)

2. The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C23C 14/36](#) to [C23C 14/44](#) covered by [C23C 14/34](#) + subgr.

The following IPC group is not used in the CPC system. Subject-matter covered by the group is classified in the following CPC groups : [C23C 18/28](#) covered by [C23C 18/2006](#) - [C23C 18/2093](#)

- C23C 2/00 - C23C 6/00**      **Coating by applying the coating material in the molten state (casting [B22D](#), e.g. [B22D 19/08](#), [B22D 23/04](#), [B29](#); built-up welding [B23K](#), e.g. [B23K 5/18](#), [B23K 9/04](#))**
- C23C 4/00**      **Coating by spraying the coating material in the molten state, e.g. by flame, plasma or electric discharge (spraying guns [B05B](#); making alloys containing fibres or filaments by thermal spraying of metal [C22C 47/16](#); plasma guns [H05H](#))**
- U    C23C 4/12      • characterised by the method of spraying

     C23C 4/127      • • {utilising plasma spraying (plasma torches in general [H05H 1/26](#), apparatus for spraying by means of electric arc in general [B05B 7/22](#))}
- U    C23C 14/00**      **Coating by vacuum evaporation, by sputtering or by ion implantation of the coating forming material (discharge tubes with provision for introducing objects or material to be exposed to the discharge [H01J 37/00](#))**
- U    C23C 14/22      • characterised by the process of coating

     C23C 14/221      • • {Ion beam deposition ([C23C 14/46](#), [C23C 14/48](#) take precedence)}
- U    C23C 14/24      • • Vacuum evaporation

     C23C 14/243      • • • {Crucibles for source material ([C23C 14/28](#), [C23C 14/30](#) take precedence)}
- U    C23C 14/34      • • Sputtering

     C23C 14/3457      • • • {using other particles than noble gas ions ([C23C 14/0036](#), [C23C 14/46](#) take precedence)}
- U    C23C 16/00**      **Chemical coating by decomposition of gaseous compounds, without leaving reaction products of surface material in the coating, i.e. chemical vapour deposition [CVD] processes (reactive sputtering or vacuum evaporation [C23C 14/00](#))**
- U    C23C 16/44      • characterised by the method of coating ([C23C 16/04](#) takes precedence)

     C23C 16/46      • • characterised by the method used for heating the substrate ([C23C 16/48](#), [C23C 16/50](#) take precedence)
- C23C 16/50      • • using electric discharges {(generation and control of plasma in discharge tubes for surface treatment [H01J 37/32](#), [H01J 37/34](#))}
- C23C 16/52      • • Controlling or regulating the coating process ({[C23C 16/45557](#), [C23C 16/279](#) take precedence } ; controlling or regulating in general [G05](#))

**C23C 18/00**      **Chemical coating by decomposition of either liquid compounds or solutions of the coating forming compounds, without leaving reaction products of surface material in the coating (chemical surface reaction [C23C 8/00](#), [C23C 22/00](#)); Contact plating**

NOTE

This groups covers also suspensions containing reactive liquids and non-reactive solid particles.

- U C23C 18/16      · by reduction or substitution, e.g. electroless plating ([C23C 18/54](#) takes precedence)
- U C23C 18/18      · · Pre-treatment of the material to be coated
- U C23C 18/20      · · · of organic surfaces, e.g. resins
- U C23C 18/2006    · · · · {by other methods than those of [C23C 18/22](#) to [C23C 18/30](#)}
- U C23C 18/2046    · · · · · {by chemical pretreatment}
- U C23C 18/2053    · · · · · · {only one step pretreatment}
- C23C 18/206      · · · · · · · {Use of metal other than noble metals and tin, e.g. activation, sensitisation with metals (Sensitising with tin [C23C 18/285](#), sensitising with noble metals [C23C 18/30](#))}

**C23C 20/00**      **Chemical coating by decomposition of either solid compounds or suspensions of the coating forming compounds, without leaving reaction products of surface material in the coating (chemical surface reaction [C23C 8/00](#), [C23C 22/00](#))**

NOTE

This group covers also suspensions containing non-reactive liquids and reactive solid particles.

**C23C 22/00**      **Chemical surface treatment of metallic material by reaction of the surface with a reactive liquid, leaving reaction products of surface material in the coating, e.g. conversion coatings, passivation of metals (wash primers [C09D 5/12](#))**

NOTES

1. This group covers also suspensions containing reactive liquids and non-reactive solid particles.
2. In groups [C23C 22/02](#) to [C23C 22/86](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
3. Rejuvenating of the bath is classified in the appropriate place for the specific bath composition.

**C23C 24/00**      **Coating starting from inorganic powder (spraying of the coating material in molten state [C23C 4/00](#); solid state diffusion [C23C 8/00](#) to [C23C 12/00](#); manufacture of composite layers, workpieces or articles by sintering metallic powder [B22F 7/00](#); friction welding [B23K 20/12](#))**

**C23C 30/00**      **Coating with metallic material characterised only by the composition of the metallic material, i.e. not characterised by the coating process ([C23C 26/00](#), [C23C 28/00](#) take precedence)**

**Project: N/A (C23D)**

**C23D 5/00**      **Coating with enamels or vitreous layers {(including applying fused refractory layers [C23C 4/10](#), [C23C 24/10](#))}**

C23D 5/10

- with refractory materials

WARNING

Group [C23D 5/10](#) is no longer used for classification. Documents are in the state of being reclassified to [C23C 4/10](#) and [C23C 24/10](#).

**Project: N/A (C23F)**

C23F 17/00

**Multi-step processes for surface treatment of metallic material involving at least one process provided for in class [C23](#) and at least one process covered by subclass [C21D](#) or [C22F](#) or class [C25](#) ([C23C 28/00](#) takes precedence)**

**Project: N/A (C25B)**

U C25B 11/00

**Electrodes; Manufacture thereof not otherwise provided for**

U C25B 11/04

- characterised by the material

C25B 11/12

- • Electrodes based on carbon (carbon masses in general [C04B 35/52](#))  
{([C25B 11/0405](#) takes precedence)}

**Project: N/A (C25D)**

C25D

**PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING (decorating textiles by metallising [D06Q 1/04](#); manufacturing printed circuits by metal deposition [H05K 3/18](#)); APPARATUS THEREFOR**

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups : ~~C25D 5/24 covered by C25D 5/34~~~~C25D 5/26 covered by C25D 5/36~~~~C25D 5/28 covered by C25D 5/38~~~~C25D 5/30 covered by C25D 5/42, C25D 5/44~~~~C25D 5/32 covered by C25D 5/46~~~~C25D 13/06 covered by C09D 5/44~~~~C25D 13/08 covered by C09D 5/4476~~~~C25D 13/10 covered by C09D 5/448~~~~C25D 19/00 covered by C25D 17/00~~

*C25D 5/24 covered by C25D 5/34  
C25D 5/26 covered by C25D 5/36  
C25D 5/28 covered by C25D 5/38  
C25D 5/30 covered by C25D 5/42, C25D 5/44  
C25D 5/32 covered by C25D 5/46  
C25D 13/06 covered by C09D 5/44  
C25D 13/08 covered by C09D 5/4476  
C25D 13/10 covered by C09D 5/448  
C25D 19/00 covered by C25D 17/00*

U C25D 1/00

**Electroforming**

C25D 1/20

- Separation of the formed objects from the electrodes {-with no destruction of said electrodes}

U C25D 3/00

**Electroplating: Baths therefor**

U C25D 3/02

- from solutions ([C25D 5/34](#) to [C25D 5/46](#) take precedence)

U C25D 3/04

- • of chromium

C25D 3/08

- • • Deposition of black chromium {-, e.g. hexavalent chromium, CrVI}

U C25D 3/38

- • of copper

C25D 3/40

- • • from cyanide baths {-, e.g. with Cu+}

U C25D 3/56

- • of alloys

- C25D 3/60      · · · containing more than 50% by weight of tin {-; SnP}
- U C25D 5/00      Electroplating characterised by the process; Pretreatment or after-treatment of work-pieces**
- C25D 5/16      · Electroplating with layers of varying thickness {, e.g. rough surfaces}{-; Hull cells}
- C25D 5/20      · Electroplating using ultrasonics {-, vibrations}
- C25D 5/54      · Electroplating {on} non-metallic surfaces {-, e.g. on carbon or carbon composites}{[C25D 7/12](#) takes precedence}
- C25D 5/56      · · on {-thin or conductive} plastics {(coating metallic material [C23C](#))}
- U C25D 7/00      Electroplating characterised by the article coated**
- C25D 7/12      · Semiconductors {-without seed layer}
- U C25D 13/00      Electrophoretic coating ([C25D 15/00](#) takes precedence; apparatus for continuously conveying articles into baths [B65G](#), e.g. [B65G 49/00](#))**
- C25D 13/22      · Servicing or operating {-apparatus or multistep processes}
- C25D 15/00      Electrolytic or electrophoretic production of coatings containing {-uncharged} embedded materials, e.g. particles, whiskers, wires**
- C25D 15/02      · Combined electrolytic and electrophoretic processes {-with charged materials}
- C25D 17/00      Constructional parts, or assemblies thereof, of cells for electrolytic coating (apparatus for continuously conveying articles into baths [B65G](#), e.g. [B65G 49/00](#); electric devices see the relevant classes, e.g. [H01B](#), [H02G](#)) {{[C25D 7/06](#), [C25D 11/005](#), [C25D 13/22](#), [C25](#) takes precedence}}**
- U C25D 17/06      · Suspending or supporting devices for articles to be coated
- C25D 17/08      · · {Supporting} racks{ {i.e. not for suspending}
- C25D 17/10      · Electrodes {-e.g. composition, counter electrode}
- U C25D 21/00      Processes for servicing or operating cells for electrolytic coating**
- C25D 21/06      · Filtering {-particles other than ions (filtering ions [C25D 21/22](#))}

**Project: N/A (C30B)**

- U C30B 29/00      Single crystals or homogeneous polycrystalline material with defined structure characterised by the material or by their shape (alloys [C22C](#))**
- NOTE  
In groups [C30B 29/02](#) to [C30B 29/58](#), in the absence of an indication to the contrary, a material is classified in the last appropriate place.
- U C30B 29/60      · characterised by shape
- C30B 29/607      · · {Crystals of complex geometrical shape, e.g. tubes, cylinders}{ (nanotubes [C30B 29/602](#))}
- WARNING  
Group [C30B 29/607](#) is not complete, see also [C30B 29/602](#), [C30B 29/605](#)

**Project: N/A (D01C)**

- D01C 5/00      Carbonising rags, {-threads or fabrics} to recover animal fibres, {-i.e. chemical removal of vegetable impurities (treatment of threads or fabrics of animal fibres for other purposes than removal of vegetable impurities [D06L](#) or [D06M](#))}**

**Project: N/A (D01D)**

- U D01D 5/00**      **Formation of filaments, threads, or the like**
- U D01D 5/12      · Stretch-spinning methods ([D01D 5/098](#) takes precedence) finishing by stretching [D02J 1/22](#))
- D01D 5/14      · · with flowing liquid {-or gaseous} stretching media {, e.g. solution-blowing}
- D01D 5/42      · by cutting films into narrow ribbons or filaments or by fibrillation of films {-or filaments}

**Project: N/A (D01F)**

- U D01F 9/00**      **Artificial filaments or the like of other substances; Manufacture thereof; Apparatus specially adapted for the manufacture of carbon filaments**
- D01F 9/08      · of inorganic material (from softened glass, minerals or slags [C03B 37/00](#); {-obtaining ceramic fibres [C04B 35/62227](#)}; incandescent bodies [F21H](#), [H01K 1/02](#), [H01K 3/02](#))
- U D01F 9/12      · · Carbon filaments; Apparatus specially adapted for the manufacture thereof {(with fullerene structure, e.g. carbon nanotubes [C01B 31/0206](#))}
- D01F 9/127      · · · by thermal decomposition of hydrocarbon gases or vapours {-or other carbon-containing compounds in the form of gas or vapour, e.g. carbon monoxide, alcohols}

**Project: N/A (D01H)**

- U D01H 3/00**      **Spinning or twisting machines in which the product is wound-up intermittently, e.g. mules**
- U D01H 3/02      · Details (drafting arrangements [D01H 5/00](#); twisting arrangements [D01H 7/00](#))
- D01H 3/26      · · Driving or stopping arrangements not otherwise provided for; Locking motions (safety devices [D01H 13/14](#) ){Control of machines}
- U D01H 7/00**      **Spinning or twisting arrangements (for open-end spinning [D01H 4/00](#))**
- U D01H 7/02      · for imparting permanent twist
- U D01H 7/52      · · Ring-and-traveller arrangements
- D01H 7/60      · · · Rings or travellers; Manufacture thereof not otherwise provided for (hand tools for applying travellers to rings [D01H 17/02](#) ){Cleaning means for rings}
- D01H 9/00      **Arrangements for replacing or removing bobbins, cores, receptacles, or completed packages at paying-out or take-up stations (arrangements of general interest in the winding of filamentary material {[B65H 67/00](#) }){-; Combination of spinning-winding machine}**
- U D01H 13/00**      **Other common constructional features, details or accessories (for open-end spinning [D01H 4/00](#))**
- D01H 13/14      · Warning or safety devices, e.g. automatic fault detectors, stop motions; {-Monitoring the entanglement of slivers in drafting arrangements}; safety devices of general application [F16P](#); indicating devices of general application [G08B](#)

**Project: N/A (D03C)**

- D03C 3/00      **Jacquards (controlling jacquard by scanning design [D03C 17/06](#); for gripper Axminster looms [D03D 39/08](#))**
- D03C 11/00      **Selvedge shedding mechanisms not forming part of main shedding mechanism (selvedge jacquards [D03C 3/18](#); leno selvedge mechanism [D03C 7/00](#))**

**Project: N/A (D04B)****U D04B 35/00****Details of, or auxiliary devices incorporated in, knitting machines, not otherwise provided for**

D04B 35/02

- Knitting tools or instruments not provided for in group [D04B 15/00](#) or [D04B 27/00](#) (needle manufacture [B21G 1/00](#))

**Project: N/A (D04H)****D04H**

**MAKING TEXTILE FABRICS, e.g. FROM FIBRES OR FILAMENTARY MATERIAL (weaving [D03](#); knitting [D04B](#); braiding {or lace-making} [D04C](#); net-making {or making knotted carpets} [D04G](#); sewing [D05B](#); tufting [D05C](#), {e.g. [D05C 15/04](#)}; finishing non-woven fabrics [D06](#)); FABRICS MADE BY SUCH PROCESSES OR APPARATUS, e.g. FELTS, NON-WOVEN FABRICS; COTTON-WOOL; WADDING {Non-woven fabrics from staple fibres, filaments or yarns, bonded with at least one web-like material during their consolidation} (non-woven fabrics having an intermediate or external layer of a different kind, e.g. of woven fabric, [B32B](#); {manufacturing hats [A42C](#); filtering material [B01D 39/00](#); making board or the like from wood fibre [B27N](#); producing shaped articles from mixtures containing fibres [B28B 1/52](#); making layered products from solid layers, at least one of which contains synthetic resin as an essential component [B32B 27/00](#); making or treating glass wool and mineral wool [C03B 37/00](#); compounding ingredients used as fillers for mortars and the like [C04B 14/38](#), [C04B 16/06](#), [C04B 20/0048](#); sintering plastics particles [C08J 9/24](#); manufacturing by extrusion of synthetic filaments and fibres in general [D01D](#); paper [D21C](#) to [D21H](#); making shaped articles from liquid suspensions of cellulose fibres [D21J](#)})**

**NOTES**

1. In this subclass, the following expression is used with the meaning indicated:

- "non-woven fabrics" means fabrics formed wholly or partly of textile material by processes comprising operations other than the weaving, knitting, braiding, lacing, or knotting of yarns, threads, or filaments for which provision is made in other subclasses of Section D. This expression includes felts, cotton-wool, and wadding.

2. In this subclass:

- some of the non-woven fabrics can also be regarded as "layered products" within the meaning of subclass [B32B](#), and further classification in that subclass should be considered in accordance with the notes thereto;
- in cases where the making of non-woven fabrics involves the use of particular chemical compounds or compositions, e.g. for treating or bonding fibres, filaments, or yarns, further classification in other appropriate subclasses should also be considered.

3. By varying the proportions of fibres or threads, and the chemical compounds or compositions, the final products may be given the appearance of paper, cardboard, leather or the like.

4. In this subclass, a number of groups, e.g. [D04H 1/067](#), correspond to IPC2012.01

**WARNING**

Documents of the complete subclass [D04H](#) including all subgroups are in the process of being reorganised to the new groups corresponding to the IPC 2012.01 classification scheme defined below.

**U D04H 1/00****Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres**

- D04H 1/005
- {Making three-dimensional articles by consolidation ([D04H 1/22](#) takes precedence)}
- WARNING  
This group is no longer used for the classification of new documents as from April 1, 2011. The backfile is being reclassified into groups [D04H 1/00-](#), [D04H 1/42](#) ]
- U D04H 1/40
- from fleeces or layers composed of fibres without existing or potential cohesive properties
- WARNING  
Groups [D04H 1/407](#) and [D04H 1/413](#) are not complete pending a reorganisation. See also group [D04H 1/40](#)  
Group [D04H 1/407](#) is not complete pending a reorganisation. See also group [D04H 1/40](#)
- U D04H 1/44
- • the fleeces or layers being consolidated by mechanical means, e.g. by rolling
- U D04H 1/46
- • • by needling or like operations to cause entanglement of fibres ([D04H 1/45](#) takes precedence; needling machines [D04H 18/00](#))
- D04H 1/465
- • • • {Hydraulic needling}
- WARNING  
This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 1/42](#) and sub-groups, [D04H 1/46-](#), [D04H 1/492-](#), [D04H 1/495](#) and [D04H 18/04](#)
- U D04H 1/70
- characterised by the method of forming fleeces or layers, e.g. reorientation of fibres
- WARNING  
Groups [D04H 1/72](#) to [D04H 1/76](#) are not complete pending a reorganisation. See also group [D04H 1/72](#)
- U D04H 1/72
- • the fibres being randomly arranged
- D04H 1/736
- • • characterised by the apparatus for arranging fibres ([D04H 1/728-](#), [D04H 1/732](#) take precedence)
- U D04H 3/00**
- Non-woven fabrics formed wholly or mainly of yarns or like filamentary material of substantial length**
- U D04H 3/08
- characterised by the method of strengthening or consolidating
- U D04H 3/10
- • with bonds between yarns or filaments made mechanically
- D04H 3/102
- • • {by needling}
- WARNING  
This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 3/002](#) - [D04H 3/018-](#), [D04H 3/105](#) and [D04H 3/11](#)
- U D04H 3/16
- • with bonds between thermoplastic filaments produced in association with filament formation, e.g. immediately following extrusion
- D04H 3/163
- • • {at spaced points or locations}
- WARNING  
This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 3/002](#) - [D04H 3/018-](#), and [D04H 3/16](#)

D04H 3/166 . . . {the filaments being flash-spun}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 3/002](#) - [D04H 3/018](#)-, and [D04H 3/16](#)

**U D04H 13/00**

**Other non-woven fabrics**

D04H 13/001

- {Making non-woven fabrics from staple fibres, filaments or yarns, bonded to at least one web-like material, e.g. woven, knitted non-woven fabric, paper, leather, during consolidation}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#)-, [D04H 1/4374](#) and [B32B](#)

D04H 13/002

- {characterised by the disposition or nature of their elements}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#)-, [D04H 1/4374](#) and [B32B](#)

D04H 13/003

- {strengthened or consolidated by mechanical methods (needling machines [D04H 18/00](#)-, knitting [D04B](#), sewing [D05B](#))}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#)-, [D04H 1/4374](#)-, [D04H 1/44](#)-, [D04H 1/45](#) and sub-groups, [D04H 1/52](#)-, [D04H 3/105](#)-, [D04H 3/11](#)-, [D04H 3/115](#)-, [D04H 5/02](#) - [D04H 5/08](#) and [B32B](#)

D04H 13/005

- . . {by needling}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#)-, [D04H 1/46](#) and sub-groups, [D04H 1/593](#)-, [D04H 3/105](#)-, [D04H 3/11](#)-, [D04H 3/115](#)-, [D04H 5/02](#) - [D04H 5/08](#) and [B32B](#)

D04H 13/006

- {strengthened or consolidated by the use of bonding agents in solid or liquid form}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#)-, [D04H 1/48](#) and sub-groups, [D04H 1/498](#)-, [D04H 5/04](#) and [B32B](#)

D04H 13/007

- {strengthened or consolidated by welding together the various components}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 13/00](#)-, [D04H 1/54](#) and sub-groups, [D04H 1/559](#)-, [D04H 5/06](#) and [B32B](#)

D04H 13/008

- {Glass fibre products; Complete installations for making them}

WARNING

This group is no longer used for the classification of new documents as from April 1, 2011. The backlog of this group is being continuously reclassified to [D04H 1/4218](#)-, [D04H 1/4226](#)-, [D04H 3/002](#) and [D04H 5/12](#)

**Project: N/A (D06H)**

D06H 7/00

**Apparatus or processes for cutting, or otherwise severing, specially adapted for the cutting, or otherwise severing, of textile materials (severing for making buttonholes [A41H](#); hand cutting tools in general [B26B](#); cutting machines in general [B26D](#); severing otherwise than by cutting in general [B26F](#); {-web delivery apparatus incorporating cutting devices [B65H 35/0006](#)}; trimming seamed edges, shearing surfaces of fabrics, shearing lace or embroidery, e.g. cutting loose threads [D06C](#))**

**Project: N/A (D06M)**

D06M

**TREATMENT, NOT PROVIDED FOR ELSEWHERE IN CLASS [D06](#), OF FIBRES, THREADS, YARNS, FABRICS, FEATHERS, OR FIBROUS GOODS MADE FROM SUCH MATERIALS (surface treatment of fibres or filaments from glass, minerals or slags {-also in the form of fabrics if the chemical aspects of the treatment are important} [C03C 25/00](#); treatment of textiles by mechanical means, see [D06B](#) to [D06J](#))**

NOTES

1. In each of the groups [D06M 11/00](#) to [D06M 15/00](#), in the absence of an indication to the contrary, a substance is classified in the last appropriate place.
2. Within each one of main groups [D06M 11/00](#) to [D06M 15/00](#), a mixture of substances is classified at least according to the essential ingredient. If more than one ingredient is essential, the mixture is classified, in the absence of an indication to the contrary, according to the essential ingredient which belongs to the last appropriate place in the sequence of substances;
3. Treatment by mixtures of substances covered by two or more of main groups [D06M 11/00](#) to [D06M 15/00](#) is classified in each appropriate main group.
4. In this subclass, the treatment of textiles, not provided for for elsewhere in class [D06](#)-, is classified according to the following principles:
  - Treatment of textiles characterised by the treating agent in groups [D06M 11/00](#) to [D06M 16/00](#);
  - Treatment of textiles characterised by the process in group [D06M 23/00](#).

**Project: N/A (D06N)**

D06N 3/00

**Artificial leather, oilcloth or {-other} material obtained by covering fibrous webs with macromolecular material, e.g. resins, rubber or derivatives thereof**

D06N 3/0056

- {characterised by the compounding ingredients of the macro-molecular coating} ([D06N 3/005](#) takes precedence)}

U D06N 3/04

- with macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds

D06N 3/10

- with styrene-butadiene copolymerisation products {-or other synthetic rubbers or elastomers except polyurethanes}

**Project: N/A (D06P)****D06P**

**DYEING OR PRINTING TEXTILES; DYEING LEATHER, FURS, OR SOLID MACROMOLECULAR SUBSTANCES IN ANY FORM** (for mechanical matters, see [B41F](#), [D06B](#), [D06C](#); printing on surfaces of materials other than textiles [B41M](#); surface treatment of fibres or filaments from glass, mineral, or slags [C03C 25/00](#); mordanting [D06M](#); dyeing paper [D21H](#))

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">D06P 3/84</a>	covered by	<a href="#">D06P 3/82</a>
<a href="#">D06P 3/85</a>	" "	<a href="#">D06P 3/82</a>
<a href="#">D06P 3/852</a>	" "	<a href="#">D06P 3/82</a>
<a href="#">D06P 3/86</a>	" "	<a href="#">D06P 3/82</a>
<a href="#">D06P 3/87</a>	" "	<a href="#">D06P 3/82</a>
<a href="#">D06P 3/872</a>	" "	<a href="#">D06P 3/82</a>
<a href="#">D06P 3/874</a>	" "	<a href="#">D06P 3/82</a>
<a href="#">D06P 5/24</a> to <a href="#">D06P 5/28</a>	" "	<a href="#">D06P 5/003</a> and s.gr.

**U D06P 1/00**

**General processes of dyeing or printing textiles, or general processes of dyeing leather, furs, or solid macromolecular substances in any form, classified according to the dyes, pigments, or auxiliary substances employed**

D06P 1/008

· {Preparing dyes in situ ([D06P 1/12](#), [D06P 1/145](#) take precedence)}

**Project: N/A (D07B)****D07B**

**ROPES OR CABLES IN GENERAL** (joining ropes or cables to one another or to other objects [B65H 69/00](#), [F16G 11/00](#); {-mountaineering ropes [A63B 29/02](#)}; mechanical finishing or dressing of ropes [D02J](#); {-braiding [D04C](#)}; decorative ropes or cords [D04D](#); suspension cables for bridges [E01D 19/16](#); specially adapted for driving, or for being driven by, pulleys or other gearing elements [F16G 9/00](#); electric cables or joints insofar as electrical aspects are essential [H01B](#), [H01R](#))

**U D07B 3/00**

**General-purpose machines or apparatus for producing twisted ropes or cables from component strands of the same or different material**

D07B 3/02

· in which the supply reels rotate about the axis of the rope or cable {-or in which a guide member rotates about the axis of the rope or cable to guide the component strands away from the supply reels in fixed position}

D07B 3/08

· in which the take-up reel rotates about the axis of the rope or cable {-or in which a guide member rotates about the axis of the rope or cable to guide the rope or cable on the take-up reel in fixed position} and the supply reels are fixed in position

D07B 3/10

· · with provision for imparting more than one complete twist to the ropes or cables for each revolution of the take-up reel {-or of the guide member}

**D07B 2801/00**

**Linked indexing codes associated with indexing codes or classes of [D07B](#) (not used)**

NOTE

The following indexing codes are applied as linked indexing codes associated to other indexing codes or classes of [D07B](#), with the following restrictions:

- [D07B 2801/10](#), [D07B 2801/14](#) -[D07B 2801/22](#) are only to be used as linked indexing codes with [D07B 2205/00](#) and lower hierarchy

- [D07B 2801/12](#) and [D07B 2801/24](#) are only to be used as linked indexing codes with [D07B 2205/00](#) and lower hierarchy or [D07B 2201/2047](#) and lower hierarchy
- [D07B 2801/60](#) and [D07B 2801/62](#) are only to be used as linked indexing codes with [D07B 2207/404](#) and lower hierarchy
- [D07B 2801/90](#) is only used as linked indexing code with any class or indexing code of [D07B](#) and defines that the classified feature belongs to the general knowledge.

**Project: N/A (D21C)**

- D21C 5/00**      **Other processes for obtaining cellulose, e.g. cooking cotton linters (obtaining fibres for spinning [D01C](#)); {-Processes characterised by the choice of cellulose-containing starting materials}**
- D21C 9/00**      **After-treatment of cellulose pulp, e.g. of wood pulp, or cotton linters; {-Treatment of dilute or dewatered pulp or process improvement taking place after obtaining the raw cellulosic material and not provided for elsewhere (polysaccharides, derivatives thereof [C08B](#); paper-making [D21B](#) to [D21H](#))}**
- D21C 9/02      • Washing; {-Displacing cooking or pulp-treating liquors contained in the pulp by fluids, e.g. wash water or other pulp-treating agents}
- D21C 9/04      • • in diffusers; {-Washing of pulp of fluid consistency without substantially thickening}
- D21C 9/06      • • in filters; {-Washing of concentrated pulp, e.g. pulp mats, on filtering surfaces}
- D21C 9/08      • Removal of fats, resins, pitch or waxes; {-Chemical or physical purification, i.e. refining, of crude cellulose by removing non-cellulosic contaminants, optionally combined with bleaching (fats, waxes [C11B](#); natural resins [C09F 1/00](#); hemicellulose [C08B 37/14](#); purification by mechanical means [D21D 5/00](#))}
- D21C 9/10      • Bleaching; {-Apparatus therefor}
- D21C 9/1068      • • {with O<sub>2</sub> (closed, see [D21C 9/147](#))}
- D21C 9/1073      • • {with O<sub>3</sub> (closed, see [D21C 9/153](#))}
- U D21C 11/00**      **Regeneration of pulp liquors {or effluent waste waters}**
- D21C 11/06      • Treatment of pulp gases; Recovery of the heat content of the gases; {-Treatment of gases arising from various sources in pulp and paper mills; Regeneration of gaseous SO<sub>2</sub>, e.g. arising from liquors containing sulfur compounds}

**Project: N/A (D21H)**

- D21H 3/00**      **Paper or cardboard prepared by adding substances to the pulp or to the formed web on the paper-making machine {-and by applying substances to finished paper or cardboard (on the paper-making machine), also when the intention is to impregnate at least a part of the paper body}**

NOTE

A compound is always classified in the last appropriate place.

- U D21H 5/00**      **Special paper or cardboard not otherwise provided for (duplicating or recording paper [B41M](#))**

- D21H 5/26
- Special paper or cardboard manufactured by dry method; {-Apparatus or processes for forming webs by dry method from mainly short-fibre or particle material, e.g. paper pulp (making board from wood, e.g. lignocellulosic, particles or fibres [B27N 1/00](#) and subgroups; making non-woven fabrics from textile fibres [D04H 1/72](#); machines for forming diapers [A61F 13/15585](#); lap-forming devices in preliminary treatment of fibres, e.g. for spinning [D01G 25/00](#)}}

**U D21H 17/00 Non-fibrous material added to the pulp, characterised by its constitution; Paper-impregnating material characterised by its constitution**

NOTES

1. In this group, in the absence of an indication to the contrary, a material is classified in the last appropriate place.
2. In this group, it is desirable to classify the individual constituents of fibres used in the pulp or paper using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 15/00](#).

- D21H 17/71
- Mixtures of material ([D21H 17/69](#) takes precedence){-Pulp or paper comprising several different materials not incorporated by special processes ([D21H 23/10](#), [D21H 23/70](#), [D21H 23/76](#) take precedence)}

NOTE

In this group, it is desirable to classify the individual components of the mixtures using Combination Sets with symbols chosen from groups [D21H 17/00](#) or [D21H 21/00](#).

**U D21H 21/00 Non-fibrous material added to the pulp, characterised by its function, form or properties; Paper-impregnating or coating material, characterised by its function, form or properties**

NOTE

In groups [D21H 21/00](#) to [D21H 21/12](#), it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 17/00](#).

- U D21H 21/14
- characterised by function or properties in or on the paper ([D21H 19/66](#), [D21H 27/02](#) take precedence)

NOTE

In groups [D21H 21/14](#) to [D21H 21/56](#), it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 19/00](#).

- D21H 21/28
- • Colorants; {-Pigments or opacifying agents}

**Project: N/A (E01B)**

- E01B 2/00
- General structure of permanent way (railway networks [B61B 1/00](#)-; foundations for pavings [E01C 3/00](#)-; foundations in general [E02D](#))**

**U E01B 3/00 Transverse or longitudinal sleepers (for switches or crossings [E01B 7/22](#)); Other means resting directly on the ballastway for supporting rails**

- E01B 3/46
- made from different materials ([E01B 3/26](#)-, [E01B 3/42](#) take precedence)

- E01B 19/00
- Protection of permanent way against development of dust or against the effect of wind, sun, frost, or corrosion; Means to reduce development of noise (snow fences [E01F 7/02](#)-, snow-ploughs [E01H 8/02](#)-, watering [E01H 11/00](#))**

- E01B 21/00** **Track superstructure adapted for tramways in paved streets (paving [E01C 9/04](#), [E01C 9/06](#))**
- U E01B 23/00** **Easily dismountable or movable tracks, e.g. temporary railways; Details specially adapted therefor**
- U E01B 23/02     • Tracks for light railways, e.g. for field, colliery, or mine use
- E01B 23/06     • • Switches (turntables [B60S](#), [B61J](#)); Portable switches; Turnouts
- E01B 25/00** **Tracks for special kinds of railways (systems [B61B](#); wheel tracks on roads [E01C 9/02](#))**
- U E01B 25/16     • Tracks for aerial rope railways with a stationary rope
- E01B 25/18     • • Ropers; Supports, fastening or straining means for ropes (ropes in general [D07B](#); masts [E04H 12/00](#); ropes sockets [F16G](#))
- E01B 27/00 - E01B 37/00** **Making, maintaining, renewing, or taking-up the ballastway or the track; Tools or machines specially designed therefor (derailing or rerailing of machines [B61K 5/00](#); removal of foreign matter from the permanent way, vegetation control applying liquids [E01H](#))**
- E01B 27/04     • Removing the ballast; Machines therefor, whether or not additionally adapted for taking-up ballast ([E01B 27/06](#), [E01B 27/12](#) takes precedence; redistributing ballasting material [E01B 27/02](#))
- U E01B 27/12     • Packing sleepers, with or without concurrent work on the track; Compacting track-carrying ballast
- E01B 27/20     • • Compacting the material of the track-carrying ballastway, e.g. by vibrating the track, by surface vibrators (of trackless ballastway [E01B 27/02](#); for packing sleepers [E01B 27/12](#))
- E01B 29/00** **Laying, rebuilding, or taking-up tracks; Tools or machines therefor ([E01B 27/00](#), [E01B 31/00](#) take precedence)**
- E01B 29/24     • Fixing or removing detachable fastening means or accessories thereof; Pre-assembling track components by detachable fastening means ([E01B 29/02](#), [E01B 31/26](#) take precedence)
- E01B 29/42     • Undetachably joining or fastening track components in or on the track, e.g. by welding, by gluing; Pre-assembling track components by gluing; Sealing joints with filling components ([E01B 31/26](#) takes precedence; independent heating means [E01B 31/18](#); welding in general [B23K](#); gluing metal parts in general [F16B 11/00](#))
- E01B 31/00** **Working rails, sleepers, baseplates, or the like, in or on the line; Machines, tools, or auxiliary devices specially designed therefor (characterised by features independent of use on assembled track [B21](#), [B23](#) to [B25](#), [B27](#))**
- U E01B 31/20     • Working or treating non-metal sleepers in or on the line, e.g. marking, creosoting (working metal sleepers [E01B 31/02](#))
- E01B 31/24     • • Forming, treating, reconditioning, or cleaning holes in sleepers; Drilling-templates ([E01B 29/28](#), [E01B 31/26](#) take precedence)
- E01B 35/00** **Applications of measuring apparatus or devices for track-building purposes (apparatus on locomotives or cars to indicate or record bad track sections [B61K 9/00](#); measuring angles, linear dimensions, or irregularities in general [G01B](#), [G01C](#))**

**E01B 2202/00 - E01B 2205/00** **Making, maintaining, renewing, or taking-up the ballastway or the track; Tools or machines specially designed therefor (derailing or rerailing of machines [B61K 5/00](#); removal of foreign matter from the permanent way, vegetation control applying liquids [E01H](#))**

**Project: N/A (E01C)**

- E01C 1/00** **Design or layout of roads, e.g. for noise abatement, for gas absorption (design or layout of sports grounds [A63C 19/00](#); design or layout of airfields [B64F](#), {of helicopter landing stages [E01F 3/00](#)})**
- E01C 1/002
- {Design or lay-out of roads, e.g. street systems, cross-sections ([E01C 1/005](#), [E01C 1/007](#) take precedence; of footpaths, sidewalks, berms, hard shoulders or cycle tracks [E01C 15/00](#)); Design for noise abatement, e.g. sunken road (reducing transmission of structure-born noise [E01C 3/06](#); arrangement of means for absorbing surfacings see the groups for the respective surfacings; other arrangements for absorbing or reflecting air transmitted road traffic noise, e.g. barriers [E01F 8/00](#))}
- E01C 1/007
- {Design or auxiliary structures for compelling drivers to slow down or to proceed with caution, e.g. tortuous carriageway; Arrangements for discouraging high-speed or non-resident traffic (decelerating or arresting surfacings [E01C 9/007](#); road surface configuring or surface arrangements for enforcing reduced speed or required caution, e.g. speed-control humps [E01F 9/047](#))}
- E01C 3/00** **Foundations for pavings (specially adapted for playgrounds or sports grounds [E01C 13/02](#); foundations in general [E02D](#))**
- E01C 3/003
- {characterised by material or composition used, e.g. waste or recycled material ([E01C 3/006](#), [E01C 3/04](#) and [E01C 3/06](#) take precedence)}
- E01C 3/06
- Methods or arrangements for protecting foundations from destructive influence of moisture, frost or vibration {(heating devices [E01C 11/26](#); draining the subbase of roads [E01F 5/00](#))}
- E01C 5/00** **Pavings made of prefabricated single units (specially adapted for playgrounds or sports grounds [E01C 13/04](#), for footpaths, sidewalks or cycle tracks [E01C 15/00](#); making artificial stones [C04B](#); building stones [E04C](#); flooring [E04F](#))**
- E01C 5/008
- {made of vegetable stems, e.g. straw, thatch (of wood [E01C 5/14](#)); made of textiles (of bituminous textile webs [E01C 5/12](#); of linoleum [E01C 5/20](#))}
- E01C 5/16
- made of metallic units ({with a filling or ground plate of other material [E01C 5/22](#); for temporary pavings [E01C 9/083](#); } steel gratings [E01C 9/10](#))
- E01C 5/20
- made of units of plastics, {e.g. concrete with plastics, linoleum} ([E01C 5/18](#) takes precedence; {of textiles made of synthetic fibres [E01C 5/008](#))}
- E01C 7/00** **Coherent pavings made in situ (specially adapted for playgrounds or sports grounds [E01C 13/06](#); for footpaths, sidewalks or cycle tracks [E01C 15/00](#))**
- U E01C 7/08
- made of road-metal and binders {([E01C 7/36](#) takes precedence)}
- U E01C 7/10
- • of road-metal and cement or like binders (cement or like binders, composition of mortars [C04B](#))
- E01C 7/14
- • • Concrete paving {(from concrete prepared in situ [E01C 7/12](#); small individual units from concrete cast in situ [E01C 9/001](#); arrangement or construction of joints [E01C 11/04](#); reinforcements [E01C 11/18](#))}
- E01C 7/142
- • • • {Mixtures or their components, e.g. aggregate ([E01C 7/147](#), [E01C 7/355](#) take precedence; different layers of different composition [E01C 7/14](#))}

- E01C 7/145
- • • {Sliding coverings, underlayers or intermediate layers (isolating underlayers [E01C 3/06](#); sliding layers between coverings of different materials [E01C 7/34](#)); Isolating or separating intermediate layers; Transmission of shearing force in horizontal intermediate planes, e.g. by protrusions, by inlays (anchoring new concrete wearing layers on old concrete paving [E01C 7/147](#))}
- E01C 7/147
- • • {Repairing concrete pavings, e.g. joining cracked road sections by dowels, applying a new concrete covering (applying thin surface layers with other binder [E01C 7/35](#); repairing pavings in general [E01C 11/005](#); roughening by means of tools [E01C 11/24](#))}
- E01C 7/16
- • • Prestressed concrete paving {(prestressed coverings from prefabricated concrete units [E01C 5/10](#); prestressed joint constructions [E01C 11/04](#); prestressed reinforcements [E01C 11/20](#))}
- E01C 7/18
- • of road-metal and bituminous binders {(for surface treatments except for penetration coverings, or for thin surface layers [E01C 7/353](#); bituminous mixtures [C08L 95/00](#))}
- E01C 7/182
- • {Aggregate or filler materials, except those according to [E01C 7/26](#) ([E01C 7/187](#), [E01C 7/353](#) take precedence; different aggregates or fillers [E01C 7/18](#))}
- E01C 7/187
- • {Repairing bituminous covers, e.g. regeneration of the covering material in situ, application of a new bituminous topping (application of thin surface layers with other binders [E01C 7/35](#); repairing pavings in general [E01C 11/005](#))}
- E01C 7/35
- • Toppings or surface dressings; Methods of mixing, impregnating, or spreading them {(devices therefor [E01C 19/00](#); mortar-macadam pavings [E01C 7/12](#); bituminous penetration coverings [E01C 7/18](#))}
- E01C 7/36
- by subjecting soil to stabilisation {([E01C 7/06](#) takes precedence; foundations [E01C 3/04](#); soil conditioning or soil stabilising materials [C09K 17/00](#); soil stabilisation devices for road construction [E01C 21/00](#))}
- E01C 9/00**
- Special pavings (specially adapted for playgrounds or sports grounds [E01C 13/00](#), for footpaths, sidewalks or cycle tracks [E01C 15/00](#)); Pavings for special parts of roads or airfields (pavement lights [E01C 17/00](#); manhole or like covers or frames [E02D 29/14](#))**
- E01C 9/001
- {Paving elements formed in situ; Permanent shutterings therefor (removable shutterings [E01C 19/502](#); moulding machines therefor [E01C 19/508](#)); Inlays or reinforcements which divide the cast material in a great number of individual units (reinforcement girders which do not break the cohesion of the covering material [E01C 11/16](#), [E01C 11/185](#))}
- E01C 9/10
- Steel gratings {; Gratings made of material other than steel} {([E01C 9/001](#) to [E01C 9/02](#), [E01C 9/06](#) take precedence; metal gratings for bridge floorings [E01D 19/125](#); } gully gratings [E03F 5/06](#))}
- E01C 11/00**
- Details of pavings {([E01C 1/005](#), [E01C 5/003](#), [E01C 5/005](#), [E01C 7/145](#), [E01C 7/185](#), [E01C 7/325](#) take precedence)}**
- E01C 11/005
- {Methods or materials for repairing pavings ([E01C 7/35](#) takes precedence; for concrete coverings [E01C 7/147](#); for bituminous coverings [E01C 7/187](#); devices for repair works [E01C 23/06](#); repairing bridge floorings [E01D 22/00](#))}
- E01C 11/02
- Arrangement or construction of joints {(for pavings consisting of prefabricated units [E01C 5/00](#)); Methods of making joints {(machines therefor [E01C 23/02](#), [E01C 23/09](#); removable joint shutterings [E01C 23/021](#)); Packing for joints (sealing joints not restricted to road or airfield paving [E04B 1/68](#))}
- U E01C 11/04
- • for cement concrete paving {([E01C 9/001](#) takes precedence)}

- E01C 11/14
  - • • Dowel assembly; {Design or construction of reinforcements in the area of joints (coupling devices for prefabricated units [E01C 5/005](#); combined with characteristic packings [E01C 11/08](#) to [E01C 11/12](#); removable holders [E01C 23/045](#)}
- E01C 11/16
  - Reinforcements ({as anchoring elements between layers [E01C 7/145](#), [E01C 7/185](#), [E01C 7/325](#)}; for building in general [E04C](#))
- U E01C 11/22
  - Gutters; {Surface drainage of streets, roads or like traffic areas (for sports grounds [E01C 13/00](#))}; Kerbs {or like edging members (for sports grounds [E01C 13/00](#))}
- U E01C 11/221
  - • {Kerbs or like edging members, e.g. flush kerbs, shoulder retaining means (specially adapted for guiding or warning traffic or for display purposes [E01F 9/053](#)); Joint members, connecting or load-transfer means specially for kerbs}
- E01C 11/222
  - • • {Raised kerbs, e.g. for sidewalks ([E01C 11/223](#), [E01F 9/0533](#), [E01F 9/0536](#) take precedence; preformed sidewalk paving with integral kerb [E01C 15/00](#); specially for traffic islands [E01F 1/00](#)); Integrated or portable means for facilitating ascent or descent}
- E01C 11/223
  - • • {Kerb-and-gutter structures; Kerbs with drainage openings channel or conduits, e.g. with out- or inlets, with integral gutter or with channel formed into the kerb (gutters, subsurface channels per se [E01C 11/227](#); gullies adapted to be used with kerbs, gully gratings [E03F 5/04](#), [E03F 5/06](#)); Kerbs adapted to house cables or pipes, or to form conduits}
- E01C 11/224
  - • {Surface drainage of streets (draining the subbase of roads, by trenches [E01F 5/00](#), by sewers [E03F](#); draining arrangements for bridges [E01D 19/086](#))}
- E01C 11/225
  - • • {Paving specially adapted for through-the-surfacing drainage, e.g. perforated, porous; Preformed paving elements comprising, or adapted to form, passageways for carrying off drainage ([E01C 9/004](#), [E01C 9/008](#), [E01C 9/08](#), [E01C 9/10](#), [E01C 11/228](#), [E01C 13/00](#) take precedence)}
- E01C 11/24
  - Methods or arrangements for preventing slipperiness or protecting against influences of the weather {(measures taken in connection with the foundation [E01C 3/06](#); paving elements with anti-slip inlays [E01C 5/22](#); aggregates resisting to grinding [E01C 7/085](#), [E01C 7/142](#), [E01C 7/182](#); specially for surface layers [E01C 7/35](#); reinforcements extending up to the surface [E01C 11/16](#), [E01C 11/18](#), [E01C 11/185](#); drainage [E01C 11/22](#); windscreens [E01F 7/02](#); snow fences [E01F 7/02](#); combating fog [E01H 13/00](#))}
- E01C 11/26
  - • Permanently installed heating or blowing devices {(specially for combating fog [E01H](#); built-in melting devices for dislodged snow [E01H 5/102](#)); Mounting thereof}
- U E01C 13/00
 

**Pavings or foundations specially adapted for playgrounds or sports grounds; {Drainage, irrigation or heating of sports grounds}(general layout [A63C 19/00](#))**
- E01C 13/02
  - Foundations, e.g. with drainage or heating arrangements {([E01C 13/003](#), [E01C 13/083](#), [E01C 13/10](#) take precedence; drainage of soil [E02B 11/00](#))}
- E01C 13/04
  - Pavings made of prefabricated single units {([E01C 13/003](#), [E01C 13/06](#)), [E01C 13/08](#), [E01C 13/10](#) take precedence)
- E01C 13/06
  - Pavings made in situ, {e.g. for sand grounds, clay courts [E01C 13/003](#)}, ([E01C 13/08](#), [E01C 13/10](#) take precedence)

- E01C 19/00 - E01C 23/00**      **Machine, tools, or auxiliary devices for constructing or repairing the surfacing of roads or like structures (constructing the road bed [E02D](#), [E02F](#))**
- E01C 19/00**      **Machines, tools or auxiliary devices for preparing or distributing paving materials, for working the placed materials, or for forming, consolidating, or finishing the paving (surface stabilisation [E01C 21/00](#); apparatus specially adapted for reconditioning or repairing paving [E01C 23/00](#))**
- E01C 19/004      • {Devices for guiding or controlling the machines along a predetermined path (for graders or bulldozers [E02F 3/841](#); for other soil-shifting machines [E02F 9/2045](#))}
- E01C 19/02      • for preparing the materials {([E01C 19/002](#), [E01C 19/45](#), [E01C 19/46](#), [E01C 21/00](#), [E01C 23/065](#) take precedence; producing hydraulic cement concrete in general [B28C 5/00](#) to [B28C 9/00](#))}
- E01C 19/10      • • Apparatus or plant for premixing or precoating aggregate or fillers with non-hydraulic binders, e.g. with bitumen, with resins, {i.e. producing mixtures or coating aggregates otherwise than by penetrating or surface dressing}; Apparatus for premixing non-hydraulic mixtures prior to placing or for reconditioning salvaged non-hydraulic compositions {([E01C 19/08](#), [E01C 19/21](#), [E01C 21/00](#), [E01C 23/065](#) take precedence)}
- E01C 19/1013      • • • {Plant characterised by the mode of operation or the construction of the mixing apparatus; Mixing apparatus; ([E01C 19/1004](#), [E01C 19/1054](#) take precedence)}
- E01C 19/1022      • • • • {Coating the solid ingredients by passing same through a shower or cloud of binder ([E01C 19/21](#), [E01C 19/4813](#) take precedence)}
- E01C 19/105      • • • • {Mixing or coating by a combination of methods covered by [E01C 19/1018](#) to [E01C 19/104](#), excluding [E01C 19/1036](#)}
- E01C 19/1054      • • • {Preparing mixtures of which at least part of the solid ingredients has previously been deposited on the surface, excluding penetrating or surface dressing, e.g. in situ mixing, mixing involving lifting of spread or windrowed aggregate (preparing and placing such bituminous mixtures [E01C 19/463](#); recycling in place or on the road [E01C 23/065](#))}
- E01C 19/12      • for distributing granular or liquid materials {([E01C 19/002](#), [E01C 19/45](#), [E01C 19/46](#), [E01C 19/48](#), [E01C 23/03](#), [E01C 23/065](#)), [E01C 23/07](#) take precedence; for filling joints or grooves [E01C 23/02](#), [E01C 23/09](#)}
- E01C 19/15      • • for laying-down uncoated stone or similar materials, or for striking-off or spreading same without compacting, e.g. for crushed rock base courses, sand cushions for paving {([E01C 19/466](#)), [E01C 19/52](#) take precedence; distributing [E01C 19/20](#); {-laying down and rolling [E01C 19/482](#))}
- E01C 19/16      • • for applying or spreading liquid materials, e.g. bitumen slurries {([E01C 19/1054](#), [E01C 19/21](#), } [E01C 19/45](#), {[E01C 19/4813](#), [E01C 21/00](#), } [E01C 23/02](#), [E01C 23/03](#), {[E01C 23/065](#), [E01C 23/096](#), [E01C 23/0973](#), [E01C 23/0993](#)}, [E01C 23/16](#) take precedence; {-spreading-out or smoothing-down means as parts of spraying apparatus [E01C 19/178](#))}
- E01C 19/18      • • Devices for distributing road-metals mixed with binders, e.g. cement, bitumen, without consolidating or ironing effect ([E01C 19/20](#), {[E01C 19/21](#), [E01C 19/46](#)}, [E01C 19/47](#), {[E01C 19/48](#), [E01C 21/00](#), [E01C 23/065](#), [E01C 23/07](#)} take precedence; conveying installation for concrete or the like [B65G](#))
- E01C 19/20      • • Apparatus for distributing, e.g. spreading, granular or pulverulent materials, e.g. sand, gravel, salt, dry binders {([E01C 19/21](#), [E01C 19/4813](#), [E01C 19/482](#), [E01C 23/098](#), [E01C 23/166](#) take precedence; } fertiliser distributors [A01C 15/00](#); {-permanently-installed devices for applying gritting or thawing materials [E01H 10/005](#); mobile spreaders specially adapted for treating wintry roads [E01H 10/007](#))}

- E01C 19/22
- for consolidating or finishing laid-down unset materials (~~{E01C 19/002-, E01C 19/48-, E01C 21/00}~~ ~~E01C 23/02~~ ~~{E01C 23/065}~~) take precedence; apparatus for generating vibrations in general ~~B06B~~)
- E01C 19/23
- • Rollers therefor; Such rollers usable also for compacting soil (~~{E01C 19/41-, } E01C 19/43-, {E01C 19/52-, E01C 23/065}~~) take precedence; specially adapted for agricultural purposes ~~A01B 29/00-~~; garden rollers ~~A01G 1/12-~~; making or maintaining surfaces of snow or ice ~~E01H 4/00-~~; solely for soil compaction ~~E02D 3/026~~)
- E01C 19/231
- • • {with both elastically-deformable and rigid rolling elements, e.g. pneumatic-tired compactor with selectively operative or inoperative steel-faced roll (with auxiliary elastically-deformable rolling elements for working only restricted zones ~~E01C 19/27-~~; rigid-roll rollers with conventional pneumatic-tired tractors or traction-units ~~E01C 19/25-, E01C 19/26-, E01C 19/28-~~)}
- E01C 19/24
- • • hand propelled (~~{E01C 19/235-, } E01C 19/27 to E01C 19/29-, {E01C 19/41}~~) take precedence)
- E01C 19/26
- • • self-propelled or fitted to road vehicles (~~{E01C 19/231-, E01C 19/235}~~ , ~~E01C 19/27 to E01C 19/29~~ take precedence)
- E01C 19/266
- • • • {fitted to vehicles, road-construction or earth-moving machinery, e.g. auxiliary roll readily movable to operative position (~~E01C 19/268-, E01C 19/4806-, E01C 19/488-, E01C 19/52-, E01C 21/00-, E01C 23/065~~ take precedence); provided with means for facilitating transport; Means for transporting rollers; Arrangements or attachments for converting vehicles into rollers, e.g. rolling sleeves for wheels}
- E01C 19/268
- • • • {designed for rolling surfaces not situated in the plane of the riding surface of the apparatus, e.g. stepped-down surfaces, sloping edge of surfacing (trench rollers ~~E02D 3/032-~~; slope rollers ~~E02D 3/039-~~)}
- E01C 19/28
- • • Vibrated rollers or rollers subjected to impacts, e.g. hammering blows (~~{E01C 19/235-, } E01C 19/29-, {E01C 19/41}~~) take precedence; ~~{~~ {combined with non-vibrated elastically-deformable rolling elements ~~E01C 19/233-~~)}
- E01C 19/285
- • • • {with attachments for work other than rolling, e.g. dozer blades, shoes for conversion into plate vibrator; fitted to vehicles, road-construction or earth-moving machinery (~~E01C 19/29-, E01C 19/4806-, E01C 19/488-, E01C 19/52-, E01C 21/00-, E01C 23/065~~ take precedence); vibrated or the like auxiliary rolls, e.g. for rolling road edges; provided with means for facilitating transport}
- E01C 19/30
- • Tamping or vibrating apparatus other than rollers {; Devices for ramming individual paving elements} (~~{E01C 19/41-, E01C 19/43-, E01C 19/4833-, E01C 19/488-, E01C 19/4886-, E01C 19/52-, E01C 21/00-, } E01C 23/02-, E01C 23/04~~ take precedence; vibrated depositing devices ~~E01C 19/12-~~; tamping or vibrating rollers ~~E01C 19/28-~~; portable percussion tools ~~B25D-~~; tamping or vibrating soil ~~E02D 3/046~~)
- U E01C 19/34
- • • Power-driven rammers or tampers, {e.g. air-hammer impacted shoes for ramming stone-sett paving; Hand-actuated ramming or tamping machines, e.g. tampers with manually hoisted dropping weight}
- E01C 19/38
- • • • with means specifically for generating vibrations, {e.g. vibrating plate compactors, immersion vibrators (~~E01C 19/40-, E01C 19/41~~ take precedence)}
- E01C 19/40
- • • • adapted to impart a smooth finish to the paving, e.g. tamping or vibrating finishers

**NOTE**

When classifying in group ~~E01C 19/402-~~, classification is also made in groups ~~E01C 19/405~~ or ~~E01C 19/407~~ if of interest

- E01C 19/42
  - Machines for imparting a smooth finish to freshly-laid paving courses other than by rolling, tamping or vibrating (for distributing only [E01C 19/12](#); {-hand-actuated smoothing tools [E01C 19/44](#)})
- E01C 19/44
  - Hand-actuated tools other than rollers, tampers, or vibrators, specially adapted for imparting a required finish to freshly-laid paving courses ([E01C 19/43](#); {[E01C 23/02](#)} take precedence)
- E01C 19/46
  - for preparing and placing the materials {e.g. slurry seals} ([E01C 19/002](#); {[E01C 19/45](#); {[E01C 21/00](#); [E01C 23/065](#)} take precedence)
- E01C 19/48
  - for laying-down the materials and consolidating them, or finishing the surface, {e.g. slip forms therefor, forming kerbs or gutters in a continuous operation in situ ([E01C 19/002](#); [E01C 23/065](#) take precedence; devices for guiding or controlling the machines along a predetermined path [E01C 19/004](#))}
- U E01C 19/4806
  - {-with solely rollers for consolidating or finishing ([E01C 19/4886](#) takes precedence; combined with other consolidating or finishing means [E01C 19/488](#))}
- E01C 19/482
  - {the materials being uncoated stone or similar granular materials, e.g. sand (laying-down uncoated stone or similar materials per se [E01C 19/15](#); distributing granular or pulverung materials per se [E01C 19/20](#))}
- E01C 19/4833
  - {-with tamping or vibrating means for consolidating or finishing, e.g. immersed vibrators, with or without non-vibratory or non-percussive pressing or smoothing means ([E01C 19/4806](#); [E01C 19/4886](#) take precedence; combined with rollers [E01C 19/488](#))}
- E01C 19/4886
  - {-for forming in a continuous operation kerbs, gutters, berms, safety kerbs, median barriers or like structures in situ, e.g. by slip-forming, by extrusion (removable forms for kerbs, gutters or similar structures [E01C 19/506](#); making conduits in situ [E02D 29/10](#))}
- E01C 19/50
  - Removable forms or shutterings for road-building purposes ([E01C 23/02](#); [E01C 23/04](#) take precedence; permanent forms [E01C 3/00](#) to [E01C 7/00](#); {[E01C 9/00](#) to [E01C 17/00](#)} ; slip forms [E01C 19/48](#)); Devices or arrangements for forming individual paving elements, e.g. kerbs, in situ
- E01C 19/502
  - {-Removable forms or shutterings, e.g. side forms; Removable supporting or anchoring means therefor, e.g. stakes (for forming individual elements [E01C 19/508](#); for grooves or like channels [E01C 23/021](#))}
- E01C 19/508
  - {-Devices or arrangements for forming individual paving elements in situ, e.g. by sectioning a freshly-laid slab (permanent forms therefor [E01C 9/001](#); imprinting freshly-laid paving to simulate stones [E01C 19/43](#); cutting sett paving [E01C 23/0906](#))}
- E01C 21/00
 

**Apparatus or processes for surface {soil} stabilisation for road building or like purposes, e.g. mixing local aggregate with binder ({recycling in place or on the road involving soil stabilisation [E01C 23/065](#)} ; stabilising soil under existing surfacing [E01C 23/10](#); soil-conditioning or soil-stabilising materials [C09K 17/00](#); soil consolidation in general [E02D 3/12](#))**
- E01C 21/02
  - Fusing, calcining, or burning soil in situ {(improving soil by thermal means in general [E02D 3/11](#); devices for heating foundation or paving [E01C 23/14](#))}
- U E01C 23/00
 

**Auxiliary devices or arrangements for constructing, repairing, reconditioning, or taking-up road or like surfaces (apparatus for reconditioning of salvaged non-hydraulic compositions {for- in plant recycling of salvaged bituminous mixtures} [E01C 19/10](#))**

- U E01C 23/02
  - Devices for making, treating or filling grooves or like channels in not-yet-hardened paving, e.g. for joints or markings (surface patterning [E01C 19/43](#)); Removable forms therefor (non-removable forms [E01C 11/02](#)); Devices for introducing inserts or removable insert-supports in not-yet-hardened paving ([E01C 23/04](#) takes precedence; non-removable {joint} insert supports [E01C 11/02](#))
- E01C 23/021
  - • {Removable, e.g. reusable, forms for grooves or like channels ([E01C 23/028](#) takes precedence; groove-forming members of groove-making apparatus [E01C 23/025](#), [E01C 23/026](#)); Installing same prior to placing the paving (into laid paving [E01C 23/026](#))}
- E01C 23/025
  - • {Making or working grooves or like channels in laid paving, e.g. smoothing groove edges ([E01C 23/026](#), [E01C 23/028](#) take precedence)}
- E01C 23/04
  - Devices for laying {inserting or positioning} reinforcing elements or dowel bars {with or without joint bodies (installing or inserting joint bodies per se [E01C 23/023](#), [E01C 23/026](#))}; Removable support for reinforcing {or load transfer} elements (non-removable supports therefor {[E01C 11/02](#) [E01C 11/16](#)}; side forms adapted to supporting reinforcement [E01C 19/50](#)); Devices, e.g. removable forms, for making essentially horizontal ducts in paving, e.g. for prestressed reinforcements
- E01C 23/06
  - Devices or arrangements for working the finished surface (working freshly laid paving [E01C 19/42](#) to [E01C 19/44](#), [E01C 23/02](#); mining picks [E21C 35/18](#)); Devices for repairing {or reconditioning} the surface of damaged paving; {Recycling in place or on the road}
- E01C 23/065
  - • {Recycling in place or on the road, i.e. hot or cold reprocessing of paving in situ or on the traffic surface, with or without adding virgin material or lifting of salvaged material; Repairs or resurfacing involving at least partial reprocessing of the existing paving (in situ mixing of hydraulic cement concrete [E01C 19/025](#); apparatus for in-plant recycling [E01C 19/1004](#), [E01C 19/1036](#))}
- E01C 23/07
  - • Apparatus combining measurement of the surface configuration of paving with application of material in proportion to the measured irregularities (measuring means only [E01C 23/01](#), {[G01B](#)})
- E01C 23/08
  - • for roughening or patterning; for removing {the surface down to a predetermined depth} high spots or material bonded to the surface, e.g. markings; {for maintaining earth roads, clay courts or like surfaces by means of surface working tools, e.g. scarifiers, levelling blades} (removing matter not bonded to the surface [E01H 1/00](#); roughening or detaching ice [E01H 5/12](#))
- U E01C 23/09
  - • for forming cuts, grooves, or recesses, e.g. for making joints or channels for markings, for cutting-out sections to be removed; for cleaning, treating, or filling cuts, grooves, recesses, or fiddures; for trimming paving edges
- E01C 23/0906
  - • • {for forming, opening-out, cleaning, drying or heating cuts, grooves, recesses or, excluding forming, cracks, e.g. cleaning by sand-blasting or air-jet ([E01C 23/096](#), [E01C 23/0993](#) take precedence, save for [E01C 23/0946](#)); for trimming paving edges}
- E01C 23/0966
  - • • {for filling or priming, with or without working the surface of the filling or applying particulate material thereto, e.g. for filling the joints of stone-sett paving ([E01C 23/096](#), [E01C 23/0993](#) take precedence)}
- U E01C 23/12
  - • for taking-up, tearing-up, or {full-depth} breaking-up paving, {e.g. sett extractor}(adapted to both placing and removing {preformed} paving {elements} [E01C 19/52](#))
- E01C 23/121
  - • • {with non-powered tools, e.g. rippers (rollers with ripping attachments [E01C 19/264](#), [E01C 19/27](#), [E01C 19/285](#); roughening or patterning using non powered tools [E01C 23/082](#))}

- E01C 23/14
- for heating or drying foundation, paving, or materials thereon, e.g. paint ([E01C 23/03](#) takes precedence; heating or drying devices incorporated in the paving [E01C 11/26](#); surface {soil} stabilisation by fusing, calcining or burning soil in situ [E01C 21/02](#); for street cleaning [E01H 1/08](#); melting snow or ice on surfacing [E01H 5/10](#))
- E01C 23/16
- Devices for marking-out, applying, or forming traffic or like markings on finished paving ([E01C 23/14](#) takes precedence; inserting or forming in not-yet-hardened paving [E01C 23/02](#); in recesses formed in fully-set paving [E01C 23/09](#); marking-out playing courts or playgrounds [A63C 19/06](#); applying liquids or other fluent materials to surfaces in general [B05](#); road surface markings per se [E01F 9/04](#)); Protecting fresh markings {(indicating fresh markings [E01F 9/0128](#))}

**Project: N/A (E01D)**

- E01D
- CONSTRUCTION OF BRIDGES, {ELEVATED ROADWAYS} OR VIADUCTS; ASSEMBLY OF BRIDGES (bridges extending between terminal buildings and aircraft for embarking or disembarking passengers [B64F 1/305](#); {tracks for special kinds of railways [E01B 25/00](#); culverts [E01F 5/005](#))}**

**Project: N/A (E01F)**

- E01F 1/00
- Construction of {station or like} platforms or refuge islands {or like islands in traffic areas, e.g. intersection or filling-station islands}{general arrangement {of filling stations [B60S 5/02](#),} of railway platforms {[B61B 1/02](#), of traffic-channelling island at intersections [E01C 1/02](#) }{-}; Kerbs specially adapted for islands in traffic areas (specially adapted for guiding, marking or signalling [E01F 9/0533](#), for illumination [E01F 9/0536](#); lane separators diverting traffic past safety zones [E01F 9/087](#))}
- E01F 5/00
- Draining the sub-base {-i.e. subgrade or ground-work, e.g. embankment} of roads or {-of the} ballastway of railways {-or draining-off road surface or ballastway drainage} by trenches, culverts, or conduits {-or other specially adapted means}{(drainage of the ballastway of railways [E01B 11/00](#); surface drainage of roads [E01C 11/224](#); drainage of soil [E02B 11/00](#));} underground drainage [E02D](#); conduits for sewerage [E03F](#))}
- U E01F 9/00
- Arrangement of road signs or traffic signals (signals, signalling systems [G08](#); signs, attachment thereof to supports [G09F](#)); Arrangements for enforcing caution, e.g. speed bumps
- E01F 9/011
- Upright bodies, e.g. marker posts or bollards; Supports for road signs, {-e.g. posts, frames, gantries}{([E01F 9/045](#), [E01F 9/0533](#), [E01F 13/02](#) take precedence);} posts or poles in general [E04H 12/00](#); means for attaching signs to a supporting structure in general [G09F 7/18](#))}

**Project: N/A (E01H)**

- E01H 1/00
- Removing undesirable matter from roads or like surfaces, with or without moistening of the surface (for snow or ice [E01H 5/00](#); cleaning tramway rails [E01H 8/00](#); obstruction removers on vehicles [B60R 19/00](#); in combination with application of bitumen or the like [E01C 19/16](#); in combination with application of traffic line [E01C 23/16](#); {-Sweeping apparatus, particularly for lawns [A01G 1/12](#); Removing undesirable matter from floors and similar surfaces [A47L 5/00](#) to [A47L 13/00](#))}

- E01H 1/02
- Brushing apparatus, {e.g. with auxiliary instruments for mechanically loosening dirt}({[E01H 1/003](#), [E01H 1/005](#), [E01H 1/006](#) and} [E01H 1/08](#) to [E01H 1/14](#) take precedence; {-loosening by means of gas jets or streams [E01H 1/0818](#), [E01H 1/0872](#); with brushes functioning under vacuum or combined with independent suction nozzles [E01H 1/0827](#); loosening by means of liquid streams [E01H 1/101](#); mechanical loosening instruments other than brushes [E01H 1/105](#); for railway tracks [E01H 8/00](#)}; brushes in general [A46B](#); {-for floors or similar surfaces [A47L 11/22](#), [A47L 11/24](#)})
- E01H 1/08
- Pneumatically dislodging or taking-up undesirable matter {-or small objects} ({[E01H 1/006](#) and [E01H 1/005](#) take precedence; } suction cleaners in general [A47L 5/00](#) to [A47L 9/00](#); {-sucking-off liquids or semi-liquids [E01H 1/108](#)}); Drying by heat only or by streams of gas (permanently-installed heating or blowing devices [E01C 11/26](#); heating or drying for road- building or repairing [E01C 23/14](#); {-devices for melting snow or ice in situ [E01H 5/10](#), [E01H 8/08](#); for scorching undesirable vegetation [E01H 11/00](#)}); Cleaning by projecting abrasive particles (sand-blasting in general [B24C](#); {-roughening of road surfaces [E01C 23/08](#); cleaning of road joints [E01C 23/0906](#)})
- E01H 3/00
- Applying liquids to roads or like surfaces, e.g. for dust control; Stationary flushing devices (combined with removal of undesirable matter [E01H 1/00](#); spray heads, other outlets [B05B](#); {-applying hot water for melting snow [E01H 5/10](#); applicators for melting liquids [E01H 10/00](#); weed destruction [E01H 11/00](#)})**
- U E01H 4/00
- Working on surfaces of snow or ice in order to make them suitable for traffic or sporting purposes, e.g. by compacting snow (production of artificial snow [F25C 3/04](#))**
- E01H 4/02
- for sporting purposes, e.g. preparation of ski trails; {-Construction of artificial surfacings for snow or ice sports (construction of ice skating rinks [E01C 13/102](#)); Trails specially adapted for on-the-snow vehicles}, e.g. devices adapted for ski-trails (production of snow or ice for winter sports or similar recreational purposes [F25C 3/00](#))
- U E01H 5/00
- Removing snow or ice from roads or like surfaces; Grading or roughening snow or ice (by applying de-icing agents [E01H 10/00](#); obstruction removers on vehicles [B60R 19/00](#); sand, gravel or salt spreaders [E01C 19/20](#))**
- U E01H 5/04
- Apparatus propelled by animal or engine power; Apparatus propelled by hand with driven dislodging or conveying {levelling} elements, conveying pneumatically {for the dislodged material}([E01H 5/10](#), [E01H 5/12](#) take precedence)
- U E01H 5/06
- • dislodging essentially by non-driven elements, e.g. scraper blades, {snow-plough blades, scoop blades}
- E01H 5/065
- • • {characterised by the form of the snow-plough blade, e.g. flexible, or by snow-plough blade accessories ([E01H 5/061](#)-,[E01H 5/063](#) take precedence)}
- E01H 5/12
- Apparatus or implements specially adapted for breaking, disintegrating, or loosening layers of ice or hard snow {with or without clearing or removing ([E01H 5/10](#) takes precedence); Roughening ice or hard snow by means of tools (by means of gritting materials [E01H 10/00](#)-; roughening or breaking-up pavements [E01C 23/08](#)-,[E01C 23/12](#)})
- E01H 8/00
- Removing undesirable matter from the permanent way of railways; Removing undesirable matter from tramway rails ([E01H 1/00](#) to [E01H 6/00](#) take precedence; {-controlling vegetation [E01H 11/00](#); removing ballast from rails or sleepers [E01B 27/023](#); removing, cleaning the ballast itself [E01B 27/04](#), [E01B 27/06](#)})**

- U E01H 8/02
- Methods or apparatus for removing ice or snow from railway tracks, e.g. using snow-ploughs {Devices for dislodging snow or ice which are carried or propelled by tramway vehicles}{operating only on rails or flange grooves [E01H 8/10](#)}; {Moving or removing ballast; ([E01B 27/02](#), [E01B 27/04](#) take precedence; removing snow or ice in general [E01H 5/00](#))}
- E01H 8/08
- • by application of heat, {e.g. by means of heated clearing instruments, melting in situ}{weed scorching devices which may also melt snow [E01H 11/00](#)}; heated track [E01B 19/00](#)}; {-Clearing devices which melt the dislodged snow; Clearing exclusively by means of rays or streams or gas or stream, or by suction}
- E01H 12/00**      **Cleaning beaches {-or sandboxes}**
- Project: N/A (E02B)**
- E02B 3/20
- Equipment for shipping on coasts, in harbours or on other fixed marine structures, e.g. bollards (tying-up, anchoring [B63B 21/00](#), e.g. bollards for shipping [B63B 21/06](#); buoys [B63B 22/00](#)); {-equipment specially adapted for use in locks or dry docks [E02C 1/10](#)}
- E02B 5/00**      **Artificial water canals, {-e.g. irrigation canals}{for water-power plants [E02B 9/02](#); irrigation of soil [E02B 13/00](#)}**
- U E02B 7/00
- Barrages or weirs; Layout, construction, methods of, or devices for, making same (for protecting banks, coasts, or harbours [E02B 3/04](#); sealings or joints [E02B 3/16](#); handling building or like materials for hydraulic engineering [E02D 15/00](#); foundations in general [E02D 27/00](#))**
- U E02B 7/20
- Movable barrages; Lock {or dry-dock} gates
- E02B 7/38
- • Rolling gates {-or gates moving horizontally in their own plane, e.g. by sliding}
- E02B 13/00**      **Irrigation ditches, i.e. gravity flow, open channel water distribution systems ({retaining waterborne material in irrigation canals [E02B 5/085](#)}; other distribution systems for watering or spraying gardens, fields, sports grounds, or the like, [A01G 25/00](#)}; {-built-in irrigation means for sports grounds [E01C 13/083](#))}**
- U E02B 15/00
- Cleaning or keeping clear the surface of open water; Apparatus therefor (construction of ships or other waterborne vessels [B63B](#), e.g. vessels specially adapted for collecting pollution from open water [B63B 35/32](#); in swimming or splash baths or pools [E04H 4/16](#))**
- U E02B 15/04
- Devices for cleaning or keeping clear the surface of open water from oil or like floating materials by separating or removing these materials ({stopping water-borne material in artificial water canals [E02B 5/085](#); stopping water-borne material at barrages or weirs [E02B 8/023](#)}; other treatment of water, waste water or sewage [C02F](#); materials for treating liquid pollutants; e.g. oil, gasoline, fat, [C09K 3/32](#)}; {separation of oil in sewage conduits [E03F 5/16](#))}
- E02B 15/06
- • Barriers therefor ([E02B 15/08](#) takes precedence){-construed for applying processing agents or for collecting pollutants, e.g. absorbent}
- E02B 15/08
- • Devices for reducing the polluted area {-with or} without {-additional devices for} removing the material
- E02B 17/00**      **Artificial islands mounted on piles or like supports, e.g. platforms on raisable legs {-or offshore constructions}; construction methods therefor ({construction methods for floating platforms [B63B 9/065](#)}; anchoring floating platforms [B63B 21/00](#); floating platforms, e.g. anchored, [B63B 35/44](#)}; {-underwater reservoirs [B65D 88/78](#))}**

**Project: N/A (E02C)**

- E02C 1/00 **Locks {-or dry-docks}; Shaft locks, i.e. locks of which one front side is formed by a solid wall with an opening in the lower part through which the ships pass (lock gates [E02B 7/20](#) {dry-dock equipment; naval construction aspects [B63C 1/00](#); flating docks [B63C 1/02](#))}**
- E02C 1/06 • Devices for filling or emptying locks (in lock gates [E02B 7/20](#) {floating docks [B63C 1/06](#)})

**Project: N/A (E02D)**

- U E02D 29/00 {Independent} underground or underwater structures (underground tanks [B65D 88/76](#); hydraulic engineering, e.g. sealings or joints, [E02B](#); underground garages [E04H 6/00](#); underground air-raid shelters [E04H 9/12](#); burial vaults [E04H 13/00](#)); Retaining walls**
- E02D 29/04 • Making large underground spaces, e.g. for underground plants, {-e.g. stations of underground railways}; Construction or layout thereof ([E02D 29/10](#) takes precedence; {-water-supply or sewerage plants [E03](#)}; layout of water power plants [E02B 9/00](#); making large underground chambers by underground methods only [E21D 13/00](#))
- E02D 29/08 • Siphons (for sewerage [E03F 5/20](#); siphon weirs [E02B 7/18](#); {-siphons in general [F04F 10/00](#)})
- E02D 29/10 • Tunnels or galleries specially adapted to house conduits, e.g. oil pipe-lines, sewer pipes (for pressure water conduits [E02B 9/06](#); {-for cables [H02G 9/02](#); layout of tunnels or galleries in general [E21D 9/14](#); road kerbs with housings for pipes or the like [E01C 11/222](#)}); Making conduits in situ, e.g. of concrete (combined with digging of trenches or ditches [E02F 5/10](#); {-making or lining tunnels or galleries [E21D](#); constructing tunnels or galleries in open excavations [E02D 29/045](#); in open water [E02D 29/063](#)}); Casings, {-i.e. manhole shafts, access or inspection chambers} or coverings of boreholes or narrow wells (wells for drinking water [E03B 3/08](#); boreholes or wells formed by deep drilling [E21B](#); shafts [E21D](#))
- E02D 29/12 • Manhole shafts; Other inspection or access chambers; Accessories therefor (for underground tanks [B65D 90/10](#); for sewerage [E03F 5/02](#); {-climbing irons or ladders [E06C 9/00](#)})

**Project: N/A (E02F)**

- U E02F 3/00 Dredgers; Soil-shifting machines (for special purposes [E02F 5/00](#); other machines or apparatus for mining [E21C](#); tunnelling [E21D](#))**
- E02F 3/02 • hand-operated; {-handheld soil shifting equipment acting by sucking [E02F 3/8891](#) (spades or rakes for agriculture or gardening purposes [A01B](#))}
- U E02F 3/04** • mechanically-driven
- E02F 3/08 • • with digging elements on an endless chain, {-e.g. bucket-type chains (for digging trenches or ditches [E02F 5/06](#); cutting machines for mining or quarrying [E21C 25/22](#))}
- E02F 3/18 • • with digging wheels turning round an axis, {-e.g. bucket-type wheels (for digging trenches [E02F 5/08](#); for laying cables underwater [E02F 5/109](#); cutting machines [E21C 25/00](#); methods or apparatus for making tunnels or galleries [E21D 9/00](#))}
- U E02F 3/28** • • with digging tools mounted on a dipper- or bucket-arm, {i.e. there is either one arm or a pair of arms}, e.g. dippers, buckets
- E02F 3/34 • • • with bucket-arms {-i.e. a pair of arms, e.g. manufacturing processes, form, geometry, material of bucket-arms (with a single arm [E02F 3/283](#))} directly pivoted on the frames of tractors or self-propelled machines
- U E02F 3/36** • • • Component parts

- E02F 3/38
- • • Cantilever beams {-i.e. booms; e.g. manufacturing processes, forms, geometry or materials used for booms (for booms with cable suspension arrangements [E02F 9/14](#) takes precedence)}; Dipper-arms {-e.g. manufacturing processes, forms, geometry or materials used for dipper-arms}; Bucket-arms {([E02F 3/34](#) takes precedence)}
- E02F 3/40
- • • Dippers; Buckets {-Grab device, e.g. manufacturing processes for buckets, form, geometry, material of buckets (devices to connect tools to arms or booms [E02F 3/3604](#); teeth therefor [E02F 9/28](#))}
- E02F 3/46
- • with reciprocating digging or scraping elements moved by cables or hoisting ropes; {-Drives or control devices therefor ([E02F 3/205](#), [E02F 3/905](#) take precedence)}
- E02F 3/627
- • Devices to connect beams or arms to tractors or similar self-propelled machines, {-e.g. drives therefor (Connection of beams or booms or arms to the frame per se [E02F 3/382](#); connection of scraper bowls to the vehicle main body [E02F 3/653](#); connecting devices for agriculture tractors [A01B 59/06](#))}
- E02F 3/76
- • Graders, bulldozers, or the like with scraper plates or ploughshare-like elements (soil-working [A01B](#)); Levelling {-scarifying} devices {(street cleaning [E01H](#); construction of roads [E01C 19/00](#), [E01C 23/00](#))}
- U E02F 3/80
- • • Component parts
- E02F 3/84
- • • Drives or control devices therefor, {-e.g. hydraulic drive systems}
- E02F 3/96
- • with arrangements for alternate {-or simultaneous} use of different digging elements {([E02F 3/7604](#), [E02F 3/769](#), [E02F 3/78](#) take precedence; quick-acting devices to connect tools to arms or booms [E02F 3/3609](#), for arms to tractors or the like [E02F 3/627](#))}
- U E02F 5/00 Dredgers or soil-shifting machines for special purposes**
- U E02F 5/02
- for digging trenches or ditches ({machines for making foundation slots [E02F 3/205](#), [E02F 3/475](#) take precedence); agricultural ploughs for working ridges [A01B 13/02](#))
- E02F 5/10
- • with arrangements for reinforcing trenches or ditches; with arrangements for making or assembling conduits or for laying conduits or cables (laying pipes per se [F16L 1/00](#), making pipes in situ [F16L 1/038](#); laying electric cables per se [H02G 1/06](#); {-drainage device- laying apparatus [E02B 11/02](#))}
- U E02F 5/16
- Machines for digging other holes in the soil (earth drilling [E21](#))
- E02F 5/18
- • for horizontal holes {-or inclined holes}
- U E02F 7/00 Equipment for conveying or separating excavated material (barges adapted for carrying-away material from floating dredgers [B63B 35/28](#))**
- E02F 7/02
- Conveying equipment mounted on dredgers or excavators (conveyers in general [B65G](#) ){(in combination with graders or bulldozers [E02F 3/7695](#); in combination with rotating digging wheels [E02F 3/181](#); in combination with bucket-arms [E02F 3/348](#); in combination with digging elements mounted on an endless chain [E02F 3/082](#), [E02F 3/083](#))}
- E02F 7/04
- Loading devices mounted on a dredger or an excavator (loading devices in general [B65G](#) ){hopper dredgers, also equipment for unloading the hopper}
- E02F 7/06
- Delivery chutes or screening plants {-or mixing plants} mounted on dredgers or excavators ({for back-filling [E02F 5/226](#) takes precedence); separating equipment in general [B03](#); delivery chutes in general [B65G](#))}
- E02F 9/00
- Component parts of dredgers or soil-shifting machines, not restricted to one of the kinds covered by groups [E02F 3/00](#) to [E02F 7/00](#) (laying-out or take-up devices for trailing electric cables [B66C](#))**

- E02F 9/14
  - Booms {-only for booms with cable suspension arrangements (for booms or manipulators with cable suspensions for suction pipes [E02F 3/905](#) takes precedence; for booms per se [E02F 3/38](#); [E02F 3/34](#) for bucket-arms)}; Cable suspensions
- E02F 9/28
  - Small metalwork for digging elements, e.g. teeth {-scraper bits (ploughs for agriculture [A01B 15/00](#); teeth of harrows [A01B 23/02](#))}

**Project: N/A (E03B)**

- U E03B 7/00** **Water main or service pipe systems (pipes or tubes in general [F16L](#))**
- U E03B 7/07
  - Arrangement of devices, e.g. filters, flow controls, measuring devices, siphons, valves, in the pipe systems (devices per se, see the relevant classes for these devices)
- E03B 7/08
  - • Arrangement of draining devices, {-e.g. manual shut-off valves}(draining devices in general [F16K](#), [F16L](#))

**Project: N/A (E03C)**

- U E03C 1/00** **Domestic plumbing installations for fresh water or waste water; Sinks {(work tops [A47B 77/022](#))}**
- U E03C 1/02
  - Plumbing installations for fresh water
- U E03C 1/04
  - • Water-basin installations specially adapted to wash-basins or baths (valves, faucets, mixing valves, taps [F16K](#))
- E03C 1/046
  - • • Adding soap, disinfectant, or the like in the supply line {-or at the water outlet}(preventing contamination of drinking-water pipes [E03C 1/10](#))

**Project: N/A (E03D)**

- U E03D 1/00** **Water flushing devices with cisterns; {Setting up a range of flushing devices or water-closets; Combinations of several flushing devices}**
- U E03D 1/02
  - High-level flushing systems
- E03D 1/14
  - • Cisterns discharging variable quantities of water (twin or multiple flushing cisterns [E03D 1/22](#); flushing devices operated by pressure of the water supply system and discharging variable quantities of water [E03D 3/12](#) )}{also cisterns with bell siphons in combination with flushing valves}
- E03D 1/30
  - Valves for high or low level cisterns; Their arrangement (inlet valves, valves in general [F16K](#) ){Flushing mechanisms in the cistern, optionally with provisions for a pre-or a post- flushing and for cutting off the flushing mechanism in case of leakage (flushing valves [E03D 1/142](#), [E03D 1/186](#), [E03D 1/266](#), [E03D 1/286](#))}
- E03D 9/00** **Sanitary or other accessories for lavatories (hand tools for cleaning the toilets bowl [A47K 11/10](#); seats or covers for closets [A47K 13/00](#); body supports, other than seats for closets [A47K 17/02](#); devices for preventing contamination of drinking-water pipes [E03C 1/10](#) ){Devices for cleaning or disinfecting the toilet room or the toilet bowl; Devices for eliminating smells (cleaning, disinfecting or deodorising the seat [A47K 13/30](#))}**
- U E03D 9/02
  - Devices adding a disinfecting, deodorising, or cleaning agent to the water while flushing (apparatus for disinfection [A61L 2/00](#); treatment of water in general [C02F](#))
- E03D 9/03
  - • consisting of a separate container with an outlet through which the agent is introduced into the flushing water, e.g. by suction; {-Devices for agents in direct contact with flushing water}

- E03D 9/08
- Devices in the bowl producing upwardly-directed sprays; Modifications of the bowl for use with such devices (showers [A47K 3/28](#); bathing devices for special therapeutic or hygienic purposes [A61H 33/00](#), for specific parts of the body [A61H 35/00](#)); {-Bidets; Combinations of bowls with urinals or bidets; Hot-air or other devices mounted in or on the bowl, urinal or bidet for cleaning or disinfecting}
- E03D 11/00
- Other component parts of water-closets (pipe-joints or couplings in general [F16L](#) )}{e.g. noise-reducing means in the flushing system (noise-reducing means in combination with flushing valves [E03D 9/14](#)), flushing pipes mounted in the bowl, seals for the bowl outlet, devices preventing overflow of the bowl contents; devices forming a water seal in the bowl after flushing, devices eliminating obstructions in the bowl outlet or preventing backflow of water and excrements from the waterpipe}**
- E03D 11/02
- Water-closet bowls (auxiliary chambers with connections to flushing water for bowl-cleaning utensils [E03D 9/06](#); modified for using upwardly-directed sprays [E03D 9/08](#); seats or covers [A47K 13/00](#) ){Bowls with a double odour seal optionally with provisions for a good siphonic action; siphons as part of the bowl (parts or details of bowls [E03D 11/13](#))}
- E03D 11/12
- Swivel-mounted bowls, e.g. for use in restricted spaces {-slidably or movably mounted bowls; combinations with flushing and disinfecting devices actuated by the swiveling or sliding movement of the bowl}
- E03D 13/00
- Urinals (without flushing devices [A47K 11/00](#) ){Means for connecting the urinal to the flushing pipe and the wastepipe; Splashing shields for urinals}**

**Project: N/A (E03F)**

- U E03F 3/00 Sewer pipe-line systems**
- E03F 3/06
- Methods of, or installations for, laying sewer pipes (making pipes in situ [F16L 1/038](#){ laying conduits in association with the digging of a trench [E02F 5/10](#); laying pipes in general [F16L 1/00](#))}
- U E03F 5/00 Sewerage structures**
- E03F 5/14
- Devices for separating liquid or solid substances from sewage, e.g. sand or sludge traps, rakes or grates (for use in sewage purification plants or both in sewage purification plants or in sewer systems [B01D](#), [C02F](#){ gullies with sediment traps [E03F 5/04](#))}
- E03F 5/20
- Siphon pipes or inverted siphons (for connections of baths, basins, or the like [E03C 1/12](#){ siphons in dams [E02B 7/18](#))}

**Project: N/A (E04B)**

**E04B GENERAL BUILDING CONSTRUCTIONS; WALLS, e.g. PARTITIONS; ROOFS; FLOORS; CEILINGS; INSULATION OR OTHER PROTECTION OF BUILDINGS (border constructions of opening in walls, floors or ceilings [E06B 1/00](#); {-electromagnetic shielding [H05K 9/0001](#))}**

NOTE

In this subclass, the following term is used with the meaning indicated :

- "ceiling" includes all the finishing material concealing the the underside of the load-carrying ceiling structure or roof structure.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[E04B 1/682](#) covered by [E04B 1/68](#)  
[E04B 1/684](#) covered by [E04B 1/68](#)

[E04B 1/686](#) covered by [E04B 1/68](#)

- U E04B 1/00** **Constructions in general; Structures which are not restricted either to walls, e.g. partitions, or floors or ceilings or roofs (scaffolds, shutterings [E04G](#); structures specially adapted for buildings for special purposes, general layout of buildings, e.g. modular co-ordination, [E04H](#); the particular parts of buildings, see the relevant groups for those parts)**
- U E04B 1/38
- Connections for building structures in general
- NOTE**
- Connections specially adapted for particular building parts or for particular building structures are classified in the groups for those parts or structures, e.g. in groups [E04B 1/21](#), [E04B 2/00](#), [E04B 5/00](#), [E04B 7/00](#) or [E04B 9/00](#). Joints not specially adapted for building construction, or of more general application, are classified in the appropriate subclasses, e.g. [F16B](#).
- U E04B 1/40
- • Separate connecting elements (for forms, falsework, or shutterings [E04G 17/00](#); releasable clips or clamps, hooks, wedges, wall-dowels, nails, bolts, rivets, screws, wood-screws [F16B](#))
- WARNING**
- Group [E04B 1/40](#) is no longer used for the classification of new documents. The backlog of this group is in the process of being reorganised to group [E04B 1/41](#) and subgroups
- E04B 1/41
- • • Connecting devices specially adapted for embedding in concrete ({joist hangers [E04B 1/2612](#); shear dowels [E04B 1/483](#)}; spacers {-other than masonry wall ties} for cavity walls [E04B 2/30](#), [E04B 2/44](#); connectors for reinforcing elements [E04C 5/16](#); supporting devices for connector reinforcing rods for concrete walls [E04G 21/125](#); fastening frames to the border of openings [E06B 1/56](#))
- U E04B 2/00** **Walls, e.g. partitions, for buildings; Wall construction with regard to insulation; Connections specially adapted to walls (connections for building structures in general [E04B 1/38](#); insulation for buildings in general [E04B 1/62](#); building elements of relatively thin form for parts of buildings [E04C 2/00](#))**
- E04B 2/74
- Removable non-load-bearing partitions; Partitions with a free upper edge (framed panels [E04C 2/38](#)){modular coordination}
- U E04B 5/00** **Floors; Floor construction with regard to insulation; Connections specially adapted therefor (elements for floors, e.g. bricks, stones, filling bodies, girders, [E04C](#); flooring as finishing work, insulation of flooring, sectional false floors, e.g. for computers [E04F 15/00](#))**
- U E04B 5/02
- Load-carrying floor structures formed substantially of prefabricated units ([E04B 5/43](#) to [E04B 5/48](#) take precedence)
- E04B 5/04
- • with beams {-or slabs} of concrete or other stone-like material, e.g. asbestos cement ([E04B 5/08](#), [E04B 5/14](#) take precedence)
- E04B 5/06
- • • {with beams} placed against one another{ optionally with pointing-mortar}
- U E04B 9/00** **Ceilings; Construction of ceilings, e.g. false ceilings; Ceiling construction with regard to insulation (ceilings used as forms for making floors [E04B 5/00](#); coverings or linings for ceilings [E04F 13/00](#))**
- E04B 9/04
- comprising slabs, {-panels,} sheets or the like
- E04B 9/06
- characterised by constructional features of the supporting construction, {-e.g. cross section or material of framework members}
- E04B 9/22
- Connection of slabs, {-panels,} sheets or the like to the supporting construction

- E04B 9/24
  - with the slabs, {-panels,} sheets or the like positioned on {-the upperside of}, or held against {-the underside of the} horizontal flanges of the supporting construction {or accessory means connected thereto}
- E04B 9/28
  - with the slabs, {-panels,} sheets or the like having grooves engaging with horizontal flanges of the supporting construction or accessory means connected thereto

**Project: N/A (E04C)**

- U E04C 2/00
 

**Building elements of relatively thin form for the construction of parts of buildings, e.g. sheet materials, slabs, or panels (materials or manufacture, see the relevant subclasses, e.g. [B27N](#), [D21J](#); made in situ [E04B](#); specially designed for insulation or other protection [E04B 1/62](#); load-carrying floor structures [E04B 5/02](#), [E04B 5/16](#); roofs consisting of self-supporting slabs [E04B 7/20](#); roof or like covering elements [E04D 3/00](#); for lining or finishing [E04F 13/00](#))**
- U E04C 2/44
  - characterised by the purpose
- E04C 2/50
  - Self-supporting slabs specially adapted for making floors ceilings, or roofs, e.g. able to be loaded ([E04C 2/52](#), [E04C 2/54](#) take precedence; structures of slab-shaped elements [E04B 1/02](#); floor structures [E04B 5/00](#); {-roofs consisting of self-supporting slabs [E04B 7/20](#);} ceilings [E04B 9/00](#); roof coverings [E04D](#); floor coverings [E04F 15/00](#))

**Project: N/A (E04D)**

- U E04D 1/00
 

**Roof covering by making use of tiles, slates, shingles, or other small roofing elements (roofing supports {and underlayers} [E04D 12/00](#))**
- U E04D 1/02
  - Grooved or vaulted roofing elements ([E04D 1/28](#), [E04D 1/30](#) take precedence)
- E04D 1/10
  - of specified materials {-not covered by any one of groups [E04D 1/04](#) to [E04D 1/085](#)}, or of combinations of materials, {-where at least one is} not covered by any one of groups [E04D 1/04](#) to [E04D 1/085](#)
- U E04D 1/12
  - Roofing elements shaped as plain tiles or shingles, i.e. with flat outer surface ([E04D 1/28](#), [E04D 1/30](#) take precedence)
- E04D 1/22
  - of specified materials {-not covered by any one of groups [E04D 1/14](#) to [E04D 1/205](#)}, or of combinations of materials, {-where at least one is} not covered by any one of groups [E04D 1/14](#) to [E04D 1/205](#)

**Project: N/A (E04F)**

- E04F 11/00
 

**Stairways, ramps, or like structures (mounting or marking-off stairways [E04F 21/26](#); of temporary {-use during building} construction [E04G 27/00](#); means for facilitating access to swimming pools [E04H 4/144](#); {-means for facilitating access to swimming pools [E04H 4/144](#); appliances for aiding patients or disabled persons to walk [A61H 3/00](#)}); Balustrades; Handrails (ladders permanently attached to fixed structures [E06C 9/00](#))**
- U E04F 11/02
  - Stairways; Layouts thereof
- U E04F 11/104
  - Treads
- E04F 11/108
  - of wood {-or with an upper layer of wood}
- E04F 11/112
  - of metal {-or with an upper layer of metal}
- E04F 11/116
  - of stone, concrete or like material {-or with an upper layer of stone or stone like material, e.g. ceramics, concrete; of glass or with an upper layer of glass}
- E04F 11/18
  - Balustrades; Handrails (guard-rails on ships [B63B](#); for bridges [E01D 19/10](#); for roads [E01F 13/00](#), [E01F 15/00](#); fences [E04H 17/00](#); {-safety measures for persons during the construction of buildings [E04G 21/32](#)})

- E04F 13/00** Coverings or linings, e.g. for walls or ceilings (flooring [E04F 15/00](#); decoration of surfaces, mosaic work [B44](#), e.g. paper-hanging [B44C 7/00](#); made of webs, e.g. of fabrics or wallpaper, {-as such, or their manufacturing} [D03D](#), [D04G](#), [D04H](#), [D06N](#), [D21H](#); construction of {-false} ceilings [E04B 9/00](#); roofings or similar water-tight coverings against precipitation [E04D](#))
- U E04F 13/07 • composed of covering or lining elements; Sub-structures therefor; Fastening means therefor
- E04F 13/08 • • composed of a plurality of similar covering or lining elements, ([E04F 13/072](#) takes precedence; borders, skirtings [E04F 19/02](#); {-of webs or fabrics [E04F 13/002](#); fixing strips [E04F 19/06](#); separate provisional spacers between adjacent tiles [E04F 21/0092](#); implements or means for setting tiles [E04F 21/18](#)})
- E04F 13/10 • • • of wood {-or with an outer layer of wood ([E04F 13/0864](#) takes precedence)}
- E04F 13/12 • • • of metal {-or with an outer layer of metal or enameled metal ([E04F 13/0864](#) takes precedence)}
- E04F 13/14 • • • stone or stone-like materials, e.g. ceramics {-concrete,}; of glass {-or with an outer layer of stone or stone-like materials or glass ([E04F 13/0864](#) takes precedence; producing shaped elements from concrete, ceramic compositions or other stone-like materials [B28B](#); prefabricated panels in general [E04C 2/00](#))}
- E04F 13/15 • • • • characterised by the use of glass elements {-, i.e. wherein an outer layer is not of glass ([E04F 13/145](#) takes precedence)}
- E04F 13/18 • • • of organic plastics with or without reinforcements or filling materials (of plastic-bound fibres or chips [E04F 13/16](#)){-or with an outer layer of organic plastics with or without reinforcements or filling materials; plastic tiles ([E04F 13/0864](#) takes precedence)}
- E04F 15/00** Flooring (stair treads [E04F 11/104](#); coverings not specially adapted for floors [E04F 13/00](#); borders, skirtings [E04F 19/02](#); {-implements for laying flooring [E04F 21/20](#)}; gratings for cleaning soles of footwear [A47L 23/24](#); {-built-in gratings [E04F 19/10](#); removing floor coverings [E04G 23/00](#); carpets [A47G 27/00](#)}; of similar materials to roads [E01C](#); basic or rough floors {-, structural floors} [E04B 5/00](#))
- U E04F 15/02 • Flooring or floor layers composed of a number of similar elements (of webs [E04F 15/16](#))
- E04F 15/04 • • only of wood {-or with a top layer of wood}, e.g. with wooden {-or metal} connecting members (rollable parquet [E04F 15/16](#))
- E04F 15/06 • • of metal, whether or not in combination with other material (gratings as building elements [E04C 2/42](#); {-of elements with a metal upper layer; [E04F 15/02405](#) takes precedence; metal treads [E04F 11/112](#))}
- E04F 15/08 • • only of stone or stone-like material, e.g. {-ceramics}, concrete; of glass {-or with a top layer of stone or stone-like material, e.g. ceramics, concrete or glass ([E04F 15/02005](#) takes precedence)}
- E04F 15/10 • • of other materials, e.g. fibrous or chipped materials, organic plastics, magnesite {-tiles}, hardboard {-, or with a top layer of other materials}
- U E04F 15/12 • Flooring or floor layers made of masses in situ, e.g. seamless magnesite floors, terrazzo {gypsum floors}(inorganic or bituminous masses [C04B](#); organic plastic masses [C08L](#))
- E04F 15/14 • • Construction of joints, e.g. dividing strips ({[E04F 15/02005](#) takes precedence;}) sealing joints not restricted to flooring [E04B 1/68](#), {-construction of joints in roads or airfields [E01C 11/02](#))}

- E04F 15/16 · Flooring, e.g. parquet on flexible web, laid as flexible webs; Webs specially adapted for use as flooring; {-Parquet on flexible web}(resiliently-mounted floors, e.g. sprung floors, [E04F 15/22](#); linoleum [D06N](#); {-carpets [A47G 27/00](#)})
- E04F 17/00 Vertical ducts; Channels, e.g. for drainage (pipes in general [F16L](#); pipeline systems [F17D](#); {-drainage devices in floors [E03F 5/04](#); roof drainage [E04D 13/04](#)})**
- E04F 21/00 Implements for finishing work on buildings (for working or treating building elements of stone or stone-like material [B28D](#); designed specifically for special details provided for in the other groups of this subclass, see the relevant groups for the details {-working measures on existing buildings [E04G 23/00](#); measuring angles or linear dimensions in general [G01B](#), [G01C](#); measuring inclination, e.g. by clinometers or levels [G01C 9/00](#); reference lines, planes or sectors, generated by active optical means [G01C 15/004](#)})**
- U E04F 21/02 · for applying plasticised masses to surfaces, e.g. plastering walls ({wall covering made of hardening materials [E04F 13/02](#)}; specially for flooring [E04F 21/20](#); implements for painting or decorating [B44](#); applying liquids or other fluent materials to surfaces, in general [B05](#))
- E04F 21/16 · · Implements for after-treatment of plaster or the like {-before it has hardened or dried}, e.g. smoothing-tools, profile trowels {([E04F 21/04](#), [E04F 21/165](#) take precedence)}
- E04F 21/165 · for finishing joints, e.g. implements for raking or filling joints, jointers (bricklayers' tools [E04G 21/16](#); repairing, e.g. filling cracks, [E04G 23/02](#); {-wallpaper scrapers or the like [B44C 7/02](#); implements for cleaning joints [A47L 13/10](#)})
- U E04F 21/18 · for setting wall or ceiling slabs or plates (tools for mosaic work [B44C](#))
- U E04F 21/1805 · · {Ceiling panel lifting devices}
- E04F 21/1811 · · · {with hand-driven crank systems, e.g. rope, cable or chain winding or rack-and-pinion mechanisms ([E04F 21/1816](#), [E04F 21/1822](#) and [E04F 21/1827](#) take precedence)}
- E04F 21/20 · for laying flooring (made of similar material to roads or pavements [E01C](#); {-arrangements for removing of previously fixed floor covering [E04G 23/00](#)})

**Project: N/A (E04G)**

- U E04G 1/00 Scaffolds primarily resting on the ground**  
WARNING
- New subgroups [E04G 1/17](#) and [E04G 1/38](#), corresponding to IPC8, are not complete. Documents from main groups [E04G 1/00](#) respectively [E04G 1/00](#) and [E04G 3/00](#) are in the process of being reorganised to these new subgroups
- E04G 1/15 · essentially comprising special means for supporting or forming platforms ([E04G 1/20](#) takes precedence); Platforms (boards or planks therefor [E04G 5/08](#), {-clips or connections for securing boards [E04G 7/28](#)})
- U E04G 1/28 · designed to provide support only at a low height
- E04G 1/32 · · Other free-standing supports, e.g. using trestles (stands or trestles in general [F16M 11/00](#), {-work benches [B25H 1/00](#)})
- E04G 3/00 Scaffolds essentially supported by building constructions, e.g. adjustable in height ([E04G 1/00](#) takes precedence {-and [E04G 21/3204](#) takes precedence})**
- U E04G 5/00 Component parts or accessories for scaffolds (connections [E04G 7/00](#))**
- U E04G 5/06 · Consoles; Brackets {([E04G 3/00](#) takes precedence)}

- E04G 5/065
- {specially adapted for attachment to ladders} (platforms on, or for use on, ladders [E06C 7/16](#))
- E04G 7/00**
- Connections between parts of the scaffold (for building structures in general [E04B 1/38](#); connections in general [F16B](#); {-connection for tubes or rods in general [F16B 7/00](#)})**
- U E04G 7/02
- with separate coupling elements
- E04G 7/04
- Flexible elements, with or without brackets, e.g. ropes, cables, chains (in general [F16G](#), {-means for fastening cables or ropes to one another or to other objects [F16G 11/00](#)})
- E04G 7/28
- Clips or connections for securing boards (brackets [E04G 5/06](#); {-scaffolds comprising special means for supporting or forming platforms, platforms [E04G 1/15](#); scaffold boards or planks [E04G 5/08](#)})
- U E04G 11/00**
- Forms, shutterings, or falsework for making walls, floors, ceilings, or roofs {(for prefabrication of concrete elements in a plant [B28B 7/00](#)})**
- U E04G 11/06
- for walls, e.g. curved {end panels for wall shutterings; filler elements for wall shutterings; shutterings for vertical ducts}([E04G 11/04](#) takes precedence)
- E04G 11/08
- Forms, which are completely dismantled after setting of the concrete and re-built for next pouring ({[E04G 11/062](#) takes precedence}; connecting or supporting means for forms [E04G 17/00](#); {-walls made by casting, pouring, in situ made in permanent forms [E04B 2/84](#)})
- E04G 11/36
- for floors, ceilings, or roofs of plane or curved surfaces {-end formpanels for floor shutterings (floors with lost forms [E04B 5/32](#)})
- E04G 13/00**
- Falsework, forms, or shutterings for particular parts of buildings, e.g. stairs, steps, cornices, balconies {-foundations, sills ([E04G 11/365](#) takes precedence; flat foundations e.g. with lost forms [E02D 27/01](#); removable forms or shutterings for road-building purposes [E01C 19/50](#)})**
- E04G 13/04
- for lintels, beams, or transoms to be encased separately; Special tying or clamping means therefor ({hat-like or trough-like elements encasing a rib and its adjacent ceiling section [E04G 11/46](#); } members, e.g. consoles, for attachment to the wall [E04G 17/16](#))
- E04G 15/00**
- Forms or shutterings for making openings, cavities, slits, or channels (forming part of shuttering for walls [E04G 11/06](#), {-e.g. double walls [E04G 11/18](#); prefabricated elements with elements wholly or partly embedded therein [B28B 23/00](#); core or mandrels for the prefabrication of concrete elements [B28B 7/28](#)})**
- E04G 15/04
- Cores for anchor holes or the like {-around anchors embedded in the concrete (means in or on the building element for connecting to handling apparatus [E04G 21/142](#)})
- U E04G 17/00**
- Connecting or other auxiliary members for forms, falsework structure, or shutterings**
- E04G 17/06
- Tying means; Spacers; {-Devices for extracting or inserting wall ties ([E04G 17/047](#) takes precedence; permanent forms for walls e.g. with ties [E04B 2/86](#)})
- U E04G 21/00**
- Preparing, conveying, or working-up building materials or building elements in situ; Other devices or measures for constructional work (conveying in general [B65G](#); lifting devices [B66](#); working stone-like materials [B28D](#); measuring instruments [G01](#))**

- U E04G 21/02 · Conveying or working-up concrete or similar masses able to be heaped or cast (in connection with finishing work [E04F](#); construction and surfacing of floorings made of similar material to roads or pavements [E01C](#); in connection with barrages [E02B 7/00](#); in connection with foundations [E02D 15/00](#); composition of concrete [C04B](#); working concrete in general, e.g. mixing machines [B28C](#))
- U E04G 21/04 · · Devices for both conveying and distributing (concrete pumps [F04](#))
- E04G 21/0409 · · · {with conveyor belts} (truck mixer with conveyor belts [B28C 5/4255](#))
- E04G 21/06 · · Solidifying concrete, e.g. by application of vacuum before hardening (devices for solidifying also soil [E02D 3/02](#); for road building [E01C 19/00](#); {-for producing shaped articles [B28B 1/00](#)})
- U E04G 21/14 · Conveying or assembling building elements (roofing [E04D](#); finishing work [E04F](#))
- U E04G 21/16 · · Tools or apparatus (devices for erecting fences [E04H 17/26](#))
- E04G 21/162 · · · {Handles to carry construction blocks} (load carriers [B65G 7/12](#))
- U E04G 23/00** **Working measures on existing buildings, ({domestic cleaning of walls or floors [A47L 11/00](#); grinding floors or walls [B24B 7/18](#); removing of wall coverings [B44C 7/00](#); removing of paint from surfaces [B44D 3/16](#); electrochemical desalination or re-alkalisation [C04B 41/00](#)}; on foundations [E02D 35/00](#), [E02D 37/00](#); in connection with insulations [E04B](#); subsequent or finishing work [E04F](#))**
- NOTE
- In addition to the subject matter referred out in this group, subject matter relating to working measures on existing buildings which are analogous to those used in constructing new buildings, are classified in the appropriate construction groups.
- U E04G 23/02 · Repairing, e.g. filling cracks; Restoring; Altering; Enlarging {(compositions of filling material [C04B](#); strengthening, widening, repairing of bridges [E01D 22/00](#); drying damp layers by temporary mechanical ventilation [E04B 1/7092](#))}
- E04G 23/0277 · · {Repairing or restoring window or door frames (door frames [E06B 1/00](#), [window frames \[E06B 3/00\]\(#\)](#)); ~~window frames [E06B 3/00](#)~~}
- E04G 25/00** **Shores or struts (specially designed for use in mines [E21D 15/00](#) { [E04G 21/26](#), [E04G 23/04](#) take precedence}); Chocks**

**Project: N/A (E04H)**

- U E04H 15/00** **Tents or canopies, in general**
- U E04H 15/32 · Parts, components, construction details, accessories, interior equipment, specially adapted for tents, e.g. guy-line equipment, skirts, thresholds
- U E04H 15/34 · · Supporting means, e.g. frames
- E04H 15/36 · · · arch-shaped type ([E04H 15/42](#) takes precedence; {-arches connected with lazy-tongues [E04H 15/505](#)})

**Project: N/A (E05B)**

- E05B 3/00** **Fastening {-knobs or} handles to lock or latch parts {([E05B 79/06](#) takes precedence)}**
- E05B 3/02 · Fastening {-knobs or} handles to the spindle by pinning or riveting {([E05B 3/10](#) takes precedence)}
- E05B 3/04 · Fastening {-the knob or} the handle shank to the spindle by screws, springs or snap bolts {([E05B 3/10](#) takes precedence)}
- E05B 7/00** **Handles pivoted about an axis parallel to the wing ([E05B 5/00](#), {[E05B 85/14](#)} take precedence; {-combined with bolt movement [E05C 1/00](#), [E05C 3/00](#)})**

- U E05B 9/00** Lock casings or latch-mechanism casings; {Fastening locks or fasteners or parts thereof to the wing}{padlock casings [E05B 67/02](#); for vehicles [E05B 79/04](#), [E05B 85/02](#)}
- E05B 9/02 · {Casings} of latch-bolt {-or deadbolt} locks
- E05B 9/10 · Coupling devices for the two halves of double cylinder locks {-e.g. devices for coupling the rotor with the locking cam ([E05B 47/0611](#) takes precedence)}
- U E05B 13/00** Devices preventing the key or the handle or both from being used {(covers or guards for keyholes [E05B 17/14](#))}
- E05B 13/04 · shaped as fork-like implements grasping and fixing the key {-or a handle, e.g. a thumb-turn}
- U E05B 17/00** Accessories in connection with locks (buffers [E05F 5/00](#); means for preventing rattling of wings [E05F 7/04](#); means for taking the weight of the wing [E05F 7/06](#))
- E05B 17/06 · Templates for marking the position of apertures in fittings of wings {-or frames; Apparatus for installation of a lockset (drill jigs [B23B 47/28](#); mortised work [B27F 5/12](#); templates for hinges [E05D 11/0009](#))}
- E05B 17/20 · Means independent of the locking mechanism, {-i.e. other than the tumblers or detents} for preventing unauthorised opening, e.g. for securing the bolt in the fastening position {([E05B 63/12](#) takes precedence)}
- E05B 19/00** Keys; Accessories therefor (making keys, see the relevant places e.g. [B21D 53/42](#) {or [B23P 15/005](#)}; milling grooves in keys [B23C 3/35](#)); {([E05B 11/005](#) takes precedence; illuminating devices [E05B 17/103](#); key rings [A44B 15/00](#); key cases [A45C 11/32](#); key holders [A47G 29/10](#))}
- E05B 19/14 · Double {or multiple} keys, {-e.g. with two or more bows or bits (see also [E05B 35/14](#))}
- E05B 21/00** Locks with {-lamelliform} tumblers {-which are not set by the insertion of the key and which are} not following the movement of the bolt{, e.g. Chubb-locks}
- E05B 23/00** Locks with {-lamelliform} tumblers {-which are not set by the insertion of the key and which are} following the movement of the bolt
- E05B 27/00** Cylinder locks {-and other locks} with tumbler pins which are set by pushing the key in {(fastening of cylinders, rotors, plugs or cores [E05B 9/084](#); with magnetic tumblers [E05B 47/0044](#); with electromagnetic control [E05B 47/0611](#))}
- E05B 29/00** Cylinder locks {-and other locks} with plate tumblers which are set by pushing the key in {(fastening of cylinders, rotors, plugs or cores [E05B 9/084](#); with magnetic tumblers [E05B 47/0044](#); with electromagnetic control [E05B 47/0611](#))}
- E05B 35/00** Locks for use with special keys or a plurality of keys; {-keys therefor}
- E05B 37/00** Permutation {-or combination} locks ({handles with combination locks [E05B 13/103](#); keyhole guards with combination locks [E05B 17/145](#); alarms therefor [E05B 45/061](#)}; electric permutation locks [E05B 49/00](#); {-for container closures [B65D 55/145](#); combination switches [H01H 27/10](#)}); Puzzle locks
- E05B 39/00** Locks giving indication of {-authorised} or unauthorised unlocking {(with key identification means [E05B 35/001](#); alarm locks [E05B 45/00](#))}

- E05B 43/00** Time locks, {e.g. locks with delaying means}(clocks or clock mechanisms with attached or built-in means operating any device at preselected times or after a predetermined time interval [G04B 23/00](#); {time recording locks [G07C 1/32](#)})
- E05B 49/00** Electric permutation locks; Circuits therefor; {Mechanical aspects of electronic locks; Mechanical keys therefor (arrangements for sensing or reading record carriers [G06K 7/00](#), [G06K 9/00](#); mechanisms including electronic locks actuated by nonmechanical keys such as passive and active electrical keys and other data carriers [G07C 9/00](#), [G07F 7/00](#); electronic switching [H03K 17/00](#))}
- E05B 65/00** Locks {or fastenings} for special use {(for dishwashers [A47L 15/4259](#); hatch fastenings [B63B 19/24](#); for container closures [B65D 55/02](#); for elevator doors [B66B 13/16](#); for lids or covers of refuse receptacles [B65F 1/1615](#); for laundry washing machines [D06F 37/42](#), [D06F 39/14](#); for two wings [E05C 7/00](#); safety devices [F16P 3/08](#); for furnaces [F24C 15/022](#); coin freed locks [G07F 17/12](#), [G07F 17/14](#); switches operated by key or combination [H01H 27/00](#))}
- E05B 67/00** Padlocks (permutation locks [E05B 37/00](#); {steering wheel padlocks [B60R 25/022](#)}); Details thereof
- E05B 67/36
- Padlocks with closing means other than shackles; {Removable locks, the lock body itself being the locking element; Padlocks consisting of two separable halves or cooperating with a stud}

**Project: N/A (E05C)**

- U E05C 9/00** Arrangements of simultaneously actuated bolts or other securing devices at well-separated positions on the same wing ({Locking, cross or security bars [E05C 19/003](#); locks for safes or the like [E05B 65/0075](#); of the vertical-rod type for panic or emergency doors [E05B 65/1006](#)}; similar constructions for engineering closures [F16J 13/08](#))
- E05C 9/24
- Means for transmitting movements between vertical and horizontal sliding bars, rods or cables {for the fastening of wings}, e.g. corner guides (means for transmitting movements between vertical and horizontal sliding bars, rods or cables, for moving wings into open or closed position [E05F 7/08](#))
- U E05C 17/00** Devices for holding wings open; Devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing; Braking devices, stops or buffers, combined therewith (combined with hinges [E05D 11/00](#); combined with operating apparatus for wings [E05F](#); other braking devices, stops, buffers [E05F 5/00](#))
- U E05C 17/02
- E05C 17/44
- by mechanical means ([E05C 17/60](#) takes precedence)
  - with a device carried on the wing for frictional or like engagement with a fixed flat surface, e.g. {for holding wings open or closed by} retractable feet {(with wedging action between the wing and a flat surface [E05C 17/54](#))}
- U E05C 19/00** Other devices specially designed for securing wings, {e.g. with suction cups}(movable draft sealings additionally used for bolting [E06B 7/18](#))
- U E05C 19/10
- E05C 19/12
- Hook fastenings; Fastenings in which a link engages a fixed hook-like member
  - pivotally mounted {around an axis ([E05C 3/045](#), [E05C 3/40](#) take precedence)}

**Project: N/A (E05D)****E05D**

**HINGES OR OTHER SUSPENSION DEVICES FOR DOORS, WINDOWS OR WINGS** ({foldable tables [A47B 3/00](#); hinged panels [A47B 5/00](#); foldable chairs [A47C 4/00](#); making hinges [B21D 53/40](#), [B21K 13/02](#); making holes for taking-up fittings [B27F 5/12](#); for vehicle tailboards [B60P 1/26](#); for refuse receptacles [B65F 1/1646](#)}; pivotal connections in general [F16C 11/00](#); mounting of stove or range doors [F24C 15/023](#); for folding flat displays of portable computers [G06F 1/1616](#) )}

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:-

[E05D 5/16](#) covered by [E05D 5/14](#)

[E05D 7/081](#) covered by [E05D 7/08](#)

[E05D 7/083](#) covered by [E05D 7/082](#)

[E05D 15/04](#) covered by [E05D 15/02](#), [E05D 15/28](#), [E05D 15/403](#)

[E05D 15/522](#) covered by [E05D 15/52](#)

[E05D 15/523](#) covered by [E05D 15/52](#)

[E05D 15/524](#) covered by [E05D 15/52](#)

**U E05D 5/00****Construction of single parts, e.g. the parts for attachment**

## U E05D 5/02

- Parts for attachment, e.g. flaps

## E05D 5/0207

- • {for attachment to vehicles ([E05D 5/043](#), [E05D 5/062](#) take precedence)}

## E05D 5/0276

- • {for attachment to cabinets or furniture, the hinge having two or more pins ([E05D 5/046](#), [E05D 5/065](#), [E05D 7/125](#) take precedence)}

## U E05D 5/10

- Pins, sockets or sleeves; Removable pins ([E05D 15/522](#) takes precedence)

## U E05D 5/12

- • Securing pins in sockets, movably or not

## E05D 5/125

- • • {Non-removable, snap-fitted pins (removable snap-fitted pins [E05D 7/1022](#), [E05D 7/1055](#))}

**E05D 7/00****Hinges or pivots of special construction (used for special suspension arrangements [E05D 15/00](#); so as to be self-closing [E05F 1/06](#), [E05F 1/12](#); with means for raising wings before being turned [E05F 7/02](#))**

## U E05D 7/04

- Hinges adjustable relative to the wing or the frame

## U E05D 7/0415

- • {with adjusting drive means}

## E05D 7/0423

- • • {Screw-and-nut mechanisms ([E05D 7/0407](#), [E05D 7/043](#) take precedence)}

**E05D 13/00****Accessories for sliding or lifting wings, e.g. pulleys, safety catches ({closers or openers for horizontally sliding wings [E05F 1/02](#), [E05F 1/08](#)}; counterbalance devices {for swinging wings} [E05F 1/00](#), [E05F 3/00](#))**

## E05D 13/003

- {Anti-dropping devices ([E05D 13/1223](#), [E05D 13/1246](#), [E05D 13/1269](#), [E05D 13/1292](#) take precedence)}

**U E05D 15/00****Suspension arrangements for wings (arrangements of wings not characterised by the construction of the supporting means [E06B 3/32](#))**

## U E05D 15/06

- for wings sliding horizontally more or less in their own plane

## E05D 15/0621

- • {Details, e.g. suspension or supporting guides ([E05D 15/0604](#), [E05D 15/08](#) to [E05D 15/14](#) take precedence)}

- U E05D 15/10
  - • movable out of one plane into a second parallel plane
- E05D 15/1002
  - • • {specially adapted for use in railway-cars or mass transit vehicles ([E05D 15/1007](#)-, [E05D 15/1023](#)-, [E05D 15/1044](#)-, [E05D 15/1068](#) take precedence)}
- U E05D 15/40
  - supported on arms movable in vertical planes
- E05D 15/406
  - • {with pivoted arms and sliding guides ([E05D 15/42](#)-, [E05D 15/44](#) take precedence)}
- U E05D 15/48
  - allowing alternative movements ({[E05D 15/0604](#) takes precedence } ; for vertically-sliding wings [E05D 15/22](#))
- E05D 15/50
  - • for opening at either of two opposite edges {(hinges or pivots of special construction to allow easy separation or connection of the parts at the hinge axis [E05D 7/10](#)-; to allow easy detachment of the hinge from the wing or the frame [E05D 7/12](#))}

**Project: N/A (E05G)**

E05G 7/00

**Safety transaction partitions, e.g movable pay-plates; [Bank drive-up windows] (non-safety paying counters, e.g. for supermarkets [A47F 9/02](#); {-secure depositories for food [A47G 29/14](#); secure transfers between a building and a vehicle [B60P 3/03](#))}**

**Project: N/A (E06B)**

E06B

**FIXED OR MOVABLE CLOSURES FOR OPENINGS IN BUILDINGS, VEHICLES, FENCES OR LIKE ENCLOSURES IN GENERAL, e.g. DOORS, WINDOWS, BLINDS, GATES (shades or blinds for greenhouses [A01G 9/22](#)-; curtains [A47H](#); lids for car boots or bonnets [B62D 25/10](#)-; skylights [E04B 7/18](#)-; sunshades, awnings [E04F 10/00](#))**

NOTES

1. This subclass does not cover combinations of wings or frames with operating, mounting, latching or locking means of the type found in class [E05](#), which are covered by the relevant subclasses of class [E05](#), except such as are covered by groups [E06B 7/086](#)-, [E06B 9/00](#)-, or [E06B 11/02](#) of this subclass.

2. In this subclass, the following terms or expressions are used with the meanings indicated:

- "wing" means a swingable, slidable or otherwise movable member such as a door or window, for closing an opening;
- "wing frame" means the peripheral edge or edges which define the outer border of the wing.

3. For vehicle door or window arrangements, attention is drawn to Note (1) following the title of subclass [B60J](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[E06B 11/06](#) covered by [E05B 65/0007](#)

E06B 1/00

**Border constructions of openings in walls, floors, or ceilings; Frames to be rigidly mounted in such openings ([E06B 5/00](#) takes precedence; features relating also to inner frames or wing frames, features relating solely to the mounting of inner frames [E06B 3/00](#)-; corner joints or edge joints [E06B 3/96](#))**

E06B 1/02

- Base frames, i.e. template frames for openings in walls or the like, provided with means for securing a further rigidly-mounted frame; Special adaptations of frames to be fixed therein ({[E06B 1/003](#)-, [E06B 1/24](#) take precedence; fastening door or window frames per se [E06B 1/56](#))}

- E06B 1/04
- Frames for doors, windows, or the like to be fixed in openings ({of curvilinear outline [E06B 1/006](#); } special adaptations for fixing in base frames [E06B 1/02](#); features relating solely to the mounting of glass panes or other sheets [E06B 3/00](#))
- U E06B 1/12
- • Metal frames
- E06B 1/14
- • • of special cross-section ([E06B 1/18](#), [E06B 1/22](#) take precedence){not used}
- U E06B 1/52
- • Frames specially adapted for doors
- E06B 1/526
- • • {for door wings that can be set up to open either left or right, outwards or inwards, e.g. provided with grooves for easily detachable hinges or latch plates (locks therefor [E05B 63/04](#); hinges therefor [E05D 7/02](#))}
- U E06B 1/56
- Fastening frames to the border of openings {or to similar contiguous frames ([E06B 1/003](#) takes precedence)}
- U E06B 1/60
- • by mechanical means, e.g. anchoring means
- E06B 1/6015
- • • {Anchoring means ([E06B 1/6007](#), [E06B 1/6046](#) to [E06B 1/6092](#) take precedence)}
- E06B 3/00**
- Window sashes, door leaves, or like elements for closing {wall or like} openings; Layout of fixed or moving closures, e.g. windows {in wall or like openings}; Features of rigidly-mounted outer frames relating to the mounting of wing frames ([E06B 5/00](#) takes precedence; shutters or the like [E06B 9/00](#); glass panes [C03](#))**
- U E06B 3/04
- Wing frames not characterised by the manner of movement (features relating to the manner of movement [E06B 3/32](#))
- U E06B 3/263
- • Frames with special provision for insulation
- E06B 3/26301
- • • {with prefabricated insulating strips between two metal section members (with two metal frame members having interpenetrating or overlapping parts when mounted [E06B 3/26336](#); combined with insulating elements formed in situ [E06B 3/2675](#))}
- E06B 3/26305
- • • • {Connection details (deformation of portions of the metal frame members [E06B 3/273](#); expansion of the extremities of the insulating elements [E06B 3/277](#))}
- U E06B 3/32
- Arrangements of wings characterised by the manner of movement; Arrangements of movable wings in openings; Features of wings or frames relating solely to the manner of movement of the wing {(fittings or supporting means, separable from the frame, for guiding or controlling the movement of wings, arrangements of wings characterised by particular forms of such means [E05D](#))}
- U E06B 3/50
- • with more than one kind of movement ([E06B 3/48](#) takes precedence) {([E06B 3/92](#) takes precedence)}
- E06B 3/5009
- • • {where the sliding and rotating movements are necessarily performed simultaneously ([E06B 3/5027](#), [E06B 3/5036](#) take precedence)}
- U E06B 3/54
- Fixing of glass panes or like plates
- E06B 3/64
- • Fixing of more than one pane to a frame
- NOTE**
- Fixing of multiple glazing units to frames is classified in the relevant groups [E06B 3/5409](#) to [E06B 3/62](#), except for the fixing thereof to frames designed for one pane only, which is classified in group [E06B 3/645](#)
- E06B 3/66
- Units comprising two or more parallel glass or like panes permanently secured together {(reforming and uniting glass sheets by fusing [C03B 23/00](#); joining glass to glass or to other materials [C03C 27/00](#); laminated glass [B32B 17/10](#))}
- U E06B 3/663
- • Element for spacing panes

- U E06B 3/66309      . . . {Section members positioned at the edges of the glazing unit}
- E06B 3/66328      . . . . {of rubber, plastics or similar materials ([E06B 3/66314](#)-, [E06B 3/66323](#) and [E06B 3/66342](#) take precedence; transparent materials [E06B 3/66333](#))}
- U E06B 3/67      . . characterised by additional arrangements or devices for heat or sound insulation {or for controlled passage of light}
- E06B 3/6715      . . . {specially adapted for increased thermal insulation or for controlled passage of light ([E06B 3/66323](#) takes precedence; coating of glass panes [C03C 17/00](#)-.; devices or arrangements for controlling the intensity, colour, phase, polarisation or direction of light [G02F 1/00](#))}
- E06B 3/673      . . Assembling the units ([E06B 3/677](#) takes precedence; {-making hollow glass sheets or bricks [C03B 23/24](#))}
- E06B 3/68      . Window bars {(bay windows [E06B 1/363](#)-.; joints for frame members crossing each other [E06B 3/9628](#))}
- U E06B 3/70      . Door leaves (wing frames [E06B 3/04](#))
- E06B 3/7015      . . {characterised by the filling between two external panels (fireproof doors [E06B 5/16](#)-.; noise insulating doors [E06B 5/20](#))}
- U E06B 3/72      . . consisting of frame and panels, {e.g. of raised panel type ([E06B 3/7001](#) to [E06B 3/7015](#) and [E06B 3/82](#) take precedence)}
- E06B 3/74      . . . with wooden panels {or frame ([E06B 3/721](#)-, [E06B 3/725](#) and [E06B 3/76](#) take precedence)}
- E06B 3/82      . . Flush doors, i.e. with completely flat surface ([E06B 3/02](#)-, {[E06B 3/7003](#) and [E06B 3/7015](#)} take precedence)
- E06B 3/92      . Doors or windows extensible when set in position (foldable wings [E06B 3/48](#)-.; sliding wings for windows [E06B 3/42](#)-.; wall-closing devices which may be rolled up, e.g. shutters, [E06B 9/11](#)){([E06B 3/01](#) takes precedence)}
- U E06B 3/96      . Corner joints or edge joints for windows, doors, or the like frames or wings {([E06B 3/663](#) takes precedence)}
- E06B 3/9604      . . {Welded or soldered joints ([E06B 3/988](#)-, [E06B 3/99](#) take precedence; welding of plastics [B29C 65/00](#)-, soldering or welding of metals [B23K](#))}
- U E06B 3/964      . . using separate connection pieces, e.g. T-connection pieces ([E06B 3/9604](#) to [E06B 3/9636](#) and [E06B 3/984](#) to [E06B 3/99](#) take precedence)
- E06B 3/9642      . . . {Butt type joints with at least one frame member cut off square; T-shape joints ([E06B 3/9641](#)-, [E06B 3/9644](#)-, [E06B 3/9647](#)-, [E06B 3/9649](#)-, [E06B 3/968](#) take precedence)}
- E06B 3/9645      . . . {Mitre joints ([E06B 3/9641](#)-, [E06B 3/9644](#)-, [E06B 3/9647](#)-, [E06B 3/9649](#)-, [E06B 3/968](#) take precedence)}
- U E06B 3/968      . . . characterised by the way the connecting pieces are fixed in or on the frame members
- E06B 3/9684      . . . . {by hooking protrusions on the connecting piece in openings of the frame member, e.g. by snap-locking ([E06B 3/972](#)-, [E06B 3/976](#)-, [E06B 3/98](#) take precedence)}
- E06B 3/9687      . . . . {with screws blocking the connecting piece inside or on the frame member ([E06B 3/972](#)-, [E06B 3/976](#) take precedence)}
- E06B 3/98      . . . . the connecting pieces being specially adapted for drawing the frame members towards each other ([E06B 3/9684](#)-, [E06B 3/972](#)-, [E06B 3/976](#) take precedence)
- U E06B 5/00      Doors, windows, or like closures for special purposes {(insulated compound frames specially adapted for sliding doors or windows [E06B 3/26347](#))}; Border constructions therefor**
- E06B 5/006      . {for furniture ([E06B 3/00](#)-, [E06B 9/115](#) take precedence)}

- U E06B 5/10
  - for protection against air-raid or other war-like action; for other protective purposes
- U E06B 5/11
  - • against burglary
- E06B 5/113
  - • • {Arrangements at the edges of the wings, e.g. with door guards to prevent the insertion of prying tools (protection of the locking region by preventing insertion of a tool [E05B 17/2003](#); means to prevent forced opening by attack, tampering or jimmying of lock [E05B 17/2084](#); anti-tamper devices arranged on or near the hinges [E05D 11/0018](#))}
- U E06B 7/00**

**Special arrangements or measures in connection with doors or windows ({arrangements against burglary at the edges of the wings [E06B 5/113](#)} ; screening or similar protective devices [E06B 9/00](#))**
- U E06B 7/02
  - for providing ventilation, e.g. through double windows; Arrangement of ventilation roses (airflow control members per se [F24F 13/08](#))
- E06B 7/08
  - • Louvre doors, windows or grilles {(shutters [E06B 9/04](#); louvre awnings [E04F 10/08](#) to [E04F 10/10](#))}
- E06B 7/12
  - Measures preventing the formation of condensed water (double glazing [E06B 3/24](#) to [E06B 3/28](#); {and [E06B 3/677](#)} ; heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#))
- E06B 7/16
  - Sealing arrangements on wings or parts co-operating with the wings ({specially adapted for fireproof or similar closures [E06B 5/164](#); } [E06B 7/098](#) takes precedence; {fixed sealing joints [E04B 1/68](#); Devices for fitting sealing strips [E04F 21/00](#))}
- U E06B 7/22
  - • by means of elastic edgings, e.g. elastic rubber tubes; by means of resilient edgings, e.g. felt or plush strips, resilient metal strips ([E06B 7/18](#) takes precedence)
- U E06B 7/23
  - • • Plastic, sponge rubber, or like strips or tubes
- E06B 7/2318
  - • • • {by applying over- or under-pressure, e.g. inflatable (gasproof doors or windows [E06B 5/12](#); for vehicles [B60J 10/0037](#))}
- E06B 7/28
  - Other arrangements on doors or windows, e.g. door-plates, windows adapted to carry plants, hooks for window cleaners {(edge protecting devices for door leaves [E06B 3/88](#); special glazing; emergency glazing; double glazing [E06B 3/66](#))}
- E06B 7/36
  - • Finger guards {or other measures preventing harmful access between the door and the door frame (safety devices for doors in railway cars [B61D 19/026](#); for lift doors [B66B 13/26](#); detection of obstructions [E05F 15/40](#))}
- E06B 9/00**

**Screening or protective devices for {wall or similar} openings, with or without operating or securing mechanisms; Closures of similar construction ([E06B 5/10](#) takes precedence; wings for doors or windows, connected at their edges, [E06B 3/48](#); additional indoor equipment of doors or windows, not forming part of the proper finishing work of a building, e.g. curtains, [A47H](#); gratings as building elements [E04C 2/24](#); fastening means [E05](#); operating-mechanisms for wings in general [E05F](#))**
- E06B 9/01
  - Grilles fixed to walls, doors, or windows; Grilles moving with doors or windows; Walls formed as grilles, e.g. claustra {(emergency release of window grilles [E05B 65/1033](#); security bars for wings [E05C 19/003](#))}
- E06B 9/02
  - Shutters, movable grilles, or other safety closing devices, e.g. against burglary (louvre windows or grilles [E06B 7/08](#); lamellar blinds [E06B 9/26](#))
- E06B 9/06
  - • collapsible or foldable, e.g. of the bellows or lazy-tongs type (bellows-type doors [E06B 3/94](#); roll-type grilles [E06B 9/18](#))

- E06B 9/08
- Roll-type closures (roller blinds [E06B 9/40](#); operating, guiding or securing devices or arrangements for roll-type closures [E06B 9/56](#); usable only as awnings [E04F 10/06](#))
- E06B 9/24
- Screens or other constructions affording protection against light, especially against sunshine; Similar screens for privacy or appearance; {Slat blinds} (operating, guiding or securing devices or arrangements for roll-type closures [E06B 9/56](#); free-hanging flexible screens [A47H 23/00](#))
- U E06B 9/26
- Lamellar or like blinds, e.g. venetian blinds {(for vehicles [B60J 1/2088](#))}
- E06B 9/266
- Devices or accessories for making or mounting lamellar blinds or parts thereof {(cleaning of lamellar blinds [A47L 4/00](#); joining plastics plates for making venetian blinds [B29C 66/437](#))}
- E06B 11/00**
- Means for allowing passage through fences, barriers or the like, e.g. stiles (general features of doors [E06B 1/00](#) to [E06B 9/00](#); {-cattle grids [A01K 3/002](#); features peculiar to electrified wire fencing [A01K 3/005](#))}**
- E06B 11/08
- Turnstiles; {Gates for control of entry or exit of persons, e.g. in supermarkets} (control gates on vehicles [B60N 5/00](#); [bank protection devices [E05G 5/00](#)]; with registering means [G07C 9/02](#); {-coin-freed facilities for turnstiles [G07F 17/14](#)})

**Project: N/A (E21B)**

- U E21B 10/00**
- Drill bits (specially adapted for deflecting the direction of boring [E21B 7/064](#); with means for collecting substances [E21B 27/00](#))**
- U E21B 10/46
- characterised by wear resisting parts, e.g. diamond inserts {(drill bits with self-renewable cutting edge [E21B 10/006](#))}
- U E21B 10/54
- the bit being of the rotary drag type, e.g. fork-type bits
- E21B 10/55
- with preformed cutting elements {-with blades having preformed cutting elements mounted on a distinct support, e.g. polycrystalline inserts}
- E21B 10/62
- characterised by parts, e.g. cutting elements, which are detachable or adjustable ([E21B 10/64](#) takes precedence; for roller bits [E21B 10/20](#); {-for rotary drag type drill bits [E21B 10/42](#); for augers [E21B 10/44](#))}
- U E21B 17/00**
- Drilling rods or pipes; Flexible drill strings; Kellies; Drill collars; Sucker rods; {Cables}; Casings; Tubings (rod couplings in general [F16D](#); tubes or tube couplings in general [F16L](#))**
- E21B 17/10
- Wear protectors; Centralising devices, {-e.g. stabilisers}(drives used in the borehole with anchoring means [E21B 4/18](#); guiding or centralising devices outside the borehole [E21B 19/24](#))
- E21B 17/20
- Flexible or articulated drilling pipes, {-e.g. flexible or articulated rods, pipes or cables (risers [E21B 17/01](#); swivel joints [E21B 17/05](#))}
- U E21B 19/00**
- Handling rods, casings, tubes or the like outside the borehole, e.g. in the derrick (surface drives [E21B 1/02](#), [E21B 3/02](#))**
- E21B 19/12
- Rope clamps (rope clamps in general [F16G 11/00](#)){rod, casings or tube clamps not secured to elevators}
- E21B 27/00**
- Containers for collecting or depositing substances in boreholes or wells, e.g. bailers, {-baskets or buckets} for collecting mud or sand; Drill bits with means for collecting substances, e.g. valve drill bits**
- U E21B 33/00**
- Sealing or packing boreholes or wells**
- U E21B 33/10
- in the borehole {(sealing the junction between main bore and laterals [E21B 41/0042](#))}

- E21B 33/13
- • Methods or devices for cementing, for plugging holes, crevices, or the like (dump bailers [E21B 27/02](#); {-methods or apparatus for grouting offshore structures [E02B 17/0008](#)} chemical compositions therefor [C09K 8/00](#))
- U E21B 37/00** **Methods or apparatus for cleaning boreholes or wells ([E21B 21/00](#) takes precedence; {bailers [E21B 27/00](#);} cleaning pipes in general [B08B 9/02](#))**
- E21B 37/06
- using chemical means for preventing, limiting {-or eliminating} the deposition of paraffins or like substances (chemical compositions therefor [C09K 8/52](#))
- U E21B 43/00** **Methods or apparatus for obtaining oil, gas, water, soluble or meltable materials or a slurry of minerals from wells (applicable only to water [E03B](#); obtaining oil-bearing deposits or soluble or meltable materials by mining techniques [E21C 41/00](#); pumps [F04](#))**
- U E21B 43/02**
- Subsoil filtering ([E21B 43/11](#) takes precedence, chemical compositions for consolidating loose sand or the like around wells [C09K 8/56](#))
- E21B 43/10
- • Setting of casings, screens, liners {-or the like} in wells (driving or forcing casings into boreholes, simultaneously drilling and casing boreholes [E21B 7/20](#); setting of tools, packers or the like [E21B 23/00](#); suspending casings in well heads [E21B 33/04](#))
- E21B 43/16
- Enhanced recovery methods for obtaining hydrocarbons (fracturing [E21B 43/26](#); obtaining slurry [E21B 43/29](#); reclamation of contaminated soil in situ [B09C](#); {-chemical compositions therefor [C09K 8/58](#)})
- U E21B 47/00** **Survey of boreholes or wells (monitoring pressure or flow of drilling fluid [E21B 21/08](#); geophysical logging [G01V](#))**
- U E21B 47/12**
- Means for transmitting measuring-signals {-or control signals} from the well to the surface {-or from the surface to the well}, e.g. for logging while drilling (remote signalling in general [G08](#))
- E21B 47/121
- • {using earth as an electrical conductor ([E21B 47/122](#) takes precedence; in general [H04B 13/02](#);- electric prospecting [G01V 3/00](#))}

**Project: N/A (E21C)**

- E21C 1/00
- Rotary-drilling machines (rotary-drilling machines in general [B23B](#); rotary earth drilling [E21B 3/00](#); driving of shafts, galleries or tunnels [E21D](#) {not used, see subgroup and [E21B 3/00](#)})**
- E21C 5/00
- Devices for feeding tool to working face (feeding devices for metal-boring machines [B23B](#) {not used, see subgroups and [E21B 19/08](#)})**
- U E21C 35/00** **Miscellaneous items relating to machines for slitting or completely freeing the mineral from the seam**
- E21C 35/18
- Mining picks; Holders therefor (planing knives [E21C 27/44](#); {-pick-like bits for milling stone like materials [B28D 1/186](#)})

**Project: N/A (E21D)**

- U E21D 1/00** **Sinking shafts**
- U E21D 1/10**
- Preparation of the ground {(for galleries or tunnels [E21D 9/001](#); improving or preserving foundation soil or rock [E02D 3/00](#))}
- E21D 1/16
- • by petrification (grouting anchoring-bolts [E21D 20/02](#); {-consolidating foundation soil by placing solidifying or pore-filling substances in the soil [E02D 3/12](#)})
- E21D 23/00
- Mine roof supports for step- by- step movement, e.g. in combination with provisions for shifting of conveyers, mining machines, or guides therefor ({transport of mine roof support units [E21F 13/008](#); } shifting of mine conveyers at the working face [E21F 13/08](#))**

Project: N/A (F)

F

**MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS;  
BLASTING ENGINES OR PUMPS**NOTEGuide to the use of this subsection (classes F01 to F04)

The following notes are meant to assist in the use of this part of the classification scheme.

1. In this subsection, subclasses or groups designating "engines" or "pumps" cover methods of operating the same, unless otherwise specifically provided for.
2. In this subsection, the following terms or expressions are used with the meanings indicated:
  - "engine" means a device for continuously converting fluid energy into mechanical power. Thus this term includes, for example, steam piston engines or steam turbines, PER SE, or internal-combustion piston engines, but it excludes single- stroke devices. "Engine" also includes the fluid-motive portion of a meter unless such portion is particularly adapted for use in a meter;
  - "pump" means a device for continuously raising, forcing, compressing, or exhausting fluid by mechanical or other means; thus this term includes fans or blowers;
  - "machine" means a device which could equally be an engine and a pump, and not a device which is restricted to an engine or one which is restricted to a pump;
  - "positive displacement" means the way the energy of a working fluid is transformed into mechanical energy, in which variations of volume created by the working fluid in a working chamber produce equivalent displacements of the mechanical member transmitting the energy, the dynamic effect of the fluid being of minor importance; and VICE-VERSA;
  - "non-positive displacement" means the way the energy of a working fluid is transformed into mechanical energy, by transformation of the energy of the working fluid into kinetic energy; and VICE-VERSA;
  - "oscillating-piston machine" means a positive-displacement machine in which a fluid-engaging work-transmitting member oscillates. This definition applies also to engines and pumps;
  - "rotary-piston machine" means a positive-displacement machine in which a fluid-engaging work-transmitting member rotates about a fixed axis or about an axis moving along a circular or similar orbit. This definition applies also to engines and pumps;
  - "rotary piston" means the work-transmitting member of a rotary-piston machine and may be of any suitable form, e.g. like a toothed gear;
  - "co-operating members" means the "oscillating piston" or "rotary piston" and another member, e.g. the working-chamber wall, which assists in the driving or pumping action;
  - "movement of the co-operating members" is to be interpreted as relative, so that one of the "co-operating members" may be stationary, even though reference may be made to its rotational axis, or both may move;
  - "teeth or tooth-equivalents", include lobes, projections or abutments;
  - "internal-axis type" means that the rotational axes of the inner and outer co-operating members remain at all times within the outer member, e.g. in a similar manner to that of a pinion meshing with the internal teeth of a ring gear;
  - "free-piston" means a piston of which the length of stroke is not defined by any member driven thereby;

- "cylinders" means positive-displacement working chambers in general and thus this term is not restricted to cylinders of circular cross-section;
  - "main shaft" means the shaft which converts reciprocating piston motion into rotary motion or VICE-VERSA;
  - "plant" means an engine together with such additional apparatus as is necessary to run the engine. For example, a steam engine plant includes a steam engine and means for generating the steam;
  - "working fluid" means the driven fluid in a pump and the driving fluid in an engine. The working fluid may be in a gaseous state, i.e. compressible, or liquid. In the former case coexistence of two states is possible;
  - "steam" includes condensable vapours in general, and "special vapour" is used when steam is excluded;
  - "reaction type" as applied to non-positive-displacement machines or engines means machines or engines in which pressure/velocity transformation takes place wholly or partly in the rotor; machines or engines with no, or only slight, pressure/velocity transformation in the rotor are called "impulse type".
3. In this subsection:
- cyclically operating valves, lubricating, gas-flow silencers or exhaust apparatus, or cooling should be classified in subclasses [F01L](#), [F01M](#), [F01N](#), [F01P](#) irrespective of their stated application, unless their classifying features are peculiar to their application, in which case they should be classified only in the relevant subclass of classes [F01](#) to [F04](#);
  - lubricating, gas-flow silencers or exhaust apparatus, or cooling of machines or engines should be classified in subclasses [F01M](#), [F01N](#), [F01P](#) except for those peculiar to steam engines which should be classified in subclass [F01B](#).
4. For use of this subsection with a good understanding, it is essential to remember, so far as subclasses [F01B](#), [F01C](#), [F01D](#), [F03B](#), [F04B](#), [F04C](#) and [F04D](#), which form its skeleton, are concerned:
- the principle which resides in their elaboration
  - the classifying characteristics which they call for, and
  - their complementarity
    - i. Principle

This concerns essentially the subclasses listed above. Other subclasses, notably those of class [F02](#), which cover better-defined matter, are not considered here. Each subclass covers fundamentally a genus of apparatus (engine or pump) and by extension covers equally "machines" of the same kind. Two different subjects, one having a more general character than the other, are thus covered by in the same subclass. Subclasses [F01B](#), [F03B](#), [F04B](#), beyond the two subjects which they cover, have further a character of generality in relation to other subclasses concerning the different species of apparatus in the genus concerned. This generality applies as well for the two subjects dealt with, without these always being in relation to the same subclasses. Thus, subclass [F03B](#), in its part dealing with "machines" should be considered as being the general class relating to subclasses [F04B](#), [F04C](#) and in its part dealing with "engines" as being general in relation to subclass [F03C](#).
    - ii. Characteristics

The principal classifying characteristic of the subclass is that of genera of apparatus, of which there are three possible:

Machines; engines; pumps.

As stated above, "machines" are always associated with one of the other two genera. These main genera are subdivided according to the general principles of operation of the apparatus:

Positive displacement; non-positive displacement.

The positive displacement apparatus are further subdivided according to the ways of putting into effect the principle of operation, that is, to the kind of apparatus:

Simple reciprocating piston; rotary or oscillating piston; other kind.

Another classifying characteristic is that of the working fluid, in respect of which three kinds of apparatus are possible, namely:

Liquid and elastic fluid; elastic fluid; liquid.

iii. Complementarity

This resides in association of pairs of the subclasses listed above, according to the characteristics under consideration in respect of kind of apparatus or working fluid.

The subclasses concerned with the various principles, characteristics and complementarity are shown in the following table:

Kind Relations of gene- dis- in place- respect ment kind cating dis- piston placement	positive		non- posi- tive		Working fluid		of rality of of
	reci- pro- ing piston placement	rotary or os- cillat- other	elastic fluid	elastic fluid	liquid	liquid	
<hr/>							
MACHINES							
X	X		X	X			<a href="#">F01B</a>
X		X		X		<a href="#">F01C</a>	
X	X	X		<a href="#">F01D</a>			
X			X	<a href="#">F03B</a>			
X		X				X	<a href="#">F04B</a>
X					X	<a href="#">F04C</a>	
<hr/>							
ENGINES							
X		X		X	X		<a href="#">F01B</a>
X			X	X		<a href="#">F01C</a>	
X	X	X		<a href="#">F01D</a>			
X			X	<a href="#">F03B</a>			
X	X	X				X	<a href="#">F03C</a>

PUMPS

X		X		X	X	X	<a href="#">F04B</a>
X			X	X	X		<a href="#">F04C</a>
X	X	X	X				<a href="#">F04D</a>

It is seen from the table that :

- For the same kind of apparatus in a given genus, the characteristic of "working fluid" associates:

- [F01B](#) and [F04B](#) )
- [F01C](#) and [F04C](#) ) Machines
- [F01D](#) and [F03B](#) )
- [F01B](#) and [F03C](#) )
- [F01C](#) and [F03C](#) ) Engines
- [F01D](#) and [F03B](#) )

- For the same kind of working fluid, the "apparatus" characteristic relates subclasses in the same way as considerations of relative generality.

Project: N/A (F01B)

F01B 15/00

Reciprocating-piston machines or engines with movable cylinders other than provided for in group [F01B 13/00](#) (with movable cylinder sleeves for working fluid control [F01L](#))

Project: N/A (F01D)

U F01D 9/00

Stators (non-fluid guiding aspects of casings, regulating, controlling, or safety aspects, see the relevant groups)

F01D 9/02

· Nozzles; Nozzle boxes; Stator blades; Guide conduits {-e.g. individual nozzles (nozzle boxes [F01D 9/047](#))}

F01D 17/00

Regulating or controlling by varying flow (for reversing [F01D 1/30](#); by varying rotor-blade position [F01D 7/00](#); specially for starting [F01D 19/00](#); shutting-down [F01D 21/00](#); regulating or controlling in general [G05](#) {specially adapted for hand-held tools or the like [F01D 15/06](#)})

Project: N/A (F01L)

F01L 15/00

Valve-gear or valve arrangements, e.g. with reciprocatory slide valves, other than provided for in groups [F01L 17/00](#) to [F01L 29/00](#) (valve drive or external valve-adjustment during operation, see the relevant groups, e.g. [F01L 31/00](#); tripping-gear or tripping of valves [F01L 31/00](#))

F01L 31/00

Valve drive, valve adjustment during operation, or other valve control, not provided for in groups [F01L 15/00](#) to [F01L 29/00](#) (sensing elements measuring the variable or condition to be controlled or regulated [F01B](#))

## Project: N/A (F01N)

**F01N** GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR MACHINES OR ENGINES IN GENERAL; GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR INTERNAL COMBUSTION ENGINES ({evacuation of fumes from the area where they are produced [B08B 15/00](#); arrangement of exhaust or silencing apparatus on percussive tools [B25D 17/12](#)}; arrangements in connection with gas exhaust of propulsion units in vehicles [B60K 13/00](#); {on ships or other waterborne vessels [B63H 21/32](#); on aircraft [B64D 33/04](#); arrangement of exhaust or silencing apparatus on firearms [F41A 21/30](#); ground installations for reducing aircraft engine or jet noise [B64F 1/26](#); silencers specially adapted for steam engines [F01B 31/16](#); air-intake silencers for gas turbine or jet propulsion plants [F02C 7/045](#); jet pipe or nozzles for jet propulsion plants [F02K](#)}; combustion-air intake silencers specially adapted for, or arranged on, internal-combustion engines [F02M 35/00](#); {combating noise or silencing in positive displacement machines or pumps [F04B 39/0027](#); in rotary-piston machines or pumps [F04C 29/06](#); in non-positive displacement pumps [F04D 29/66](#); means in valves for absorbing noise [F16K 47/02](#); noise absorbers in pipe system [F16L 55/02](#); conducting smoke or fumes from various locations to the outside [F23J 11/00](#); means for preventing or suppressing noise in air-conditioning or ventilation systems [F24F 13/24](#)}; protecting against, or damping, noise in general [G10K 11/16](#))

NOTE

Attention is drawn to the notes preceding Class [F01](#), especially as regards Note 2(b).

**F01N 1/00** Silencing apparatus characterised by method of silencing ({by cooling [F01N 3/02](#); using liquids [F01N 3/04](#))}

F01N 1/003 • {by using dead chambers communicating with gas flow passages (resonance chambers [F01N 1/02](#); chambers containing sound-absorbing materials [F01N 1/24](#))}

U F01N 1/08 • by reducing exhaust energy by throttling or whirling

F01N 1/089 • • {using two or more expansion chambers in series ([F01N 1/083](#); [F01N 1/084](#); [F01N 1/086](#) take precedence)}

F01N 1/14 • by adding air to exhaust gases {(in tailpipes [F01N 13/082](#); [F01N 13/20](#))}

F01N 1/24 • by using sound-absorbing materials ([F01N 1/04](#); [F01N 1/06](#); [F01N 1/10](#); [F01N 1/14](#); [F01N 1/16](#) take precedence)

**F01N 3/00** Exhaust or silencing apparatus having means for purifying, rendering innocuous, or otherwise treating exhaust (electric control [F01N 9/00](#); monitoring or diagnostic devices for exhaust-gas treatment apparatus [F01N 11/00](#); {collecting or removing exhaust gases of vehicle engines in workshops [B08B 15/00](#); on highways [E01C 1/005](#))}

F01N 3/02 • for cooling, or for removing solid constituents of, exhaust (by means of electric or electrostatic separators [F01N 3/01](#); {mixing air with exhaust in tailpipes [F01N 13/082](#); [F01N 13/20](#))}

F01N 3/05 • • by means of air, e.g. by mixing exhaust with air (silencers working by addition of air to exhaust [F01N 1/14](#); arrangements for the supply of additional air for the thermal or catalytic conversion of noxious components of exhaust [F01N 3/30](#); {in tailpipes [F01N 13/082](#))}

F01N 3/08 • for rendering innocuous (using electric or electrostatic separators [F01N 3/01](#); chemical aspects [B01D 53/92](#))

F01N 3/0892 • • {Electric or magnetic treatment, e.g. dissociation of noxious components (electric filters [F01N 3/01](#); regeneration of exhaust filters [F01N 3/023](#); heating catalytic converters [F01N 3/2006](#))}

- U F01N 3/10
  - • by thermal or catalytic conversion of noxious components of exhaust (by using other chemical processes, chemical aspects of catalytic conversion, e.g. using specified catalysts, [B01D 53/34](#))
- U F01N 3/24
  - • • characterised by constructional aspects of converting apparatus (filtering in combination with catalytic reactors [F01N 3/035](#))
- U F01N 3/28
  - • • • Construction of catalytic reactors
- U F01N 3/2803
  - • • • • {characterised by structure, by material or by manufacturing of catalyst support}
- F01N 3/2825
  - • • • • • {Ceramics ([F01N 3/2832](#)-, [F01N 3/2835](#) take precedence)}
- F01N 3/2882
  - • • • • • {Catalytic reactors combined or associated with other devices, e.g. exhaust silencers or other exhaust purification devices (combined with absorbents or adsorbents only [F01N 3/0814](#)-, combined with particulate filters [F01N 3/035](#))}
- U F01N 3/30
  - • • • Arrangements for supply of additional air (regulation, e.g. using air by-passes or variable air pump drives [F01N 3/22](#))
- F01N 3/32
  - • • • • using air pump (using jet air pumps [F01N 3/34](#)-, pumps in general [F04](#))
- F01N 9/00**

**Electrical control of exhaust gas treating apparatus (monitoring or diagnostic devices for exhaust-gas treatment apparatus [F01N 11/00](#)-, {electrical control of supply of combustible mixture or its constituents in relation with the state of the exhaust gas treating apparatus [F02D 41/0235](#)} ; controlling combustion engines conjoint electrical control of two or more combustion engine functions [F02D 43/00](#))**
- F01N 11/00**

**Monitoring or diagnostic devices for exhaust-gas treatment apparatus, {e.g. for catalytic activity (safety, indicating or supervising devices for internal combustion engines [F02B 77/08](#)-, testing of machines [G01M 13/00](#))}**
- F01N 13/00**

**Exhaust or silencing apparatus characterised by constructional features; {Exhaust or silencing apparatus, or parts thereof, having pertinent characteristics not provided for in, or of interest apart from, groups [F01N 1/00](#) to [F01N 5/00](#)-, [F01N 9/00](#)-, [F01N 11/00](#)}**
- F01N 13/004
  - {specially adapted for marine propulsion, i.e. for receiving simultaneously engine exhaust gases and engine cooling water (for submerged exhausting [F01N 13/12](#)-, treating exhaust by using liquids [F01N 3/04](#))}
- F01N 13/007
  - {Apparatus used as intake or exhaust silencer (silencing methods [F01N 1/00](#)-, intake silencers [F02M 35/12](#))}
- F01N 13/08
  - Other arrangements or adaptations of exhaust conduits {(pipes, joints or supports therefor in general [F16L](#)-, collecting or removing exhaust gases of vehicle engines in workshops [B08B 15/00](#)-, on highways [E01C 1/005](#))}
- F01N 2240/00**

**Combination or association of two or more different exhaust treating devices, or of at least one such device with an auxiliary device, not covered by indexing codes [F01N 2230/00](#) or [F01N 2250/00](#)-, one of the devices being**

## Project: N/A (F01P)

- F01P 9/00**

**Cooling having pertinent characteristics not provided for in, or of interest apart from, groups [F01P 1/00](#) to [F01P 7/00](#) (profiting from waste heat of combustion-engine cooling [F02G 5/00](#))**

## Project: N/A (F02B)

F02B

**INTERNAL-COMBUSTION PISTON ENGINES; COMBUSTION ENGINES IN GENERAL (plants in which engines use combustion products [F02C](#), [F02G](#); internal-combustion turbines [F02C](#))**

NOTES

1. In this subclass, the following terms or expressions are used with the meanings indicated:

- "positive ignition" means ignition by a source external to the working fluid, e.g. by spark or incandescent source;
- "charging" means forcing air or fuel-air mixture into engine cylinders and thus embraces super-charging;
- "scavenging" means forcing the combustion residues from the cylinders other than by movement of the working pistons and thus embraces tuned exhaust systems.

2. Attention is drawn to the Notes preceding class [F01](#), specially as regards Note (1).

3. Engines with specified cycles or number of cylinders are classified in group [F02B 75/02](#) or [F02B 75/16](#), unless other classifying features predominate.

F02B 1/00 -  
F02B 11/00

**Engines characterised by the working fluid to be compressed, or characterised by the type of ignition (with both fuel-air mixture compression and air-compression, or with both positive ignition and compression ignition [F02B 11/00](#); with pre-combustion chambers [F02B 19/00](#); having air storage chambers [F02B 21/00](#); with special shape or construction of other combustion chambers [F02B 23/00](#))**

F02B 1/00

Engines characterised by fuel-air mixture compression (characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#); characterised by precombustion chambers [F02B 19/00](#); characterised by air-storage chambers [F02B 21/00](#); characterised by special shape or construction of combustion chambers [F02B 23/00](#))

NOTE

in this group the following indexing codes are used:

[F02B 2700/02](#) to [F02B 2720/30](#)

F02B 3/00

**Engines characterised by air compression and subsequent fuel addition (characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#); characterised by precombustion chambers [F02B 19/00](#); characterised by air-storage chambers [F02B 21/00](#); characterised by special shape or construction of combustion chambers [F02B 23/00](#))**

NOTE

in this group the following indexing codes are used:

[F02B 2700/02](#) to [F02B 2720/30](#)

F02B 5/00

**Engines characterised by positive ignition ([F02B 1/02](#), [F02B 3/02](#) take precedence; with non-timed positive ignition [F02B 9/06](#); characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#); characterised by precombustion chambers [F02B 19/00](#); characterised by air-storage chambers [F02B 21/00](#); characterised by special shape or construction of combustion chambers [F02B 23/00](#))**

- F02B 7/00** Engines characterised by the fuel-air charge being ignited by compression ignition of an additional fuel (characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#); characterised by precombustion chambers [F02B 19/00](#); characterised by air-storage chambers [F02B 21/00](#); characterised by special shape or construction of combustion chambers [F02B 23/00](#))
- F02B 9/00** Engines characterised by other types of ignition (characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition [F02B 11/00](#); characterised by precombustion chambers [F02B 19/00](#); characterised by air-storage chambers [F02B 21/00](#); characterised by special shape or construction of combustion chambers [F02B 23/00](#))
- NOTE  
- in this group the following indexing codes are used:  
[F02B 2700/02](#) to [F02B 2720/30](#)
- F02B 9/02** · with compression ignition ([F02B 1/12](#), [F02B 3/06](#) take precedence)
- F02B 11/00** Engines characterised by both fuel-air mixture compression and air compression, or characterised by both positive ignition and compression ignition, e.g. in different cylinders (characterised by recombustion chambers [F02B 19/00](#); characterised by air-storage chambers [F02B 21/00](#); characterised by special shape or construction of combustion chambers [F02B 23/00](#))
- F02B 13/00 -  
F02B 17/00** Engines characterised by the method of introducing fuel into cylinders (characterised by use of gaseous or solid fuels [F02B 43/00](#), [F02B 45/00](#); carburettors, fuel-injection apparatus [F02M](#))
- U F02B 19/00** Engines characterised by precombustion chambers (engines with incandescent chambers [F02B 9/08](#))
- U F02B 19/16** · Chamber shapes or constructions not specific to sub-groups [F02B 19/02](#) to [F02B 19/10](#)
- F02B 19/165** · {The shape or construction of the pre-combustion chambers is specially adapted to be formed, at least in part, of ceramic material (surface coverings of combustion-gas-swept parts [F02B 77/02](#); shaped ceramic products characterised by their composition or ceramic compositions [C04B 35/00](#); ceramic material for engine casings [F02F 7/0087](#))}
- U F02B 25/00** Engines characterised by using fresh charge for scavenging cylinders (aspects characterised by provision of driven charging or scavenging pumps [F02B 33/00](#) to [F02B 39/00](#))
- NOTE  
- in this group the following indexing codes are used:  
[F02B 2700/02](#) to [F02B 2700/038](#)
- F02B 25/26** · Multi-cylinder engines other than those provided for in, or of interest apart from, groups [F02B 25/02](#) to [F02B 25/24](#) (internal-combustion aspects of rotary engines with movable cylinders [F02B 57/00](#))
- F02B 27/00** Use of kinetic or wave energy of charge in induction systems, or of combustion residues in exhaust systems, for improving quantity of charge or for increasing removal of combustion residues (aspects characterised by provision of driven charging or scavenging pumps [F02B 33/00](#) to [F02B 39/00](#), e.g. use of driven apparatus for immediate conversion of combustion gas pressure into pressure of fresh charge [F02B 33/42](#))

- F02B 29/00** **Engines characterised by provision for charging or scavenging not provided for in groups [F02B 25/00](#), [F02B 27/00](#) or [F02B 33/00](#) to [F02B 39/00](#); Details thereof**
- F02B 29/02 · Other fluid-dynamic features of induction systems for improving quantity of charge (for also imparting a rotation to the charge in the cylinder [F02B 31/00](#); structural features of induction systems [F02M](#))
- U F02B 31/00** **Modifying induction systems for imparting a rotation to the charge in the cylinder (structural features of induction systems [F02M](#))**
- U F02B 31/04 · by means within the induction channel, e.g. deflectors
- U F02B 31/06 · · Movable means, e.g. butterfly valves
- U F02B 31/08 · · · having multiple air inlets, {i.e. having main and auxiliary intake passages}
- F02B 31/082 · · · · {the main passage having a helical shape around the intake valve axis; Engines characterised by provision of driven charging or scavenging pumps (introducing fuel into cylinders by air-pressure [F02B 13/00](#); after-charging [F02B 29/06](#); arrangements of such pumps or other auxiliary apparatus on engines [F02B 67/00](#); combined engine pump control, control dependent on variables other than those generic to pump [F02D](#))}
- F02B 33/00 - F02B 41/00** **Engines characterised by provision of driven charging or scavenging pumps (introducing fuel into cylinders by air-pressure [F02B 13/00](#); after-charging [F02B 29/06](#); arrangements of such pumps or other auxiliary apparatus on engines [F02B 67/00](#); combined engine and pump control, control dependent on variables other than those generic to pump [F02D](#); {Details or constructional aspects of turbines [F01D](#); turbochargers [F02C](#); pumps [F04](#)})**
- F02B 33/00** **Engines characterised by provision of pumps for charging or scavenging (characterised by the introduction of liquid fuel into cylinders by use of auxiliary fluid [F02B 13/00](#); characterised by after-charging [F02B 29/06](#); characterised by provision of pumps for sucking combustion residues from cylinders [F02B 35/00](#); characterised by provision of exhaust-driven pumps [F02B 37/00](#))**
- NOTE
- in this group the following indexing code is used:  
[F02M 2700/33](#)
- F02B 37/00** **Engines characterised by provision of pumps driven at least for part of the time by exhaust (characterised by the introduction of liquid fuel into cylinders by use of auxiliary fluid [F02B 13/00](#); characterised by after-charging [F02B 29/06](#); characterised by passages conducting the charge from the pump to the engine inlet [F02B 33/44](#))**
- U F02B 37/12 · Control of the pumps
- F02B 37/127 · · {by bypassing air from the pump inlet, e.g. to the pump outlet (bypassing charging air [F02B 37/16](#); valves for admission of atmospheric air to engine [F02B 33/446](#))}
- U F02B 41/00** **Engines characterised by special means for improving conversion of heat or pressure energy into mechanical power**
- U F02B 41/02 · Engines with prolonged expansion
- F02B 41/10 · · in exhaust turbines (use of exhaust turbines for charging [F02B 37/00](#); turbines constructions [F01D](#); gas turbine plant [F02C](#))

- F02B 43/00 -  
F02B 45/00** Engines operating on non-liquid fuels; Plants including such engines, i.e. combinations of the engines with fuel-generating apparatus (engines having gas-air charge ignited by compression-ignition of an additional fuel [F02B 7/06](#); engines convertible from gas to other fuel consumption [F02B 69/04](#); apparatus for generating fuel, e.g. gas, see the relevant classes, e.g. [C10](#))
- F02B 43/00** Engines characterised by operating on gaseous fuels; Plants including such engines (engines characterised by the gas-air charge being ignited by compression ignition of an additional fuel [F02B 7/06](#); engines convertible from gas to other fuel consumption [F02B 69/04](#))
- NOTE  
- in this group the following indexing codes are used:  
[F02B 2700/02](#) to [F02B 2720/30](#)
- F02B 45/00** Engines characterised by operating on non-liquid fuels other than gas; Plants including such engines (plants involving generation of gaseous fuel from solid fuel [F02B 43/08](#); engines convertible from gas to other fuel consumption [F02B 69/04](#))
- F02B 61/00 -  
F02B 65/00** Adaptations of engines for special use; Combinations of engines with devices other than engine parts or auxiliaries (of rotary-piston or oscillating-piston engines [F02B 53/14](#); aspects predominantly concerning such devices, see the relevant classes for the devices)
- F02B 61/00** Adaptations of engines for driving vehicles or for driving propellers; Combinations of engines with gearing (the engine torque being divided by a differential gear for driving a scavenging or charging pump and the engine output shaft [F02B 39/06](#); adaptations or combinations of rotary-piston or oscillating-piston engines [F02B 53/14](#); arrangements in vehicles, see the relevant classes for vehicles)
- F02B 61/06** · Combinations of engines with mechanical gearing ([F02B 61/02](#); [F02B 61/04](#) take precedence)
- F02B 65/00** Adaptations of engines for special uses not provided for in groups [F02B 61/00](#) or [F02B 63/00](#); Combinations of engines with other devices, e.g. with non-driven apparatus (of rotary-piston or oscillating-piston engines [F02B 53/14](#); combinations of prime-movers consisting of electric motors and internal combustion engines for mutual or common propulsion [B60K 6/20](#))
- U F02B 77/00** **Component parts, details or accessories, not otherwise provided for**
- F02B 77/08** · Safety, indicating or supervising devices (thermal insulation [F02B 77/11](#); {rendering engines inoperative or idling [F02D 17/04](#); dependent on lubricating conditions [F01M 1/22](#); dependent on cooling [F01P 11/14](#)})

**Project: N/A (F02D)**

- F02D 1/00 -  
F02D 17/00** Controlling, e.g. regulating, fuel injection (peculiar to engines characterised by their use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures [F02D 19/00](#); peculiar to supercharged engines [F02D 23/00](#); automatic controllers for prime movers, in general [G05D](#))
- F02D 1/16** · Adjustment of injection timing ([F02D 1/02](#) takes precedence {rotary distributor pumps [F02M 41/00](#); by adjustment of pumping elements [F02M 59/20](#)})

- F02D 3/00** Controlling low-pressure fuel injection, i.e. where the air-fuel mixture containing fuel thus injected will be substantially compressed by the compression stroke of the engine, by means other than controlling only an injection pump (controlling fuel-injection electrically [F02D 41/30](#); {controlling the feeding of liquid fuel from storage containers to carburettors or fuel-injection apparatus [F02D 33/003](#); } carburettors [F02M](#))
- NOTE  
When the control apparatus or system forms part of the low-pressure fuel-injection apparatus it is classified in group [F02M 69/00](#).
- F02D 9/00** Controlling engines by throttling air or fuel-and-air induction conduits or exhaust conduits
- NOTE  
- in this group the following indexing codes are used: [F02D 2700/00](#)-, [F02D 2700/02](#)-, [F02D 2700/04](#)-, [F02D 2700/09](#)
- F02D 9/08 · Throttle valves specially adapted therefor; Arrangements of such valves in conduits (throttle valves modified for use in or arranged in carburettors [F02M](#);-; throttle valves in general [F16K](#))
- F02D 11/00** Arrangements for, or adaptations to, non-automatic engine control initiation means, e.g. operator initiated (specially for reversing [F02D 27/00](#);-; arrangement or mounting of prime-mover control devices in vehicles [B60K 26/00](#))
- U F02D 17/00** Controlling engines by cutting out individual cylinders; Rendering engines inoperative or idling (controlling or rendering inoperative by varying inlet or exhaust valve operating characteristics [F02D 13/00](#))
- NOTE  
- in this group the following indexing codes are used:  
[F02D 2700/05](#)
- F02D 17/04 · rendering engines inoperative or idling, e.g. caused by abnormal conditions (dependent on lubricating conditions [F01M 1/22](#);-; dependent on cooling [F01P 5/14](#))
- F02D 28/00** Programme-control of engines (programme-control specific to a type or purpose covered by one of the groups of this subclass except groups [F02D 29/00](#)-, [F02D 39/00](#)-, or by one group of another subclass e.g. [F01L](#)-, see that group; programme-control in general [G05B 19/00](#))
- F02D 33/00** Controlling delivery of fuel or combustion-air, not otherwise provided for {{(using exhaust gas sensors [F02D 35/0023](#)-, [F02D 35/0046](#))}}
- F02D 33/003 · Controlling the feeding of liquid fuel from storage containers to carburettors or fuel-injection apparatus (control of electrical fuel pumps [F02D 41/3082](#)-, controlling fuel flow to a common rail [F02D 41/3845](#)); Failure or leakage prevention; Diagnosis or detection of failure; Arrangement of sensors in the fuel system; Electric wiring; Electrostatic discharge]
- U F02D 35/00** Controlling engines, dependent on conditions exterior or interior to engines, not otherwise provided for
- F02D 35/0007 · {using electrical feedback ([F02D 35/0015](#) takes precedence)}
- NOTE  
Attention is drawn to the note preceding [F02D 41/00](#)-.

- U F02D 35/0015 · {using exhaust gas sensors ([F02D 41/14](#) takes precedence)}
- U F02D 35/0046 · · {Controlling fuel supply}
- U F02D 35/0053 · · · {by means of a carburettor}
- F02D 35/0061 · · · · {Controlling the emulsifying air only ([F02D 35/0076](#)-, [F02D 35/0084](#) take precedence)}
- F02D 35/0069 · · · · {Controlling the fuel flow only ([F02D 35/0076](#)-, [F02D 35/0084](#) take precedence)}
  
- U F02D 37/00**      **Controlling conjointly two or more functions of engines, not otherwise provided for**
- F02D 37/02 · one of the functions being ignition (ignition control per se [F02P](#)-, {-automatically advancing or retarding ignition combined with electronic control of other engine functions, e.g. fuel injection [F02P 5/045](#)})
  
- U F02D 41/00**      **Electrical control of supply of combustible mixture or its constituents ([F02D 43/00](#) takes precedence)**
- U F02D 41/0025 · {Controlling engines characterised by use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures}
- U F02D 41/0047 · · {Controlling exhaust gas recirculation [EGR] (temperature control with cooler in recirculation circuit [F02M 25/0738](#))}
- F02D 41/006 · · · {using internal EGR (control of valve overlap for internal EGR [F02D 13/0261](#)-, arrangements for internal EGR [F02M 25/0752](#))}
- U F02D 41/02 · Circuit arrangements for generating control signals
- U F02D 41/04 · · Introducing corrections for particular operating conditions ([F02D 41/14](#) takes precedence)
- F02D 41/08 · · · for idling ([F02D 41/06](#)-, [F02D 41/16](#) take precedence)
- F02D 41/12 · · · for deceleration {([F02D 41/0005](#)-, [F02D 41/107](#) take precedence)}
- U F02D 41/14 · · Introducing closed-loop corrections
- F02D 41/1401 · · · {characterised by the control or regulation method ([F02D 41/1473](#)-, [F02D 41/1477](#) take precedence)}
- F02D 41/22 · Safety or indicating devices for abnormal conditions {(in air/fuel ratio feedback systems [F02D 41/1495](#)-, in electric control linkage [F02D 11/107](#)-, in purge control systems [F02M 25/0809](#))}
- U F02D 41/30 · Controlling fuel injection {([F02D 41/182](#), [F02D 41/24](#) take precedence)}
- U F02D 41/38 · · of the high pressure type
- F02D 41/3809 · · · {Common rail control systems (common rail apparatus [F02M 55/025](#)-, [F02M 63/0225](#))}
  
- F02D 45/00**      **Electrical control not provided for in groups [F02D 41/00](#) to [F02D 43/00](#) (electrical control of exhaust gas treating apparatus [F01N 9/00](#)-, electrical control of one of the functions; ignition, lubricating, cooling, starting, intake-heating, see relevant subclasses for such functions)**

**F02D 2250/00 -  
F02D 2700/00** Controlling, e.g. regulating, fuel injection (peculiar to engines characterised by their use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures [F02D 19/00](#); peculiar to supercharged engines [F02D 23/00](#); automatic controllers for prime movers, in general [G05D](#))

## Project: N/A (F02F)

**F02F** **CYLINDERS, PISTONS OR CASINGS, FOR COMBUSTION ENGINES; ARRANGEMENTS OF SEALINGS IN COMBUSTION ENGINES (specially adapted for rotary-piston or oscillating-piston internal-combustion engines [F02B](#); specially adapted for gas-turbine plants [F02C](#); specially adapted for jet-propulsion plants [F02K](#))**

## NOTES

1. Attention is drawn to the notes preceding class [F01](#).
2. In considering the relationship between class [F16](#) and subclass [F02F](#), class [F16](#) will take precedence unless the subject-matter is specific to combustion engines.

- U F02F 1/00** **Cylinders; Cylinder heads (in general [F16J](#))**
- F02F 1/004 · {Cylinder liners ([F02F 1/08](#), [F02F 1/16](#) take precedence)}
- U F02F 1/24 · Cylinder heads
- U F02F 1/42 · · Shape or arrangement of intake or exhaust channels in cylinder heads
- U F02F 1/4285 · · · {of both intake and exhaust channel}
- F02F 1/4292 · · · · {with liners ([F02F 1/4257](#), [F02F 1/4271](#) take precedence)}
- U F02F 3/00** **Pistons (in general [F16J](#))**
- U F02F 3/02 · having means for accomodating or controlling heat expansion
- F02F 3/022 · · {the pistons having an oval circumference or non-cylindrical shaped skirts, e.g. oval ([F02F 3/025](#), [F02F 3/027](#) take precedence)}
- F02F 7/00** **Casings, e.g. crankcases (engine casings in general [F16M](#)){or frames}**
- F02F 11/00** **Arrangements of sealings in combustion engines (piston rings [F02F 5/00](#){not used, see [F16J 9/00](#)} ; sealings per se [F16J](#))**

## Project: N/A (F02K)

**F02K 9/00** **Rocket- engine plants, i.e. plants carrying both fuel and oxidant therefor; Control thereof (chemical composition of propellants [C06B](#), [C06D](#){launching apparatus for rockets [F41F 3/04](#); explosive charges, ammunition [F42B](#))**

## Project: N/A (F02M)

- F02M 19/00** **Details, component parts, or accessories of carburettors, not provided for in, or of interest apart from, the apparatus of groups [F02M 1/00](#) to [F02M 17/00](#) (measuring or testing apparatus in general [G01](#))**
- U F02M 25/00** **Engine-pertinent apparatus for adding non-fuel substances or small quantities of secondary fuel to combustion-air, main fuel, or fuel-air mixture ([F02M 43/00](#) takes precedence; adding secondary air to fuel-air mixture [F02M 23/00](#))**
- U F02M 25/022 · Adding fuel and water emulsion, water or steam
- U F02M 25/025 · · Adding water
- F02M 25/03 · · · into the cylinder {-or the pre-combustion chamber}

- U F02M 25/032      • • Producing and adding steam  
F02M 25/038      • • • into the cylinder {-or the pre-combustion chamber}
- U F02M 25/06      • adding lubricant vapours or exhaust gases  
F02M 25/07      • • adding exhaust gases; {-Exhaust gas recirculation [EGR]}
- U F02M 35/00      Combustion-air cleaners, air intakes, intake silencers, or induction systems specially adapted for, or arranged on, internal-combustion engines (air cleaners in general [B01D](#))**
- U F02M 35/02      • Air cleaners  
F02M 35/04      • • specially arranged with respect to engine, {-to intake system or specially adapted to vehicle}; Mounting thereon; {-Combinations with other devices (combined with silencers [F02M 35/14](#))}
- F02M 35/08      • • with means for removing dust, {-particles or liquids} from cleaners; with means for indicating clogging; with by-pass means; {-Regeneration of cleaners}
- F02M 35/09      • • • Clogging indicators; {-Diagnosis or testing of air cleaners (sensors therefore [F02M 35/10373](#))}
- F02M 35/12      • Intake silencers {-Sound modulation, transmission or amplification (intake silencers also used as exhaust silencer [F01N 13/007](#); filters for compressors [F04B 39/16](#))}
- U F02M 51/00      Fuel-injection apparatus characterised by being operated electrically**  
F02M 51/06      • Injectors peculiar thereto {-with means directly operating the valve needle}
- F02M 55/00      Fuel-injection apparatus characterised by their fuel conduits or their venting means; {-Arrangements of conduits between fuel tank and pump [F02M 37/00](#) (venting in general [B01D 19/00](#))}**
- F02M 55/02      • Conduits between injection pumps and injectors, {-e.g. conduits between pump and common-rail or conduits between common-rail and injectors}
- F02M 59/00      Pumps specially adapted for fuel-injection and not provided for in groups [F02M 39/00](#) to [F02M 57/00](#), {-e.g. rotary cylinder-block type pumps}(general features of pumps [F04](#))**
- NOTE  
- in this group the following indexing codes are used: [F02M 2700/1323](#), [F02M 2700/1341](#), [F02M 2700/1352](#), [F02M 2700/1388](#)
- F02M 63/00      Other fuel-injection apparatus having pertinent characteristics not provided for in groups [F02M 39/00](#) to [F02M 57/00](#) or [F02M 67/00](#); Details, component parts, or accessories of fuel-injection apparatus, not provided for in, or of interest apart from, the apparatus of groups [F02M 39/00](#) to [F02M 61/00](#) or [F02M 67/00](#);{-{Combination of fuel pump with other devices, e.g. lubricating oil pump}**
- NOTE  
- in this group the following indexing codes are used: [F02M 2700/05](#), [F02M 2700/072](#)
- F02M 69/00      Low-pressure fuel-injection apparatus (electrically operated [F02M 51/00](#));{-{Apparatus with both continuous and intermittent injection; Apparatus injecting different types of fuel}**
- NOTE  
- in this group the following indexing codes are used: [F02B 2720/15](#)

**Project: N/A (F02N)****F02N**

**STARTING OF COMBUSTION ENGINES** (starting of free-piston combustion engines [F02B 71/02](#); starting of gas-turbine plants [F02C 7/26](#)); **STARTING AIDS FOR SUCH ENGINES, NOT OTHERWISE PROVIDED FOR**

NOTES

1. Attention is drawn to the notes preceding class [F01](#).
2. The starting of engines which are not explicitly stated to be combustion engines will be classified in this subclass insofar as their starting is equivalent to that of combustion engines.

**U F02N 11/00**

**Starting of engines by means of electric motors (arrangement or mounting of prime-movers consisting of electric motors and internal combustion engines for mutual or common propulsion [B60K 6/20](#))**

U F02N 11/08

- Circuits {or control means} specially adapted for starting of engines

U F02N 11/0814

- • {comprising means for controlling automatic idle-start-stop}

U F02N 11/0818

- • • {Conditions for starting or stopping the engine or for deactivating the idle-start-stop mode}

F02N 11/0833

- • • • {Vehicle conditions ([F02N 11/0822](#)-, [F02N 11/0825](#) take precedence)}

**Project: N/A (F02P)****F02P**

**IGNITION, OTHER THAN COMPRESSION IGNITION, FOR INTERNAL-COMBUSTION ENGINES; TESTING OF IGNITION TIMING IN COMPRESSION-IGNITION ENGINES** ({anti-pollution means for internal-combustion engines [F02B 17/00](#)); specially adapted for rotary-piston or oscillating-piston engines [F02B 53/12](#); {ignition of gas turbine plants [F02C 7/26](#); ignition of jet propulsion plants [F02K 9/95](#); starting of combustion engines [F02N 9/00](#)}; ignition of combustion apparatus in general, glowing plugs [F23Q](#); measuring of physical variables in general [G01](#); controlling in general [G05](#); data processing in general [G06](#); electrical components in general see Section H; {-ignition coils [H01F 38/12](#)}; sparking plugs [H01T 13/00](#))

**U F02P 3/00****Other installations**

U F02P 3/02

- having inductive energy storage, e.g. arrangements of induction coils {(ignition coils structurally combined with sparking plugs [F02P 13/00](#); constructional details of ignition coils [H01F 38/12](#))}

U F02P 3/04

- • Layout of circuits

F02P 3/055

- • • with protective means to prevent damage to the circuit, {-e.g. semiconductor devices} or the ignition coil

**F02P 7/00**

**Arrangements of distributors, circuit-makers or -breakers, {e.g. of distributor and circuit-breaker combinations} or pick-up devices (advancing or retarding ignition or control therefor [F02P 5/00](#);- such devices *per se*, see the relevant classes of Section H, e.g. rotary switches [H01H 19/00](#), contact-breakers, distributors [H01R 39/00](#), generators [H02K](#))**

**F02P 13/00**

**Sparking plugs structurally combined with other parts of internal-combustion engines** ({connection of ignition coil to spark plug connector [F02P 3/02](#)}; with fuel injectors [F02M 57/06](#); {spark plug connectors *per se* [H01T 13/04](#) to [H01T 13/06](#);- predominant aspects of sparking plug, see [H01T 13/40](#) to [H01T 13/44](#)}; predominant aspects of the parts, see the relevant subclasses)

**Project: N/A (F03B)**

**F03B** **MACHINES OR ENGINES FOR LIQUIDS (positive-displacement engines for liquid [F03C](#); machines for liquids and gases [F01](#); positive-displacement machines for liquids [F04](#), rotary fluid gearing of the hydrokinetic type [F16H 41/00](#))**

**NOTES**

1. Attention is drawn to the notes preceding Class [F01](#), especially as regards the definition of "reaction type".
2. This subclass comprises:
  - engines, other than of positive-displacement type, driven by liquids;
  - machines, other than of positive-displacement type, for liquids.

**F03B 15/00** **Controlling (controlling in general [G05](#) {regulation of plants characterised by the use of siphons [F03B 13/086](#)})**

**Project: N/A (F03D)**

**U F03D 1/00** **Wind motors with rotation axis substantially in wind direction (controlling [F03D 7/00](#))**

- U F03D 1/06** • Rotors
- F03D 1/065** • {characterised by their construction, i.e. structural design details ([F03D 1/001](#) takes preference [F03D 1/001](#) takes precedence)}

**Project: N/A (F03H)**

**F03H 1/00** **Using plasma to produce a reactive propulsive thrust (generating plasma [H05H 1/00](#) ){(ion sources per se [H01J 27/02](#), ion sources for plasma processing or ion beams [H01J 37/08](#))}**

**Project: N/A (F04B)**

**F04B 39/00** **Component parts, details, or accessories, of pumps or pumping systems, not otherwise provided for in, or of interest apart from, groups [F04B 25/00](#) to [F04B 37/00](#) (for controlling [F04B 49/00](#))**

**Project: N/A (F04C)**

**U F04C 14/00** **Control of, monitoring of, or safety arrangements for, machines, pumps or pumping installations (of pumps or pumping installations specially adapted for elastic fluids [F04C 28/00](#))**

- F04C 14/24** • characterised by using valves regulating pressure or flow rate, e.g. discharge valves, {-unloading valves}([F04C 14/10](#) takes precedence)

**F04C 15/00** **Component parts, details or accessories of machines, pumps or pumping installations, not provided for in groups [F04C 2/00](#) to [F04C 14/00](#) (of pumps specially adapted for elastic fluids [F04C 18/00](#) to [F04C 29/00](#))**

**U F04C 28/00** **Control of, monitoring of, or safety arrangements for, pumps or pumping installations specially adapted for elastic fluids**

- F04C 28/24** • characterised by using valves regulating pressure or flow rate, e.g. discharge valves {-unloading valves}([F04C 28/10](#) takes precedence)

**U F04C 29/00** **Component parts, details or accessories of pumps or pumping installations, not provided for in groups [F04C 18/00](#) to [F04C 28/00](#)**

- F04C 29/0021** • {Systems for the equilibration of forces acting on the pump}{(interstice adjustment other than by fluid pressure [F01C 21/102](#))}

**Project: N/A (F04D)**

- F04D 1/00** Radial-flow pumps, e.g. centrifugal pumps; Helico-centrifugal pumps (adapted for pumping specific fluids [F04D 7/00](#); priming or boosting [F04D 9/00](#))
- F04D 1/06 · Multi-stage pumps ([F04D 1/02](#)-, [F04D 13/10](#) take precedence)
- F04D 7/00** Pumps adapted for handling specific fluids, e.g. by selection of specific materials for pumps or pump parts ([F04D 11/005](#)-, [F04D 29/22](#) take precedence)
- F04D 19/00** Axial-flow pumps ([F04D 21/00](#) takes precedence); {pump comprising axial flow and radial flow stages [F04D 17/025](#)}
- U F04D 25/00** Pumping installations or systems (controlling [F04D 27/00](#))
- U F04D 25/02 · Units comprising pumps and their driving means (predominant aspect of the driving means, see the relevant classes for such means)
- F04D 25/04 · · the pump being fluid-driven {(pumps driven by exhaust gases [F02B 37/00](#)-, [F02B 39/00](#);-; turbochargers [F02C 6/12](#))}
- U F04D 27/00** **Control, e.g. regulation, of pumps, pumping installations or systems**  
WARNING  
This group is not complete pending a reorganisation. See also group [F04D 27/02](#) which covers also control in general not focussing on surge control
- U F04D 27/02 · Surge control {(surge detection [F04D 27/001](#))}
- F04D 27/0207 · · {by bleeding, bypassing or recycling fluids} (influencing the boundary layer by an uncontrolled bleeding of the working fluid [F04D 29/681](#))}
- U F04D 29/00** **Details, component parts, or accessories (machine elements in general [F16](#))**
- F04D 29/06 · Lubrication {([F04D 13/0606](#)-, [F04D 13/0646](#)-, [F04D 13/0653](#) take precedence)}
- U F04D 29/26 · Rotors specially for elastic fluids
- U F04D 29/32 · · for axial flow pumps {(multistage rotors [F01D 5/00](#))}
- F04D 29/325 · · · {for axial flow fans (blade mountings [F04D 29/34](#)-, blades [F04D 29/38](#))}
- F04D 29/40 · Casings; Connections of working fluid {(bleed or by-pass valves [F04D 15/0011](#)-, [F04D 27/0215](#))}
- F04D 29/58 · Cooling (of machines or engines in general [F01P](#)); Heating; Diminishing heat transfer {(for the motor of air-pump units [F04D 25/082](#);-; cooling of shafts or bearings [F04D 29/04](#))}
- U F04D 29/582 · · {specially adapted for elastic fluid pumps}
- F04D 29/584 · · · {cooling or heating the machine ([F04D 29/5846](#)-, [F04D 29/5853](#) take precedence)}
- U F04D 29/586 · · {specially adapted for liquid pumps}
- F04D 29/588 · · · {cooling or heating the machine ([F04D 29/5886](#)-, [F04D 29/5893](#) take precedence)}

**Project: N/A (F05D)**

- U F05D 2260/00** **Function**
- U F05D 2260/60 · Fluid transfer
- F05D 2260/61 · · Removal of CO<sub>2</sub> (removal of CO<sub>2</sub> from waste gases [B01D 53/62](#))

## Project: N/A (F15B)

## F15B

**SYSTEMS ACTING BY MEANS OF FLUIDS IN GENERAL; FLUID-PRESSURE ACTUATORS, e.g. SERVO-MOTORS; DETAILS OF FLUID-PRESSURE SYSTEMS, NOT OTHERWISE PROVIDED FOR** ({hydraulically or pneumatically operated lifting devices for soil-working machines [A01B 63/10](#); hydraulic drawing presses [B21D](#); hydraulic or pneumatic manipulators [B25J](#); hydraulic or pneumatic tipping devices for vehicles [B60P 1/00](#); hydraulic or pneumatic remote control for railway signals [B61L 7/04](#); hydraulic or pneumatic mine supports [E21D 15/44](#)}; motors, turbines, compressors, blowers, pumps [F01](#) to [F04](#); {fluid signal amplifiers, relays [F15C](#)}; fluid dynamics [F15D](#); fluid clutches or brakes [F16D](#); fluid springs [F16F](#); fluid gearing [F16H](#); pistons, cylinders packing [F16J](#); valves, taps, cocks, actuating-floats [F16K](#); safety valves with auxiliary fluid operation of the main valve [F16K 17/10](#); fluid-operating means for valves [F16K 31/12](#); pipes, pipe joints [F16L](#); lubricating [F16N](#))

NOTE

In this subclass, the following terms are used with the meaning stated:

- "Telemotor" means a system or device in which a substantially constant amount of fluid is trapped between an input member and an output member to act as a fluid link;
- "Servomotor" means a fluid-pressure actuator, e.g. a piston and cylinder, directly controlled by a valve or other device which is responsive to operation of an initial controlling member; "Servomotor" does not cover a telemotor. The initial controlling member may be adjacent to the servomotor or at a distance, and may be, for example a hand lever.

## F15B 5/00

**Transducers converting variations of physical quantities, e.g. expressed by variations in positions of members, into fluid-pressure variations or vice-versa; Varying fluid pressure as a function of variations of a plurality of fluid pressures or variations of other quantities** ([F15B 9/00](#) takes precedence; for measuring or controlling [G01](#), [G05](#))

## F15B 7/00

**Systems in which the movement produced is definitely related to the output of a volumetric pump; Telemotors** {(for control in motor vehicles [B60K](#); in ships [B63H 25/00](#); in aircraft [B64C 13/00](#); combinations of telemotor and servomotor systems [F15B 17/00](#))}

## F15B 7/001

• {with multiple inputs (input units [F15B 7/08](#), e.g. for dual control)}

## U F15B 9/00

**Servomotors with follow-up action, [e.g. obtained by feed-back control], i.e. in which the position of the actuated member conforms with that of the controlling member** {([F15B 11/10](#) takes precedence)}

## U F15B 9/02

• with servomotors of the reciprocatable or oscillatable type

## F15B 9/03

• • with electrical control means {([F15B 9/07](#), [F15B 9/09](#), [F15B 9/17](#) take precedence)}

## F15B 9/16

• Systems essentially having two or more interacting servomotors, {e.g. multi-stage ([F15B 18/00](#), [F15B 20/00](#) take precedence; servo-operated pilot valves for the following stage [F15B 13/042](#))}

## U F15B 11/00

**Servomotor systems without provision for follow-up action; {Circuits therefor}**([F15B 3/00](#) takes precedence)

## U F15B 11/02

• Systems essentially incorporating special features for controlling the speed or actuating force of an output member

## U F15B 11/04

• • for controlling the speed ([F15B 11/024](#) takes precedence)

## F15B 11/042

• • • by regulating means in feed line, {i.e. "meter in"} ([F15B 11/046](#), [F15B 11/05](#) take precedence)

- F15B 11/044
  - • • by regulating means in return line, {i.e. "meter out"} ([F15B 11/046](#)-, [F15B 11/05](#) take precedence)
- F15B 11/05
  - • • specially adapted to maintain constant speed, e.g. pressure-compensated, load-responsive {([F15B 11/161](#) takes precedence ; counterbalance valves [F15B 11/0445](#)-, valves for load sensing [F15B 13/0416](#))}
- U F15B 11/08
  - with only one servomotor
- F15B 11/12
  - • providing distinct intermediate positions; with step-by-step action {with a number of pistons in a single cylinder step-by-step action obtained by combining two or more servomotors [F15B 11/18](#)-, (for restricting the stroke [F15B 15/24](#))}
- U F15B 11/16
  - with two or more servomotors {(for soil-shifting machines [E02F 9/22](#))}
- U F15B 11/161
  - • {with sensing of servomotor demand or load}
- F15B 11/162
  - • • {for giving priority to particular servomotors or users (priority valve details [F15B 13/022](#)-, for power steering [B62D 5/07](#))}
- F15B 13/00**

**Details of servomotor systems {([F15B 1/04](#)-, [F15B 1/26](#)-, [F15B 3/00](#)-, [F15B 7/08](#)-, [F15B 11/02](#)-, [F15B 11/10](#)-,) [F15B 15/00](#) take precedence}{; Valves for servomotor systems}**
- F15B 13/01
  - Locking-valves or other detent, {i.e. load-holding}, devices (associated with the actuator [F15B 15/26](#)-, {-systems with load-holding valves [F15B 11/003](#))}
- U F15B 13/02
  - Fluid distribution or supply devices characterised by their adaptation to the control of servomotors {([F15B 11/15](#) takes precedence } ; multiple-way valves [F16K 11/00](#))

WARNING  
Subgroups [F15B 13/023](#) to [F15B 13/029](#) are not complete, see [F15B 13/02](#)
- F15B 13/022
  - • {Flow-dividers; Priority valves (circuits for giving priority to particular servomotors [F15B 11/162](#)-, priority valves for power steering [B62D 5/07](#))}
- U F15B 13/04
  - • for use with a single servomotor
- F15B 13/0416
  - • • {with means or adapted for load sensing (fluid systems with load sensing [F15B 11/05](#)-, [F15B 11/161](#))}
- F15B 13/042
  - • • operated by fluid pressure {([F15B 13/0401](#)-, [F15B 13/0416](#) take precedence)}
- F15B 13/0422
  - • • • {with manually-operated pilot valves, e.g. joysticks (arrangements of handles or pedals for cranes [B66C 13/54](#)-, control levers for dredgers and soil shifting machines [E02F 9/2004](#)-, similar mechanical control actuators [G05G 9/047](#))}
- U F15B 13/043
  - • • • with electrically-controlled pilot valves {(electrically-operated main valves [F15B 13/044](#))}
- F15B 13/0433
  - • • • • {the pilot valves being pressure control valves ([F15B 13/0435](#)-, [F15B 13/0436](#)-, [F15B 13/0438](#) take precedence)}
- F15B 13/16
  - Special measures for feedback, {e.g. by a follow-up device (servomotors with follow-up action [F15B 9/00](#)-, devices with means or adapted for load sensing [F15B 13/0416](#))}
- U **F15B 15/00**

**Fluid-actuated devices for displacing a member from one position to another (motors for continuous movement [F01](#) to [F03](#)); Gearing associated therewith**
- U F15B 15/08
  - characterised by the construction of the motor unit (pistons, cylinders, packing [F16J](#))

- F15B 15/088
- · {the motor using combined actuation, e.g. electric and fluid actuation}
- WARNING  
Not complete, see also [F15B 15/08](#), [F15B 2015/206](#)
- F15B 15/10
- · the motor being of diaphragm type (connection of valves to inflatable elastic bodies [B60C 29/00](#); diaphragms, bellows [F16J 3/00](#); {-clutches with a fluid-actuated elastic clutching member [F16D 25/04](#)})
- U F15B 15/14
- · of the straight-cylinder type
- F15B 15/1404
- · · {in clusters, e.g. multiple cylinders in one block (servomotors having a plurality of working chambers [F15B 11/036](#); motors with two or more independently movable working pistons [F15B 15/1409](#))}
- F15B 15/1409
- · · {with two or more independently movable working pistons (systems [F15B 11/12](#), [F15B 11/18](#))}
- U F15B 15/20
- Other details {e.g. assembly with regulating devices}
- F15B 15/204
- · {Control means for piston speed or actuating force without external control, e.g. control valve inside the piston ([F15B 11/02](#), [F15B 15/22](#) take precedence)}
- U F15B 21/00**      **Common features; Fluid-pressure systems, or details thereof, not covered by any preceding group**
- U F15B 21/04
- Special measures taken in connection with the properties of the fluid, e.g. for venting, compensating for changes of viscosity, cooling, filtering, preventing churning
- F15B 21/048
- · {Compressed air preparation units, e.g. comprising air driers or condensers, filters, oilers or lubricators, pressure regulators (for steam traps [F16T](#); for mist lubrication [F16N 7/32](#); for air conditioning [F24F](#))}
- F15B 21/08
- Servomotor systems incorporating electrically operated control means ([F15B 21/02](#), {[F15B 21/065](#)} take precedence)
- F15B 21/12
- Fluid oscillators or pulse generators (fluid oscillators predominantly used for computing or control purposes [F15C 1/22](#), [F15C 3/16](#))
- U F15B 2211/00**      **Circuits for servomotor systems**
- U F15B 2211/30
- Directional control
- U F15B 2211/305
- · characterised by the type of valves
- U F15B 2211/3056
- · · Assemblies of multiple valves
- U F15B 2211/30565
- · · · having multiple valves for a single output member, e.g. for creating higher valve function by use of multiple valves like two 2/2-valves replacing a 5/3-valve
- F15B 2211/3058
- · · · having additional valves for interconnecting the fluid chambers of a double-acting actuator, e.g. for regeneration mode or for floating mode (directional control valves having a regenerative position [F15B 2211/3133](#); directional control valves having a floating position [F15B 2211/3127](#))

**Project: N/A (F15C)**

F15C

**FLUID-CIRCUIT ELEMENTS PREDOMINANTLY USED FOR COMPUTING OR CONTROL PURPOSES** (transducers [F15B 5/00](#), {[F15B 21/00](#)}; fluid dynamics in general [F15D](#); computer comprising fluid elements [G06D](#), [G06G](#); {-electric control by means of electro-hydraulic or electro-pneumatic amplifiers [G05B 7/02](#)})

**Project: N/A (F15D)**

**F15D** FLUID DYNAMICS, i.e. METHODS OR MEANS FOR INFLUENCING THE FLOW OF GASES OR LIQUIDS ({nozzles, spray heads [B05B](#); devices to decrease friction or resistance or to increase speed of ships [B63B](#); ship rudders [B63H 25/38](#); influencing the flow or the viscosity of fluids with chemical additives [C09K 3/00](#), [C10M](#); hydraulic engineering [E02B](#)}; fluid circuit elements [F15C](#); {-one-way check valves [F16K 15/00](#)})

NOTE

This subclass comprises boundary-layer control and other arrangements and methods, not provided for in other classes, for influencing the flow of fluids relative to constraining surfaces and after leaving these surfaces, e.g. producing or removing turbulence, deflecting jets, guiding flow through bends in conduits, affecting distribution of fluid in a conduit, reducing fluid friction.

**Project: N/A (F16B)**

**F16B 2/00** Friction-grip releasable fastenings (for cables or ropes, e.g. cleats [F16G 11/00](#) )({connections of rods or tubes, e.g. of non-circular section, mutually, including resilient connections [F16B 7/00](#)})

**U F16B 7/00** Connections of rods or tubes, e.g. of non-circular section, mutually, including resilient connections ({[F16B 11/008](#), [F16B 17/002](#) take precedence}); umbrella frames [A45B 25/02](#); welding or soldering of connections [B23K](#); vehicle connections in general [B60D](#); railway couplings [B61G](#); bicycle frames [B62K](#); couplings for transmitting rotation [F16D](#); couplings for tubes conveying fluids [F16L](#))

**F16B 7/10** · Telescoping systems ({for vertically adjustable chairs [A47C 3/20](#); telescopic steering columns [B62D 1/18](#)}; for scaffolding [E04G 25/04](#); {-telescopic masts, poles or the like [E04H 12/182](#); telescopic door or window holders [E05C 17/30](#)}; telescope props for mining [E21D 15/14](#) to [E21D 15/46](#); stands or trestles as supports for apparatus or articles placed thereon {[F16M 11/26](#)})

**F16B 15/00** Nails; Staples (surgical staples [A61B 17/064](#); manufacture of nails or staples [B21G](#); {-drawing-pins, thumb-tacks [B43M 15/00](#)}; railway spikes [E01B 9/06](#))

**U F16B 19/00** Bolts without screw-thread; Pins, including deformable elements (in screwed connections [F16B 29/00](#)); Rivets (means for preventing withdrawal [F16B 21/00](#))

**F16B 19/002** · {Resiliently deformable pins (~~[F16B-21/06](#) takes precedence~~[F16B 21/06](#) takes precedence)}

**Project: N/A (F16C)**

**F16C 13/00** Rolls, drums, discs, or the like (guide rollers in feeding webs [B65H 27/00](#); calender rolls, bearings therefor [D21G 1/02](#); rotary drums or rollers for heat-exchange or heat-transfer apparatus [F28F 5/02](#)-; special adaptations, see the relevant classes); Bearings or mountings therefor

**F16C 19/00** Bearings with rolling contact, for exclusively rotary movement (adjustable bearings [F16C 23/00](#), [F16C 25/00](#); {-electrically insulating bearings [H02K 5/173](#)})

**F16C 23/00** Bearings for exclusively rotary movement adjustable for aligning or positioning ([F16C 27/00](#) takes precedence; {-hydrostatic bearings [F16C 32/067](#)})

- F16C 29/00** Bearings for parts moving only linearly ([F16C 32/06](#) takes precedence; incorporated in flexible shafts [F16C 1/28](#) {parts of bearings in general and special methods for making bearings or parts thereof in general [F16C 33/00](#)})
- U F16C 33/00** Parts of bearings; Special methods for making bearings or parts thereof (metal-working or like operations, see the relevant classes)
- U F16C 33/02 · Parts of sliding-contact bearings
- U F16C 33/04 · · Brasses; Bushes; linings
- F16C 33/06 · · · Sliding surface mainly made of metal ([F16C 33/24](#) to [F16C 33/28](#) take precedence; {-casting metal bearing surfaces [B22D 15/02](#), [B22D 19/08](#)})
- U F16C 35/00** Rigid support of bearing units; Housings, e.g. caps, covers ([F16C 23/00](#) takes precedence)
- U F16C 35/04 · in the case of ball or roller bearings
- F16C 35/06 · · Mounting {-or dismounting} of ball or roller bearings; Fixing them onto shaft or in housing
- F16C 41/00** Other accessories, {-e.g. devices integrated in the bearing not relating to the bearing function as such}

**Project: N/A (F16D)****F16D****COUPLINGS FOR TRANSMITTING ROTATION; CLUTCHES; BRAKES**NOTE

Attention is drawn to the following places:

- [A01D 69/08](#) , [A01D 69/10](#) Clutches or brakes of harvesting machines for grass or cereals;
- [A61C 1/18](#) Clutches in dental machines for boring or cutting;
- [B21B 35/14](#) Drive couplings for metal-rolling mills;
- [B30B 15/10](#) Brakes specially adapted for presses;
- [B30B 15/12](#) Clutches specially adapted for presses;
- [B41J 33/52](#) Braking devices for ribbon-feed devices in selective printing mechanisms;
- [B60K 17/00](#) Arrangement or location of clutches in vehicles;
- [B61H](#) Brakes peculiar to rail vehicles;
- [B62B 5/04](#) Braking mechanisms for hand carts;
- [B62B 9/08](#) Braking mechanisms for children`s carriages or perambulators;
- [B62C 7/00](#) Braking mechanisms for animal-drawn vehicles;
- [B62L](#) Cycle brakes;
- [B66D 5/00](#) Braking devices for lifting or hoisting gear;
- [E21B 17/02](#) Couplings for drilling rods;
- [H02P 3/04](#) Brakes for electric motors, generators, dynamo-electric converters;

[H04L 13/04](#) Clutches for apparatus for transmission of coded digital information.

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- F16D 3/19 covered by [F16D 3/50](#);
- F16D 3/27 covered by [F16D 3/265](#);
- F16D 27/07 covered by [F16D 27/06](#), [F16D 27/14](#);
- F16D 48/12 covered by [B60K 23/0808](#);
- F16D 65/35 covered by [F16D 63/00](#).

F16D 1/00 -  
F16D 9/00

**Couplings {for transmitting mechanical rotation} (fluid couplings [F16D 31/00](#) to [F16D 39/00](#); couplings or joints specially adapted for deep-drilling rods or sucker rods [E21B](#); for transmitting motion through a wall without relatively-moving surfaces [F16J 15/50](#))**

F16D 1/00

**Couplings for rigidly connecting two coaxial shafts or other movable machine elements (attachment of wheels to axles for railway carriages [B60B](#); for attachment of cranks to their shafts [F16C 3/10](#))**

U F16D 1/06

- for attachment of a member on a shaft or on a shaft-end (attachment of marine propellers on shafts [B63H 23/34](#))

U F16D 1/08

- • with clamping hub; with hub and longitudinal key

F16D 1/0805

- • • {with radial clamping due to deformation of a resilient body or a body of fluid ([F16D 1/091](#) takes precedence; elastic couplings [F16D 3/80](#); fluid pressure clutches [F16D 25/04](#))}

F16D 1/0817

- • • {with radial clamping due to rotation along an eccentric surface, e.g. arcuate wedging elements (similar clutches [F16D 17/00](#); similar free-wheel clutches [F16D 41/06](#))}

F16D 1/0823

- • • {with radial clamping of a helical wrap spring on the shaft or in the hub bore (similar clutches [F16D 13/025](#), [F16D 13/08](#), [F16D 27/025](#), [F16D 27/105](#); similar slip couplings [F16D 7/022](#); similar free-wheel clutches [F16D 41/206](#))}

F16D 1/0829

- • • {with radial loading of both hub and shaft by an intermediate ring or sleeve ([F16D 1/0817](#), [F16D 1/0823](#), [F16D 1/093](#) take precedence)}

F16D 1/0852

- • • {with radial clamping between the mating surfaces of the hub and shaft ([F16D 1/0805](#) to [F16D 1/0817](#), [F16D 1/09](#) take precedence)}

F16D 3/00

**Yielding couplings, i.e. with means permitting movement between the connected parts during the drive (couplings disconnectable simply by axial movement [F16D 1/10](#); slip couplings [F16D 7/00](#))**

U F16D 3/16

- Universal joints in which flexibility is produced by means of pivots or sliding or rolling connecting parts

F16D 3/20

- • one coupling part entering a sleeve of the other coupling part and connected thereto by sliding or rolling members ([F16D 3/18](#), [F16D 3/24](#) take precedence)

#### NOTE

"coupling parts" means the driving member and the driven member of the coupling to be mounted on and rotate as a unit with the shafts or their equivalents between which the coupling is placed. An intermediate member interconnecting these parts is regarded as such an equivalent.

U F16D 3/22

- • • the rolling members being balls, rollers, or the like, guided in grooves or sockets in both coupling parts

U F16D 3/223

- • • • the rolling members being guided in grooves in both coupling parts

- F16D 3/229
- • • • Prismatic coupling parts having each groove centre-line lying on planes parallel to the axis of the respective coupling part ([F16D 3/224](#)-, [F16D 3/226](#) take precedence)
- F16D 3/26
- • Hooke`s joints or other joints with an equivalent intermediate member to which each coupling part is pivotally or slidably connected ([F16D 3/18](#)-, [F16D 3/20](#) take precedence)
- U F16D 3/50
- with the coupling parts connected by one or more intermediate members ([F16D 3/16](#) takes precedence)
- U F16D 3/72
- • with axially-spaced attachments to the coupling parts ([F16D 3/56](#) takes precedence)
- F16D 3/725
- • • {with an intermediate member made of fibre-reinforced resin (made of rubber-like material [F16D 3/74](#)-; shafts made of fibre-reinforced resin [F16C 3/026](#))}
- F16D 7/00**
- Slip couplings, e.g. slipping on overload, for absorbing shock (combined with yielding shaft couplings [F16D 3/14](#)-; fluid slip couplings [F16D 31/00](#) to [F16D 35/00](#))**
- F16D 7/02
- of the friction type (couplings in which overload initiates a decrease of coupling pressure or a disconnection, see the relevant groups for clutches {e.g. for friction overload clutches [F16D 43/21](#)})
- F16D 7/04
- of the ratchet type (similar gearings based on repeated accumulation and delivery of inertia-energy [F16H 33/08](#)-; {overload clutches of the ratchet type [F16D 43/202](#)})
- U F16D 11/00**
- Clutches in which the members have interengaging parts (arrangements for synchronisation [F16D 23/02](#))**
- F16D 11/14
- with clutching members movable only axially ([F16D 11/02](#)-, [F16D 11/08](#) take precedence)
- F16D 11/16
- with clutching members movable otherwise than only axially ([F16D 11/02](#)-, [F16D 11/08](#) take precedence)
- U F16D 13/00**
- Friction clutches (arrangements for synchronisation [F16D 23/02](#))**
- U F16D 13/04
- with means for actuating or keeping engaged by a force derived at least partially from one of the shafts to be connected (automatic clutches [F16D 43/00](#))
- F16D 13/06
- • with clutching members movable otherwise than only axially ([F16D 13/08](#)-, [F16D 13/12](#) take precedence)
- F16D 13/08
- with a helical band or equivalent member, which may be built up from linked parts, with more than one turn embracing a drum or the like, with or without an additional clutch actuating the end of the band ([F16D 13/02](#) takes precedence; {similar slip couplings [F16D 7/022](#)-, similar clutches electromagnetically actuated [F16D 27/025](#)-, [F16D 27/105](#)}; similar free-wheel clutches [F16D 41/20](#)-, similar brakes [F16D 49/02](#))
- F16D 13/14
- with outwardly-movable clutching members co-operating with the inner surface of a drum or the like ([F16D 13/02](#)-, [F16D 13/06](#)-, [F16D 13/12](#) take precedence; similar brakes [F16D 51/00](#))
- U F16D 21/00**
- Systems comprising a plurality of actuated clutches (for synchronisation [F16D 23/04](#))**
- F16D 21/08
- Serially-arranged clutches interconnecting two shafts only when all the clutches are engaged ([F16D 13/08](#)-, [F16D 13/12](#) take precedence)
- U F16D 23/00**
- Details of mechanically-actuated clutches not specific for one distinct type**

- F16D 23/12
- Mechanical clutch-actuating mechanisms arranged outside the clutch as such (specific for combined clutches [F16D 21/00](#); mechanisms specific for synchronisation [F16D 23/02](#))
- U F16D 25/00 Fluid-actuated clutches**
- U F16D 25/08
- with fluid-actuated member not rotating with a clutching member ([F16D 25/02](#) takes precedence {[F16D 25/048](#) takes precedence})
- U F16D 25/082
- • {the line of action of the fluid-actuated members co-inciding with the axis of rotation}
- F16D 25/087
- • • {the clutch being actuated by the fluid-actuated member via a diaphragm spring or an equivalent array of levers ([F16D 25/085](#); [F16D 25/086](#) take precedence)}
- F16D 27/00 Magnetically- {or electrically-} actuated clutches; Control or electric circuits therefor (clutches with magnetisable particles [F16D 37/02](#); {-with electro-rheological fluids [F16D 37/008](#)})**
- F16D 28/00 Electrically-actuated clutches (arrangements for synchronisation [F16D 23/02](#); clutches actuated directly by means of an electromagnet [F16D 27/00](#); automatic clutches [F16D 43/00](#) to [F16D 45/00](#); external control [F16D 48/00](#))**
- U F16D 33/00 Rotary fluid couplings or clutches of the hydro-kinetic type**
- U F16D 33/06
- controlled by changing the amount of liquid in the working circuit
- F16D 33/16
- • by means arranged externally of the coupling or clutch (mounting of such means in vehicles [B60K 23/00](#), e.g. [B60K 23/02](#))
- F16D 41/00 Freewheels or freewheel clutches (cycle brakes controlled by back-peddalling [B62L 5/00](#); {-one-way linear clutches [F16B 2007/16](#)})**
- F16D 41/04
- combined with a clutch for locking the driving and driven members ([F16D 41/02](#), [F16D 41/24](#) take precedence)
- F16D 41/06
- with intermediate wedging coupling members between an inner and an outer surface ([F16D 41/02](#), [F16D 41/24](#) take precedence)
- F16D 41/12
- with hinged pawl co-operating with teeth, cogs, or the like ([F16D 41/02](#), [F16D 41/24](#) take precedence)
- F16D 41/18
- with non-hinged detent ([F16D 41/02](#), [F16D 41/24](#) take precedence)
- F16D 41/20
- with expandable or contractable clamping ring or band ([F16D 41/02](#), [F16D 41/24](#) take precedence)
- F16D 41/22
- with clutching ring or disc axially shifted as a result of lost motion between actuating members ([F16D 41/02](#), [F16D 41/24](#) take precedence)
- F16D 43/00 Automatic clutches (varying the relationship between two coaxial shafts [F16D 3/10](#); freewheels, freewheel clutches [F16D 41/00](#))**
- U F16D 43/02
- actuated entirely mechanically
- F16D 43/26
- • acting at definite angular position or disengaging after {consecutive} definite number of rotations (actuating by means of stationary abutment [F16D 11/02](#), [F16D 13/02](#), [F16D 15/00](#); control of change-speed or reversing-gearings conveying rotary motion [F16H 59/00](#) to [F16H 63/00](#))
- U F16D 47/00 Systems of clutches, or clutches and couplings, comprising devices of types grouped under at least two of the preceding guide headings**
- F16D 47/04
- of which at least one is a freewheel ([F16D 47/02](#), [F16D 47/06](#) take precedence; freewheels combined with a clutch to lock the driving and driven members of the freewheel [F16D 41/04](#), [F16D 41/26](#))

**F16D 48/00 External control of clutches****WARNING**

Groups [F16D 48/00](#), [F16D 48/06](#), [F16D 48/08](#), [F16D 48/10](#), introduced in September 1998, are not complete. Documents from the groups [F16D 48/062](#) to [F16D 48/066](#) are in the process of being reorganised to [F16D 48/00](#), [F16D 48/08](#), [F16D 48/10](#)

- U F16D 48/02  
F16D 2048/0227
- Control by fluid pressure
  - · {Source of pressure producing the clutch engagement or disengagement action within a circuit; Means for initiating command action in power assisted devices (for details of the source or means per se [F16D 25/088](#), [F16D 29/005](#))}
- U F16D 48/06  
F16D 48/064  
F16D 48/066
- Control by electric or electronic means, e.g. of fluid pressure
  - · {Control of electrically or electromagnetically actuated clutches ([F16D 48/062](#), [F16D 48/068](#) take precedence)}
  - · {Control of fluid pressure, e.g. using an accumulator ([F16D 48/062](#), [F16D 48/068](#) take precedence)}
- F16D 49/00 -  
F16D 71/00**
- Brakes (electrodynamic brake systems for vehicles in general [B60L](#); dynamo-electric brakes [H02K](#))**
- F16D 67/00**
- Combinations of couplings and brakes; Combinations of clutches and brakes (combinations of couplings and clutches [F16D 47/02](#); conjoint control of brake systems and driveline clutches in vehicles [B60W 10/02](#), [B60W 10/18](#))**
- F16D 69/00**
- Friction linings; Attachment thereof; Selection of coating friction substances or surfaces (clutching elements [F16D 13/60](#); braking members [F16D 65/02](#))**
- F16D 71/00**
- Mechanisms for bringing members to rest in a predetermined position (combined with or controlling clutches [F16D 43/26](#); means for initiating operation of brakes at a predetermined position [F16D 65/14](#); means for securing members after operation [F16B 1/02](#))**
- U **F16D 2300/00**
- U F16D 2300/02  
F16D 2300/021
- Special features for couplings or clutches**
- Overheat protection, i.e. means for protection against overheating
  - · Cooling features not provided for in group [F16D 13/72](#) or [F16D 25/123](#), e.g. heat transfer details

**Project: N/A (F16F)****F16F****SPRINGS; SHOCK-ABSORBERS; MEANS FOR DAMPING VIBRATION****NOTES**

1. This subclass covers:
  - springs, shock-absorbers or vibration-dampers;
  - their arrangement in, or adaptation for, particular apparatus if not provided for in the subclasses covering said apparatus.
2. This subclass does not cover inventions concerning the arrangement or adaptation of springs, shock-absorbers or vibration-dampers in, or for, particular apparatus, if provided for in the subclasses concerning the said apparatus, e.g. [A47C 23/00](#)
  - to [A47C 27/00](#) Spring mattresses
  - {[A61F 2/00](#) Prostheses }
  - [A63C 5/075](#) Vibration dampers in skis
  - [B60G](#) Vehicle suspensions
  - [B60R 19/24](#) Mounting of bumpers on vehicles

<a href="#">B61F</a>	Rail vehicle suspensions
<a href="#">B61G 11/00</a>	Buffers for railway or tramway vehicles
<a href="#">B62D 21/15</a>	Vehicle chassis frames having impact absorbing means
<a href="#">B62J 1/02</a>	Resiliently mounted saddles on cycles
<a href="#">B62K 21/08</a>	Steering dampers
<a href="#">B63H 21/30</a>	Anti-vibration mounting of marine propulsion plant in ships
<a href="#">B64C 25/58</a>	Arrangement of shock-absorbers or springs in aeroplane alighting gear
<a href="#">B65D 81/02</a>	Containers, packing elements or packages with shock-absorbing means
<a href="#">D06F 37/20</a>	Resilient mountings in washing machines
<a href="#">D06F 49/06</a>	Resilient mountings in domestic spin-dryers
{ <a href="#">E04B 1/98</a>	Protection of buildings against vibrations
or shocks }	
<a href="#">E05D 7/086</a>	Braking devices structurally combined with hinges
<a href="#">F03G 1/00</a>	Spring motors
{ <a href="#">F16L 3/20</a>	Pipe or cable supports }
<a href="#">F21V 15/04</a>	Resilient mounting of lighting devices
<a href="#">F41A 25/00</a>	Gun cradles to permit recoil
<a href="#">F41B 5/1426</a>	Vibration dampers for archery bows
<a href="#">G01D 11/00</a>	Indicating or recording in connection with measuring
<a href="#">G01G 21/10</a>	Weighing apparatus, e.g. arrangement of shock-absorbers in weighing apparatus
<a href="#">G04B</a>	Clocks, watches
<a href="#">G12B 3/08</a>	Damping of movements in instruments
<a href="#">G21C 7/20</a>	Disposition of shock-absorbing devices for displaceable control elements in nuclear reactors.
{ <a href="#">H02G 7/14</a>	Arrangements or devices for damping mechanical oscillations of power lines }

3. Mention of "steel" or "metal" in groups [F16F](#), unless specific mention is made otherwise, should be seen in the light of the title of group [F16F 1/00](#), i.e. material having low internal friction. This normally includes composite materials such as fibre-reinforced plastics.

4. Mention of "rubber" or "plastics" in group [F16F](#), unless specific mention is made otherwise, should be seen in the light of the title of group [F16F 1/36](#), i.e. material having high internal friction. This normally does NOT include composite materials such as fibre-reinforced plastics except in the case of groups [F16F 1/366](#) to [F16F 1/3686](#) and [F16F 15/305](#).

#### WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">F16F 3/07</a>	covered by	<a href="#">F16F 13/00</a>	
<a href="#">F16F 9/24</a>	covered by	<a href="#">F16F 9/22</a>	
<a href="#">F16F 9/40</a>	covered by	<a href="#">F16F 9/00</a>	to
<a href="#">F16F 9/50</a>			
<a href="#">F16F 9/508</a>	covered by	<a href="#">F16F 9/512</a>	
<a href="#">F16F 11/00</a>	covered by	<a href="#">F16F 7/00</a>	,
<a href="#">F16F 9/00</a>	,	<a href="#">F16F 15/00</a>	
<a href="#">F16F 13/12</a>	covered by	<a href="#">F16F 13/08</a>	

- F16F 1/00 Springs (working with fluid [F16F 5/00](#), [F16F 9/00](#))**
- F16F 1/02
- made of steel or other material having low internal friction {(characterised by their special construction from fibre-reinforced plastics [F16F 1/366](#); spring units consisting of several springs [F16F 3/02](#); making springs from wire [B21F 35/00](#)); Wound, torsion, leaf, cup, ring or the like springs, the material of the spring not being relevant
- F16F 1/025
- • {characterised by having a particular shape ([F16F 1/04](#), [F16F 1/14](#), [F16F 1/18](#), [F16F 1/32](#), [F16F 1/34](#) take precedence)}
- U F16F 1/04
- • Wound springs {(making springs by coiling wire [B21F 3/00](#))}
- F16F 1/041
- • • {with means for modifying the spring characteristics ([F16F 1/12](#), [F16F 3/06](#) take precedence; fluid regulation of coil spring characteristics in vehicle suspensions [B60G 17/0272](#))}
- F16F 1/12
- • • Attachments or mountings {([F16F 1/041](#), [F16F 13/02](#) take precedence; of combinations of vibration damper and mechanical spring for vehicle suspension units [B60G 15/02](#))}
- F16F 1/123
- • • • {characterised by the ends of the spring being specially adapted, e.g. to form an eye for engagement with a radial insert ([F16F 1/122](#), [F16F 1/125](#) take precedence)}
- F16F 1/125
- • • • {where the end coils of the spring engage an axial insert ([F16F 1/126](#), [F16F 1/128](#) take precedence)}
- F16F 1/18
- • Leaf springs {(planar springs in general [F16F 1/027](#); "Belleville"-type springs with generally radial arms [F16F 1/324](#))}
- F16F 1/26
- • • Attachments or mountings {([F16F 1/182](#), [F16F 1/22](#), [B60G 11/10](#) take precedence)}
- U F16F 1/36
- made of rubber or other material having high internal friction, {e.g. thermoplastic elastomers (spring units consisting of several springs [F16F 3/08](#))}
- F16F 1/3605
- • {characterised by their material ([F16F 1/362](#), [F16F 1/364](#), [F16F 1/366](#), [F16F 1/37](#) take precedence; composition of macromolecular compounds in general [C08L](#))}
- F16F 1/366
- • made of fibre-reinforced plastics, {i.e. characterised by their special construction from such materials}
- NOTE**
- Attention is drawn to notes following the subclass title regarding interpretation of the term "plastics" in groups [F16F](#), in particular as regards the subject matter of groups [F16F 1/366](#) to [F16F 1/3686](#).
- F16F 1/371
- • characterised by inserts or auxiliary extension {or exterior} elements, e.g. for rigidification ([F16F 1/387](#) takes precedence; {-non-embedded reinforcing elements for flexibly-walled air springs [F16F 9/0436](#))}
- F16F 1/38
- • with a sleeve of elastic material between a rigid outer sleeve and a rigid inner sleeve or pin, {i.e. bushing-type (hydraulically-damped bushes [F16F 13/14](#); suppression of vibrations in rotating systems by making use of elastomeric spring members between rotating elements, driveline torque being transmitted therebetween [F16F 15/126](#), by making use of a dynamic damping mass attached to a rotating element by means of elastomeric springs [F16F 15/14](#); pivots per se [F16C 11/00](#); elastic or yielding bearings or bearing supports [F16C 27/00](#); parts of sliding-contact bearings, e.g. bushes [F16C 33/04](#))}
- F16F 1/3835
- • • {characterised by the sleeve of elastic material, e.g. having indentations or made of materials of different hardness ([F16F 1/3807](#), [F16F 1/387](#) take precedence)}
- F16F 1/3863
- • • {characterised by the rigid sleeves or pin, e.g. of non-circular cross-section ([F16F 1/3807](#), [F16F 1/387](#) take precedence)}

- F16F 1/42
- characterised by the mode of stressing
- NOTE  
Classification of documents in groups [F16F 1/42](#) to [F16F 1/54](#), concerning the mode of stressing of elastomeric springs, is to be considered only when classification in other subgroups of [F16F 1/36](#) would be unsuitable. Attention is drawn to the parallel scheme of indexing codes under [F16F 2236/00](#).
- F16F 3/00**      **Spring units consisting of several springs, e.g. for obtaining a desired spring characteristic (~~F16F 1/32~~, ~~F16F 1/34~~, ~~F16F 7/14~~ take precedence) ; if including fluid springs ~~F16F 5/00~~, ~~F16F 13/00~~)**
- NOTE  
In this group, vehicle leaf spring units, i.e. "packets" of individual leaves, are considered as a single spring
- U F16F 3/08
- with springs made of a material having high internal friction, e.g. rubber {(multi-part grommet-type resilient mountings [F16F 1/3735](#))}
- F16F 3/087
- Units comprising several springs made of plastics or the like material (~~F16F 1/40~~, {~~F16F 1/545~~} take precedence)
- F16F 7/00**      **Vibration-dampers; Shock-absorbers (using fluid ~~F16F 5/00~~, ~~F16F 9/00~~; specific for rotary systems ~~F16F 15/10~~; {-belt tensioners ~~F16H 7/12~~)}**
- F16F 7/02
- with relatively-rotatable friction surfaces that are pressed together ([F16F 7/01](#) takes precedence; one of the members being a spring [F16F 13/02](#); {-friction devices between relatively-movable parts of a hinge [E05D 11/08](#); braking devices for wings [E05F 5/00](#))}
- F16F 7/08
- with friction surfaces rectilinearly movable along each other ([F16F 7/01](#) takes precedence; {-one of the members being a spring [F16F 13/02](#))}
- F16F 7/10
- using inertia effect (~~F16F 13/108~~, ~~F16F 13/22~~, ~~F16F 15/10~~, ~~F16F 15/22~~ take precedence; stabilising vehicle bodies by means of movable masses [B62D 37/04](#); protection of buildings against vibrations or shocks by mass dampers [E04B 1/985](#); arrangements or devices for damping mechanical oscillations of power lines [H02G 7/14](#))}
- F16F 7/12
- using plastic deformation of members {([F16F 9/30](#) takes precedence; yieldable means for mounting bumpers on vehicles [B60R 19/26](#); yieldable or collapsible steering columns [B62D 1/192](#))}
- F16F 7/123
- {-Deformation involving a bending action, e.g. strap moving through multiple rollers, folding of members ([F16F 7/125](#), [F16F 7/128](#) take precedence)}
- F16F 7/125
- {-Units with a telescopic-like action as one member moves into, or out of a second member (~~F16F 7/124~~, ~~F16F 7/127~~, [F16F 7/128](#) take precedence)}
- F16F 9/00**      **Springs, vibration-dampers, shock-absorbers, or similarly-constructed movement-dampers using a fluid or the equivalent as damping medium ([F16F 5/00](#) takes precedence; connection of valves to inflatable elastic bodies [B60C 29/00](#); {-braking devices, stops or buffers for wing-operating appliances ~~E05F 3/00~~, ~~E05F 5/00~~)}**
- U F16F 9/02
- using gas only {or vacuum ([F16F 9/006](#) takes precedence)}
- U F16F 9/0209
- {-Telescopic ([F16F 9/04](#) takes precedence)}
- F16F 9/0218
- {-Mono-tubular units (~~F16F 9/0227~~, ~~F16F 9/0236~~, [F16F 9/0245](#) take precedence)}
- U F16F 9/04
- in a chamber with a flexible wall {(producing hollow articles of plastics, e.g. air bellows, [B29D 22/00](#))}
- F16F 9/0454
- {-characterised by the assembling method or by the mounting arrangement, e.g. mounting of the membrane (~~F16F 9/0409~~, [F16F 9/0445](#) take precedence)}

- F16F 9/0472
  - • • {characterised by comprising a damping device (with plastic deformation of members [F16F 7/12](#); delay devices or arrangements [F15B 21/10](#))}
- F16F 9/049
  - • • {multi-chamber units ([F16F 9/0472](#)-, [F16F 9/05](#) take precedence)}
- U F16F 9/06
  - using both gas and liquid {([F16F 9/486](#) take precedence; self-pumping fluid springs [B60G 17/044](#))}
- F16F 9/064
  - • {Units characterised by the location or shape of the expansion chamber ([F16F 9/068](#)-, [F16F 9/08](#) take precedence)}
- F16F 9/066
  - • {Units characterised by the partition, baffle or like element ([F16F 9/068](#)-, [F16F 9/08](#) take precedence)}
- F16F 9/30
  - with solid or semi-solid material, e.g. pasty masses, as damping medium {(in devices where rotary elements are damped by viscous shear effect only, any throttling effect being immaterial [F16F 9/12](#);-; where members moving with a rotating system are being damped [F16F 15/16](#))}
- U F16F 9/32
  - Details
- F16F 9/34
  - • Special valve constructions ({[F16F 9/44](#)-, [F16F 9/50](#) take precedence; filtering details [F16F 9/3285](#)}; valves in general [F16K](#)); Shape or construction of throttling passages
- F16F 9/3405
  - • • {Throttling passages in or on piston body, e.g. slots ([F16F 9/344](#)-, [F16F 9/3481](#) take precedence)}
- F16F 9/348
  - • • Throttling passages in the form of annular discs {or other plate-like elements which may or may not have a spring action}, operating in opposite directions {or singly, e.g. annular discs positioned on top of the valve or piston body ([F16F 9/341](#)-, [F16F 9/3415](#) take precedence)}
- F16F 9/3482
  - • • • {the annular discs being incorporated within the valve or piston body ([F16F 9/3484](#)-, [F16F 9/3485](#) take precedence)}
- F16F 9/36
  - • Special sealings, including sealings or guides for piston-rods ({[F16F 9/325](#)-, [F16F 9/3485](#) take precedence; arrangements for filling via piston rod sealing or guiding means [F16F 9/432](#)}; sealing of moving parts in general [F16J 15/16](#) to [F16J 15/56](#))}
- F16F 9/362
  - • • {Combination of sealing and guide arrangements for piston rods ([F16F 9/361](#)-, [F16F 9/365](#) take precedence)}
- F16F 9/44
  - • Means on or in the damper for manual or non-automatic adjustment; Such means combined with temperature correction ([F16F 9/53](#)-, {[F16F 13/26](#)} take precedence; temperature correction only [F16F 9/52](#))}
- U F16F 9/46
  - • • allowing control from a distance, {i.e. location of means for control input being remote from site of valves, e.g. on damper external wall (attachment of valve units to cylinders [F16F 9/325](#))}
- F16F 9/466
  - • • • {Throttling control, i.e. regulation of flow passage geometry ([F16F 9/464](#)-, [F16F 9/465](#) take precedence)}
- F16F 9/48
  - • Arrangements for providing different damping effects at different parts of the stroke ({[F16F 9/346](#)-, [F16F 9/516](#)}, [F16F 9/53](#) take precedence)}
- U F16F 9/50
  - • Special means providing automatic damping adjustment, {i.e. self-adjustment of damping by particular sliding movements of a valve element, other than flexions or displacement of valve discs}{[F16F 9/53](#) takes precedence}; {Special means providing self-adjustment of spring characteristics}
- F16F 9/512
  - • • Means responsive to load action, {i.e. static load} on the damper or {dynamic} fluid pressure {changes} in the damper, {e.g. due to changes in velocity ([F16F 9/504](#)-, [F16F 9/516](#) take precedence; non-automatic damper adjustment from a distance using servo control, the servo pressure being created by the flow of damping fluid [F16F 9/465](#);-; self-pumping fluid springs in vehicle suspensions [B60G 17/044](#))}

- F16F 9/53
  - • Means for adjusting damping characteristics by varying fluid viscosity, e.g. electromagnetically {(F16F 13/30 takes precedence; brakes comprising a medium with electrically or magnetically controlled friction F16D 57/002; electrorheological fluids per se C10M 171/001; magnetorheological fluids per se H01F 1/447)}
- F16F 9/54
  - • Arrangements for attachment {(grommet-type rubber mounting springs per se F16F 1/3732; construction of cylinder ends F16F 9/3242; attachments to vehicles B60G 13/001; B60G 15/00)}
- F16F 9/56
  - • Means for adjusting the length of, or for locking, the spring or damper, e.g. at the end of the stroke {(F16F 9/50 takes precedence; for telescopic gas springs or dampers F16F 9/0245; vehicle suspension locking arrangements B60G 17/005)}
- F16F 13/00**

**Units comprising springs of the non-fluid type as well as vibration-dampers, shock-absorbers, or fluid springs (F16F 5/00, {F16F 6/00, F16F 9/003} take precedence)**
- F16F 13/002
  - {comprising at least one fluid spring (F16F 13/005, F16F 13/02, F16F 13/04 take precedence)}
- U F16F 13/04
  - comprising both a plastics spring and a damper, e.g. a friction damper
- U F16F 13/06
  - • the damper being a fluid damper, e.g. the plastics spring not forming a part of the wall of the fluid chamber of the damper (F16F 13/26 takes precedence)
- U F16F 13/08
  - • • the plastics spring forming at least a part of the wall of the fluid chamber of the damper (F16F 13/20 to F16F 13/24 take precedence)
- F16F 13/14
  - • • Units of the bushing type, {i.e. loaded predominantly radially (bushes F16F 1/38; mounting brackets therefor F16F 1/3849)}
- F16F 13/20
  - • • characterised by comprising also a pneumatic spring (F16F 13/22, {F16F 13/26} take precedence)
- F16F 15/00**

**Suppression of vibrations in systems ({damping of non-rotary systems using inertia effect F16F 7/10; prevention or isolation of vibrations in machine tools B23Q 11/0032; suppression of driveline vibrations in hybrid vehicle transmissions B60W 30/20}; vehicle seat suspension devices B60N 2/50; {methods or devices for protecting against, or damping of, acoustic waves, e.g. sound G10K 11/16}); Means or arrangements for avoiding or reducing out-of-balance forces, e.g. due to motion ({vibration absorbing or balancing means for aircraft propellers B64C 11/008, for rotorcraft rotors B64C 27/001}; testing static and dynamic balance of machines or structures G01M 1/00)**
- F16F 15/005
  - {using electro- or magnetostrictive actuation means (generating of mechanical vibrations operating with electrostriction B06B 1/06, with magnetostriction B06B 1/08; vehicle suspension arrangements characterised by use of piezo-electric elements B60G 17/01941; piezo-electric, electrostrictive and magnetostrictive devices per se H01L 41/00)}
- F16F 15/02
  - Suppression of vibrations of non-rotating, e.g. reciprocating systems; Suppression of vibrations of rotating systems by use of members not moving with the rotating systems ({F16F 15/005 takes precedence}; layered products B32B; suppression of vibration in ships B63; {relieving load on bearings, using magnetic means F16C 39/06})
- U F16F 15/023
  - • using fluid means
- F16F 15/0235
  - • • {where a rotating member is in contact with fluid (rotary viscous dampers per se F16F 9/12; suppression of vibrations in rotating systems containing a fluid F16F 15/16)}
- F16F 15/03
  - • using {magnetic or} electromagnetic means (F16F 9/53, {F16F 15/005} take precedence)

- F16F 15/04
  - • using elastic means (single elements or their attachment [F16F 1/00](#) to [F16F 13/00](#)); ([F16F 15/023](#)-, [F16F 15/03](#) take precedence)}
- F16F 15/08
  - • • with rubber springs {(grommet- or bushing-type resilient mountings [F16F 1/3732](#)-, [F16F 1/38](#)); with springs made of rubber and metal (arrangement of internal-combustion or jet-propulsion units [B60K 5/12](#)-; mounting of propulsion plants on vessels [B63H 21/30](#)-; mounting of vehicle drivers` cabs [B62D 33/0604](#))}
- F16F 15/10
  - Suppression of vibrations in rotating systems by making use of members moving with the system (by balancing [F16F 15/22](#)-; {-yielding couplings [F16D 3/00](#)} ; with flywheels acting variably or intermittently [F16H](#)-; {-construction providing resilience or vibration-damping for gear elements [F16H 55/14](#)})
- U F16F 15/12
  - • using elastic members or friction-damping members, e.g. between a rotating shaft and a gyratory mass mounted thereon ({[F16F 15/14](#) , [F16F 15/16](#) take precedence)
- F16F 15/1207
  - • • {characterised by the supporting arrangement of the damper unit ([F16F 15/1238](#)-, [F16F 15/13164](#) take precedence)}
- U F16F 15/121
  - • • using springs as elastic members, e.g. metallic springs ({[F16F 15/133](#) takes precedence)}
- F16F 15/1217
  - • • • {Motion-limiting means, e.g. means for locking the spring unit in pre-defined positions ([F16F 15/1202](#)-, [F16F 15/1338](#) take precedence)}
- F16F 15/123
  - • • • Wound springs ({[F16F 15/1213](#)-, [F16F 15/1216](#)-, [F16F 15/127](#) take precedence)}
- F16F 15/1232
  - • • • • {characterised by the spring mounting ([F16F 15/12306](#)-, [F16F 15/12313](#) take precedence)}
- F16F 15/124
  - • • • Elastomeric springs ([F16F 15/123](#)-, {[F16F 15/127](#)} take precedence)
- F16F 15/129
  - • • characterised by friction-damping means ({[F16F 15/1202](#)-, [F16F 15/1238](#)} , [F16F 15/131](#) take precedence)
- U F16F 15/131
  - • • the rotating system comprising two or more gyratory masses
- U F16F 15/133
  - • • • using springs as elastic members, e.g. metallic springs
- F16F 15/134
  - • • • • Wound springs ({[F16F 15/1333](#)-, [F16F 15/1337](#)-, [F16F 15/137](#) take precedence)}
- F16F 15/1343
  - • • • • • {characterised by the spring mounting ([F16F 15/13407](#)-, [F16F 15/13415](#) take precedence)}
- F16F 15/136
  - • • • • Plastics springs, e.g. made of rubber ([F16F 15/134](#)-, {[F16F 15/137](#)} take precedence)
- F16F 15/14
  - • using masses freely rotating with the system, {i.e.uninvolved in transmitting driveline torque, e.g. rotative dynamic dampers (compensation of inertia forces [F16F 15/22](#)-; weights for balancing rotating bodies [F16F 15/32](#))}
- U F16F 15/1407
  - • • {the rotation being limited with respect to the driving means}
- F16F 15/1414
  - • • • {Masses driven by elastic elements ([F16F 15/145](#)-, [F16F 15/1464](#) take precedence)}
- F16F 15/16
  - • using a fluid {or pasty material} ([F16F 9/53](#)-, [F16F 15/13157](#) take precedence; devices connecting input and output members [F16D](#))
- F16F 15/18
  - • using electric, {magnetic or electromagnetic} means ({suppression of vibrations of rotating systems by use of non-rotating magnetic or electromagnetic means [F16F 15/03](#)-; } dynamo-electric devices [H02K](#); {-control effected upon generator excitation circuit to reduce harmful effects of overloads or transients [H02P 9/10](#)})

- F16F 15/22
- Compensation of inertia forces {(suppression of vibrations of rotating systems by favourable grouping or relative arrangements of the moving members of the system or systems [F16F 15/20](#); counterweights [F16F 15/28](#); correcting-weights for balancing rotating bodies [F16F 15/32](#))}
- F16F 15/28
- Counterweights, {i.e. additional weights counterbalancing inertia forces induced by the reciprocating movement of masses in the system, e.g. of pistons attached to an engine crankshaft (rotating balancer shafts [F16F 15/264](#); correcting-weights for balancing rotating bodies [F16F 15/32](#)); Attaching or mounting same
- F16F 15/30
- Flywheels ([F16F 15/16](#), [F16F 15/28](#) take precedence; suppression of vibrations in rotating systems using elastic members or friction-damping members moving with the system, {i.e. split flywheels or single masses connected to a hub by elastic members or friction-damping members} [F16F 15/12](#); rotary-body aspects in general [F16C 13/00](#), [F16C 15/00](#))
- F16F 15/32
- Correcting- or balancing-weights or equivalent means for balancing rotating bodies, e.g. vehicle wheels {(suppression of vibrations in rotating systems by using freely rotating masses [F16F 15/14](#); compensation of inertia forces [F16F 15/22](#); compensating unbalance for testing purposes [G01M 1/30](#))}
- F16F 15/322
- • {the rotating body being a shaft ([F16F 15/34](#), [F16F 15/36](#) take precedence)}

**Project: N/A (F16G)**

- U F16G 1/00** **Driving-belts (V-belts [F16G 5/00](#); conveyer belt [B65G](#))**
- F16G 1/06
- made of rubber ([F16G 1/28](#) takes precedence; making thereof [B29D 29/00](#){  
}consisting of several parts [F16G 1/22](#))
- U F16G 11/00** **Means for fastening cables or ropes to one another or to other objects; Caps or sleeves for fixing on cables or ropes (attaching ropes or cables to lift cars or cages [B66B 7/08](#), to winch drums or barrels [B66D 1/34](#); ground anchors [E02D 5/00](#); anchoring devices for prestressed members [E04C 5/00](#); rope clamps in earth drilling [E21B 19/12](#))**
- F16G 11/04
- with wedging action, e.g. friction clamps ([F16G 11/02](#), {[F16G 11/10](#)} take precedence; {-eyes for grommet-thimble type fastenings [F16G 11/146](#))}
- WARNING  
Subgroups of [F16G 11/04](#) pending a reorganisation, see also [F16G 11/04](#)

**Project: N/A (F16H)**

- F16H** **GEARING {(steering of motor vehicles by differentially driving ground-engaging elements on opposite vehicle sides [B62D 11/02](#))}**
- NOTES
1. Combinations including mechanical gearings are classified in groups [F16H 37/00](#) or [F16H 47/00](#), unless they are provided for in groups [F16H 1/00](#) to [F16H 35/00](#).
  2. In this subclass, sets of rigidly-connected members are regarded as single members.
  3. In this subclass, the following terms or expressions are used with the meanings indicated:
    - "toothed gearing" includes worm gearing and other gearing involving at least one wheel or sector provided with teeth or the equivalent, EXCEPT gearing with chains or toothed belts, which is treated as friction gearing;
    - "conveying motion" includes transmitting energy, and means that the applied and resultant motions are of the same kind, though they may differ in, e.g. speed, direction extent;
    - "rotary" implies that the motion may continue indefinitely;

- "oscillating" means moving about an axis to an extent which is limited by the construction of the gearing, and which may exceed one revolution, the movement being alternately forwards and backwards during continued operation of the gearing;
- "reciprocating" means moving substantially in a straight line, the movement being alternately forwards and backwards during continued operation of the gearing;
- "reversing" or "reversal" means that an applied movement in one direction may produce a resultant movement in either of two opposed directions at will;
- "central gears" includes any gears whose axis is the main axis of the gearing.

4. Attention is drawn to the following places:

[A01D 69/06](#) Gearings in harvesting machines  
[A63H 31/00](#) Gearing for toys  
[B21B 35/12](#) Toothed-wheel gearing for metal-rolling mills  
[B60K](#) Arrangement of transmissions in vehicles  
[B61C 9/00](#) Transmissions for railway locomotives  
[B62D 3/00](#) Vehicle steering gears  
[B62M](#) Transmissions for cycles  
[B63H 23/00](#) Transmissions for marine propulsions  
[B63H 25/00](#) Marine steering gears  
{ [B64C 27/12](#) , [B64C 27/58](#) Transmissions for helicopters  
[B64D 35/00](#) Transmissions for aircraft }  
[F01](#) to [F04](#) Machines, engines, pumps  
[F15B 15/00](#) Gearings associated with fluid-actuated devices  
[G01D 5/04](#) Gearing used in indicating or recording apparatus in connection with measuring devices  
[H03J 1/00](#) Driving arrangements for tuning resonant circuits  
[H04L 13/04](#) Driving mechanisms for apparatus for transmission of coded digital information.

- U F16H 3/00** **Toothed gearings for conveying rotary motion with variable gear ratio or for reversing rotary motion (speed-changing or reversing mechanisms [F16H 59/00](#) to [F16H 63/00](#))**
- U F16H 3/02  
F16H 3/06
- without gears having orbital motion
  - with worm and worm-wheel or gears essentially having helical or herring-bone teeth
- NOTE**  
In groups [F16H 3/08](#), [F16H 3/16](#) and [F16H 3/20](#), gears which can be put out of mesh are not taken into consideration if they are used for reversal only.
- U F16H 3/08  
F16H 3/083
- exclusively or essentially with continuously meshing gears, that can be disengaged from their shafts
  - with radially acting and axially controlled clutching members, e.g. sliding keys {(clutches with clutching members movable otherwise than only axially [F16D 11/12](#); clutches with wedgeable clutching members [F16D 15/00](#); systems of mechanically actuated clutches [F16D 21/04](#))}

- F16H 3/087
- • • characterised by the disposition of the gears ([F16H 3/083](#)-, [F16H 3/085](#) take precedence)
- NOTE  
When counting the countershafts, the reverse countershaft is not taken into consideration if it is used for reversal only.
- F16H 7/00**      **Gearings for conveying rotary motion by endless flexible members (specific for conveying rotary motion with variable gear ratio or for reversing rotary motion [F16H 9/00](#);- {Belts, V-belts, ropes, cables, and chains [F16G](#)-, chain-wheels [F16H 55/30](#);- pulleys [F16H 55/36](#)})**
- U F16H 7/02      • with belts; with V-belts
- F16H 7/023      • • {with belts having a toothed contact surface or regularly spaced bosses or hollows for slipless or nearly slipless meshing with complementary profiled contact surface of a pulley (toothed belts [F16G 1/28](#)-, [F16G 5/20](#))}  
F16H 7/08      • Means for varying tension of belts, ropes, or chains (pulleys of adjustable construction [F16H 55/52](#);- {gearings with endless belts [F16H 7/02](#);- tensioning for chains or belts specially adapted for cycles [B62M 9/16](#);- belt or chain tensioning arrangements for endless conveyers [B65G 23/44](#)})
- U F16H 9/00**      **Gearings for conveying rotary motion with variable gear ratio, or for reversing rotary motion, by endless flexible members (control of change-speed or reversing-gearings conveying rotary motion [F16H 59/00](#) to [F16H 63/00](#))**
- U F16H 9/02      • without members having orbital motion  
F16H 9/04      • • using belts, V-belts, or ropes (with toothed belts [F16H 9/24](#);- pulleys of adjustable construction [F16H 55/52](#))  
F16H 9/24      • • using chains or toothed belts, belts in the form of links; Chains or belts specially adapted to such gearing (toothed belts [F16G 1/28](#);- V-belts in the form of links [F16G 5/18](#);- toothed V-belts [F16G 5/20](#))
- F16H 13/00**      **Gearings for conveying rotary motion by friction between rotary members (specific for conveying rotary motion with variable gear ratio or for reversing rotary motion [F16H 15/00](#);- {friction discs [F16H 55/32](#)})**
- F16H 15/00**      **Gearings for conveying rotary motion with variable gear ratio, or for reversing rotary motion, by friction between rotary members ({gearings for reversal only [F16H 3/14](#)-, [F16H 3/60](#)} ; control of change-speed or reversing-gearings conveying rotary motion [F16H 59/00](#) to [F16H 63/00](#))**
- F16H 19/00**      **Gearings comprising essentially only toothed gears or friction members and not capable of conveying indefinitely-continuing rotary motion (with intermittently-driving members [F16H 27/00](#) - [F16H 31/00](#);- rope or like tackle for lifting or haulage [B66D 3/00](#))**
- U F16H 21/00**      **Gearings comprising primarily only links or levers, with or without slides**
- U F16H 21/10      • all movement being in or parallel to a single plane
- U F16H 21/16      • • for interconverting rotary motion and reciprocating motion
- U F16H 21/18      • • • Crank gearings; Eccentric gearings  
F16H 21/20      • • • with adjustment of throw (adjustable cranks or eccentrics [F16C 3/28](#);- adjustable connecting-rods [F16C 7/06](#))
- U F16H 23/00**      **Wobble-plate gearings; Oblique-crank gearings {(conveying rotary motion with toothed nutating gears [F16H 1/321](#))}**
- F16H 23/02      • with adjustment of throw by changing the position of the wobble-member ([F16H 29/04](#)-, [F16H 33/10](#) take precedence)

- F16H 27/00** Step-by-step mechanisms without freewheel members, e.g. Geneva driven (rotary gearings with cyclically-varying velocity ratio [F16H 35/02](#); impulse couplings [F16D 5/00](#); clockwork escapements [G04B 15/00](#))
- F16H 29/00** Gearings for conveying rotary motion with intermittently-driving members, e.g. with freewheel action (freewheels [F16D 41/00](#); {-Gearings for converting oscillating or reciprocating movement with freewheeling members or other intermittently-driving members into a rotary movement [F16H 31/00](#)})
- F16H 29/02
  - between one of the shafts and an oscillating or reciprocating intermediate member, not rotating with either of the shafts ([F16H 29/20](#), [F16H 29/22](#) take precedence)
- F16H 29/12
  - between rotary driving and driven members ([F16H 29/20](#), [F16H 29/22](#) take precedence)
- F16H 31/00** Other gearings with freewheeling members or other intermittently driving members ([F16H 21/00](#), [F16H 23/00](#), [F16H 25/00](#) take precedence; gearings involving the use of automatic changing-mechanisms, e.g. cyclically-actuated reversal gearings, see the appropriate groups)
- U F16H 31/003
  - {Step-by-step mechanisms for rotary motion}
- F16H 31/005
  - {with pawls driven by a reciprocating or oscillating transmission member ([F16H 31/002](#), [F16H 31/004](#) take precedence)}
- U F16H 35/00** Gearings or mechanisms with other special functional features
- F16H 35/06
  - Gearings designed to allow relative movement between supports thereof without ill effects ([F16H 1/26](#), [F16H 1/48](#) take precedence; {-mounting or supporting gearboxes [F16H 57/025](#)})
- U F16H 37/00** Combinations of mechanical gearings, not hereinbefore provided for (applications of "underdrives" or "overdrives" in motor vehicles, combinations with differential gearings in motor vehicles [B60K](#))
- F16H 37/12
  - Gearings comprising primarily toothed or friction gearing, links or levers, and cams, or members of at least two of these types ([F16H 21/14](#), [F16H 21/28](#), [F16H 21/30](#) take precedence; toothed or friction gearing or cam gearing with only an additional lever or link, see the appropriate group for the main gearing)
- F16H 39/00 - F16H 49/00** Fluid gearing (fluid actuators [F15B](#); couplings or clutches with a fluid or semi-fluid as power-transmitting means [F16D 31/00](#) to [F16D 39/00](#); fluid-resistance brakes [F16D 57/00](#))
- F16H 43/00** Other fluid gearing, e.g. with oscillating input or output {(generating mechanical vibrations of infrasonic or sonic frequency [B06B](#); percussive tools [B25D 9/00](#); mine roof supports for step by step movement [E21D 23/00](#); reciprocating-piston machines without rotary main shaft [F01B 11/08](#); fluid pressure actuators [F15B](#))}
- F16H 45/00** Combinations of fluid gearings for conveying rotary motion with couplings or clutches ([F16H 41/22](#), {[F16H 47/085](#)} take precedence; conjoint control of driveline clutches and change-speed gearing in vehicles [B60W 10/02](#), [B60W 10/10](#) {and [B60W 30/18](#)})
- NOTE  
Clutches for varying working conditions in fluid torque-converters are regarded as part of the torque converter
- U F16H 47/00** Combinations of mechanical gearing with fluid clutches or fluid gearing (conjoint control of driveline clutches and change-speed gearing in vehicles [B60W 10/02](#) and [B60W 10/10](#))

- U F16H 47/06
  - the fluid gearing being of the hydrokinetic type
- F16H 47/07
  - • using two or more power-transmitting fluid circuits  
([F16H 47/065](#)-, [F16H 47/10](#) take precedence)
- F16H 51/00 -  
F16H 57/00**
  - Details of gearing or mechanisms (of screw-and-nut gearing [F16H 25/00](#)-; of fluid gearing [F16H 39/00](#) to [F16H 43/00](#)-; shafts, Bowden mechanisms, cranks, eccentrics, bearings, pivotal, pivotal connections, crossheads, connecting-rods [F16C](#)-; chains, belts [F16G](#)-; piston-rods [F16J 7/00](#))**
- F16H 51/00
  - Levers of gearing mechanisms ({connecting rods or links pivoted at both ends [F16C 7/00](#)-; gear levers [F16H 59/00](#)}; manipulating levers [G05G](#))**
- U F16H 55/00
  - Elements with teeth or friction surfaces for conveying motion; Worms; Pulleys; Sheaves (pulley-blocks [B66D 3/04](#))**
- U F16H 55/02
  - Toothed members; Worms
- F16H 55/06
  - • Use of materials; Use of treatments of toothed members or worms to affect their intrinsic material properties {(coatings for lubrication [F16H 57/041](#)-; producing gear wheels from plastics or substances in a plastic state [B29D 15/00](#)-; heat treatment [C21D 9/32](#)-; electrolytic surface treatment [C25D](#)-; heating by electromagnetic field [H05B 6/00](#))}
- U F16H 55/08
  - • Profiling
- F16H 55/0846
  - • • {Intersecting-shaft arrangement of the toothed members ([F16H 55/0813](#)-, [F16H 55/0826](#)-, [F16H 55/0833](#)-, [F16H 55/084](#) take precedence)}
- F16H 55/0853
  - • • {Skewed-shaft arrangement of the toothed members ([F16H 55/082](#)-, [F16H 55/0826](#)-, [F16H 55/0833](#)-, [F16H 55/084](#) take precedence)}
- F16H 55/14
  - • Construction providing resilience or vibration-damping ([F16H 55/06](#) takes precedence; resilient coupling of wheel or wheel-rim with shaft [F16D 3/50](#)-, [F16D 3/80](#))
- F16H 55/17
  - • Toothed wheels ({with simple tooth shapes [F16H 55/10](#)}; worm wheels [F16H 55/22](#)-; chain wheels [F16H 55/30](#))
- F16H 55/18
  - • • Special devices for taking up backlash {(in tuner actuating devices [H03J](#)-, [H03J 1/06](#)-; in gear-train of clocks or watches [G04B 35/00](#))}
- U F16H 55/32
  - Friction members (friction surfaces [F16D 69/00](#))
- U F16H 55/36
  - • Pulleys (with features essential for adjustments [F16H 55/52](#))
- F16H 55/48
  - • • manufactured exclusively or in part of non-metallic material, e.g. plastics ([F16H 55/38](#)-, [F16H 55/42](#)-, [F16H 55/46](#) take precedence; {-manufacture of wooden wheels [B27H 7/00](#))}
- F16H 57/00**
  - General details of gearing (of screw-and-nut gearing [F16H 25/00](#)-; of fluid gearing [F16H 39/00](#) - [F16H 43/00](#))**
- F16H 57/0006
  - {Vibration-damping or noise reducing means specially adapted for gearings (devices for varying tension of belts, ropes or chains with damping means [F16H 7/0829](#)-; toothed members with construction providing vibration damping [F16H 55/14](#)-; reducing vibrations or noise of the gearbox casing [F16H 57/028](#)-; suppression of vibrations or noise of gear selectors [F16H 59/0208](#)-; control of hydrostatic fluid gearing preventing or reducing vibrations or noise [F16H 61/4183](#))}
- F16H 57/0018
  - {Shaft assemblies for gearings (camshafts with single track cams [F16H 53/02](#))}

**WARNING**  
Groups [F16H 57/0018](#) and subgroups are not complete pending a reorganisation; see also [F16H 57/021](#)-, [F16H 57/022](#)
- U F16H 57/01
  - Monitoring wear or stress of transmission elements, e.g. for triggering maintenance

- F16H 2057/018
- {Detection of mechanical transmission failures (fixing or adapting to failure [F16H 2057/0081](#); of transmission control [F16H 61/12](#))}
- U F16H 57/02
- Gearboxes; Mounting gearing therein
- NOTE**
- When classifying in this group, in the absence of an indication to the contrary, classification is made in all appropriate subgroups.
- WARNING**
- Subgroups of [F16H 57/02](#) are not complete pending reclassification; see provisionally also respective higher groups
- U F16H 57/021
- • Shaft support structures, e.g. partition walls, bearing eyes, casing walls or covers with bearings
- F16H 57/022
- • • Adjustment of transmission shafts or bearings (for compensating misalignment of axes of toothed gears without orbital motion [F16H 1/26](#); for compensating misalignment of axes of planetary gears [F16H 1/48](#))
- F16H 57/04
- Features relating to lubrication or cooling {or heating} ({in hydrokinetic gearing [F16H 41/30](#); } control of lubrication or cooling in hydrostatic gearing [F16H 61/4165](#))
- WARNING**
- Subgroups of [F16H 57/04](#) are not complete pending reclassification; see provisionally also respective higher groups
- F16H 57/0408
- • {Exchange or filling of transmission lubricant (filling or draining lubricant of or from machines or engines [F01M 11/04](#); servicing, maintaining, repairing, or refitting of vehicles [B60S 5/00](#))}
- F16H 57/0458
- • {Oil-mist or spray lubrication ; Means to reduce foam formation (lubrication by injection [F16H 57/0456](#); venting [F16H 57/027](#))}
- U F16H 57/08
- of gearing with members having orbital motion
- F16H 2057/087
- • {Arrangement and support of friction devices in planetary gearings, e.g. support of clutch drums, stacked arrangements of friction devices (see also arrangements for shifting planetary gears [F16H 3/62](#), [F16H 63/3026](#))}

**F16H 59/00 -  
F16H 63/00**

**Control of gearings conveying rotary motion**

**NOTES**

1. Attention is drawn to the Notes after the title of subclass [B60W](#).
2. In groups [F16H 59/00](#) to [F16H 63/00](#), clutches positioned within a gearbox are considered as comprising part of the gearings.
3. In groups [F16H 59/00](#) to [F16H 63/00](#), the following terms or expressions are used with the meaning indicated:
  - "final output element" means the final element which is moved to establish a gear ratio, i.e. which achieves the linking between two power transmission means, e.g. reverse idler gear, gear cluster, coupling sleeve, apply piston of a hydraulic clutch;
  - "mechanism" means a kinematic chain consisting either of a single element or alternatively of a series of elements, the position of each point on the kinematic chain being derivable from the position of any other point on the chain, and therefore, for a given position of a point on one of the elements forming the kinematic chain there is only one position for each of the other points on the elements forming the kinematic chain;
  - "final output mechanism" means the mechanism which includes the final output element;
  - "actuating mechanism" means the mechanism, the movement of which causes the movement of another mechanism by being in mutual contact;

- "final actuating mechanism" means the mechanism actuating the final output mechanism.
  - {"mechanical force" means the force transmitted by an actuating mechanism or the human body}
4. Combinations of features individually covered by group [F16H 61/00](#) and one or both of groups [F16H 59/00](#) and [F16H 63/00](#) are classified in group [F16H 61/00](#).
5. Combinations of features individually covered by groups [F16H 59/00](#) and [F16H 63/00](#) are classified in group [F16H 63/00](#).
6. When classifying in groups [F16H 59/00](#) to [F16H 63/00](#), control inputs or types of gearing, which are not identified by the preceding notes concerning combinations, and which are considered to represent information of interest for search, may also be classified. Such non-obligatory classification should be given as "additional information", e.g. selected from subgroup [F16H 61/66](#) relating to the type of gearing controlled or from group [F16H 59/00](#) relating to control inputs
- U F16H 59/02      · Selector apparatus
- NOTE  
Selection apparatus of general applicability or of interest apart from its use in control of gearings conveying rotary motion is also classified in subclass [G05G](#)
- F16H 59/0217      · {with electric switches or sensors not for gear or range selection, e.g. for controlling auxiliary devices (for gear selection [F16H 59/044](#); for range selection [F16H 59/105](#))}
- F16H 2059/0221      · {for selecting modes, i.e. input device (for selecting between different modes with range selector [F16H 2059/082](#); for conjoint control [B60W 30/182](#))}
- U F16H 61/00      **Control functions within {control units of} change-speed- or reversing-gearings for conveying rotary motion; {Control of exclusively fluid gearing, friction gearing, gearings with endless flexible members or other particular types of gearing}**
- F16H 2061/004      · {Venting trapped air from hydraulic systems (venting of hydrostatic transmissions [F16H 61/4174](#); deaeration or removal of unsolved gas [F15B 21/044](#))}
- F16H 61/02      · characterised by the signals used {(for shift actuators [F16H 61/28](#), for continuously variable gearings [F16H 61/66](#))}
- NOTES
1. Control units where gearshift is controlled by an electric circuit, are classified in [F16H 61/0202](#)
2. Control units where gearshift is controlled by hydraulic signals and a subfunction, e.g. kickdown, is controlled by an electric circuit, are classified in [F16H 61/0262](#) with indexing of the electric features
- U F16H 61/0202      · {the signals being electric ([F16H 61/04](#) takes precedence)}
- F16H 61/0248      · · {Control units where shifting is directly initiated by the driver, e.g. semi-automatic transmissions (generation of movements for final actuating mechanisms [F16H 61/28](#))}
- WARNING  
This group is not complete pending reclassification; see also groups [F16H 61/0204](#), [F16H 61/0206](#)
- U F16H 61/0262      · · {the signals being hydraulic ([F16H 61/04](#) takes precedence)}

- F16H 61/0274
- • • {Control units where shifting is directly initiated by the driver, e.g. semi-automatic transmissions (generation of movements for final actuating mechanisms [F16H 61/28](#))}
- WARNING  
This group is not complete pending reclassification; see also groups [F16H 61/0265](#), [F16H 61/0267](#)
- F16H 61/22
- Locking {of the control input devices} ([F16H 63/34](#) takes precedence; {-vehicle fittings for preventing unauthorised use, e.g. ignition keys interlocked with gear box or gear lever [B60R 25/06](#)})
- F16H 61/26
- Generation or transmission of movements for final actuating mechanisms
- NOTES
1. The generation or transmission of movements comprising only the selector apparatus, is classified in group [F16H 59/00](#).
  2. The generation or transmission of movements, when part of the final output mechanisms, is classified in group [F16H 63/00](#).
- U F16H 61/28
- • with at least one movement of the final actuating mechanism being caused by a non-mechanical force, e.g. power-assisted
- F16H 61/2807
- • • {using electric control signals, e.g. electro-hydraulic control ([F16H 61/30](#), [F16H 61/32](#) take precedence; methods for generating shift signals [F16H 61/0213](#))}
- U F16H 61/38
- Control of exclusively fluid gearing
- F16H 61/40
- • hydrostatic (involving modification of the gearing [F16H 39/02](#), [F16H 39/04](#))
- U F16H 61/48
- • hydrodynamic
- U F16H 61/50
- • • controlled by changing the flow, force, or reaction of the liquid in the working circuit, while maintaining a completely filled working circuit
- U F16H 61/58
- • • • by change of the mechanical connection of, or between, the runners
- F16H 61/62
- • • • • involving use of a speed-changing gearing or of a clutch in the connection between runners ([F16H 45/02](#), [F16H 61/60](#) take precedence)
- U F16H 63/00**
- Control outputs {from the control unit} to change-speed- or reversing-gearings for conveying rotary motion {or to other devices than the final output mechanism}**
- U F16H 63/02
- Final output mechanisms therefor; Actuating means for the final output mechanisms
- U F16H 63/30
- • Constructional features of the final output mechanisms
- F16H 2063/3093
- • • {Final output elements, i.e. the final elements to establish gear ratio, e.g. dog clutches or other means establishing coupling to shaft (fluid actuated clutches [F16H 63/3026](#); electromagnetic clutches [F16H 2063/3046](#))}
- U F16H 63/40
- comprising signals other than signals for actuating the final output mechanisms
- F16H 63/42
- • Ratio indicator devices
- WARNING  
This group is not complete pending reclassification; see also codes [B60K 2741/22](#), [B60K 2741/225](#)

**Project: N/A (F16J)**

- U F16J 3/00
- Diaphragms; Bellows; Bellows pistons (connection of valves to inflatable elastic bodies [B60C 29/00](#); bellows or the like used in instruments [G12B 1/04](#); diaphragms for electromechanical transducers [H04R 7/00](#))**

- U F16J 3/04           · Bellows  
 F16J 3/048           · · **{{with guiding or supporting means}}**

**Project: N/A (F16K)**

F16K

**VALVES; TAPS; COCKS; ACTUATING-FLOATS; DEVICES FOR VENTING OR AERATING {{(devices for emptying and evacuating the excess liquid in valves or conduits [F16L 55/07](#))}}**NOTE

Attention is drawn to the following places:

- [A47J 27/09](#)           Safety devices for pressure cookers  
[A47J 31/46](#)           Dispensing spouts, drain valves or like beverage-making apparatus  
[A61B 5/0235](#)          Valves specially adapted for measuring pressure in heart or blood vessels  
[A61F 2/24](#)           Heart valves  
[A61M 16/20](#)          Valves specially adapted for medical respiratory devices  
[A61M 39/00](#)          Tube connectors, tube couplings, valves or branch units specially adapted for medical use in general  
[A62B 9/02](#)           Valves for respiratory apparatus  
[A62B 18/10](#)          Valves for breathing masks or helmets  
[A62C](#)                 Fire extinguishers  
 {[B01D 35/04](#)           Plug, tap, or cock filters           }  
[B05B](#)                 Nozzles, spray heads or other discharge apparatus for spraying or atomising  
[B60C 29/00](#)          Arrangements of tyre-inflating valves relative to tyres or wheel rims; Connection of valves to wheel rims, tyres or other inflatable elastic bodies  
[B60G 17/048](#)         Valves specially adapted for adjusting vehicle fluid-spring characteristics  
[B60T](#)                 Valves specially adapted for vehicle brake control systems  
[B62D 5/08](#)           Vehicle power-assisted steering characterised by the type of valve used  
~~[B63B 7/00](#)~~ ,  
[B63C 9/00](#)           Arrangement of inflating valves for floatable life-saving equipment  
[B65D 47/04](#)          Container closures with discharging valves  
[B65D 90/32](#)          Safety valves for large containers  
[B65D 90/54](#)          Gates or closures on large containers  
[B67C 3/28](#)           Flow control devices for bottling liquids  
[B67D](#)                 Dispensing, delivering or transferring liquids  
 {[C21B 9/12](#)           Hot-blast valves for blast furnaces           }  
[E02B 8/00](#)           Details, e.g. valves, of barrages or weirs  
[E02B 13/02](#)          Closures for irrigation conduits  
 {[E03C 1/04](#)           Water-basin installations specially adapted for wash-basins or baths       }  
 {[E03C 1/05](#)           Arrangements on wash-basins for the remote control of taps       }

[E03D](#) Flushing valves for water-closets or urinals  
{[E03F 7/04](#) Valves for preventing return flow in sewer systems }  
[E05F 3/12](#) Valve arrangements in door closers  
[E21B 21/10](#) Valve arrangements in drilling-fluid circulation systems  
[E21B 34/00](#) Valve arrangements for boreholes or wells  
{[E21D 15/51](#) Arrangement of relief valves in hydraulic mine props }  
[F01B 25/10](#) Working-fluid valves for controlling machines or engines in general or of positive-displacement type  
[F01D 17/10](#) Final actuators for controlling non-positive displacement machines or engines  
[F01L](#) Cyclically operated valves for machines or engines  
[F02D 9/08](#) Throttle valves for controlling combustion engines  
[F02K 9/58](#) Propellant feed valves for rocket-engines  
[F02M](#) Carburettors, fuel injection  
[F02M 59/46](#) Valves for fuel injection pumps  
[F04](#) Pumps  
[F16F 9/34](#) Valves for shock absorbers  
~~[F16L 29/00](#)~~,  
[F16L 37/28](#) Pipe joints or quick-acting couplings with fluid cut-off means  
[F16L 55/00](#) Arrangement of valves in pipes  
[F16L 55/055](#) Valves specially adapted to prevent or minimise the effect of water hammer  
[F16L 55/46](#) Launching devices for pigs or moles  
[F16N 23/00](#) Check valves for lubrication systems  
{F16T Draining-off liquids from steam traps}  
[F17C 13/04](#) Arrangement of valves in pressure vessels  
[F22B 37/44](#) Arrangement of safety valves on steam boilers  
[F22D 5/34](#) Application of valves to automatic water-feed in boiler  
[F23L 13/00](#) Valves for air supply control to burners  
{[F23Q 2/16](#) Valves for lighters with gaseous fuel and adjustable flame }  
~~[F24C 3/12](#)~~,  
[F24C 5/16](#) Arrangement of valves on stoves or ranges  
[F24F](#) Air conditioning; Ventilation  
[F25B 41/04](#) Disposition of fluid circulation valves in refrigeration machines  
[G05D](#) Controlling non-electric variables  
[G10B 3/06](#) Valves for organs  
[G10D 9/04](#) Valves for other wind-actuated musical instruments  
{[G21C 9/06](#) Safety valves structurally associated with nuclear reactors }

{[H01M 2/12](#) Vent plugs in batteries or cells }

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[F16K 31/11](#) covered by [F16K 31/06](#), [F16K 31/08](#),  
[F16K 31/10](#),  
[F16K 31/64](#) " " [G05D](#)  
[F16K 31/66](#) " " [F16K 31/06](#); [H01F](#)  
[F16K 31/68](#) " " [G05D](#)  
[F16K 31/70](#) " " [F16K 31/002](#)  
[F16K 31/72](#) " " [F16K 31/00](#)

**F16K 1/00 -  
F16K 13/00**

**Constructional types (check valves [F16K 15/00](#))**

**NOTE**

In groups [F16K 1/00](#) to [F16K 13/00](#), an initial seal breaking or final sealing movement which is different from the opening or closing movement of the valve is not considered in determining the movement to be classified.

**F16K 1/00**

**Lift valves (or globe valves), i.e. cut-off apparatus with closure members having at least a component of their opening and closing motion perpendicular to the closing faces (in combination with sliding valves [F16K 3/246](#), [F16K 3/267](#)); diaphragm valves [F16K 7/00](#))**

- U F16K 1/32 · Details (details of more general applicability [F16K 25/00](#) to [F16K 51/00](#))
- F16K 1/34 · · Cutting-off parts, e.g. valve members, seats ([F16K 1/06](#), [F16K 1/12](#), [F16K 1/14](#), [F16K 1/26](#) take precedence)
- F16K 1/36 · · · Valve members (for double-seat valves [F16K 1/44](#); {for butterfly valves [F16K 1/222](#), [F16K 1/223](#)})

**U F16K 3/00**

**Gate valves or sliding valves, i.e. cut-off apparatus with closing members having a sliding movement along the seat for opening and closing ([F16K 5/00](#) takes precedence; in barrages or weirs [E02B 8/04](#))**

- U F16K 3/02 · with flat sealing faces; Packings therefor
- F16K 3/16 · · with special arrangements for separating the sealing faces or for pressing them together ([F16K 3/10](#), [F16K 3/14](#) take precedence)
- U F16K 3/22 · with sealing faces shaped as surfaces of solids of revolution ([F16K 13/02](#) takes precedence; with resilient valve members [F16K 3/28](#))
- U F16K 3/24 · · with cylindrical valve members
- U F16K 3/26 · · · with fluid passages in the valve member
- F16K 3/267 · · · · {Combination of a sliding valve and a lift valve ([F16K 3/262](#), [F16K 3/265](#) take precedence)}

**F16K 7/00**

**Diaphragm {valves or} cut-off apparatus, e.g. with a member deformed, but not moved bodily, to close the passage (container gates or closures operating by deformation of flexible walls [B65D 90/56](#); means for plugging pipes or hoses [F16L 55/10](#)){Pinch valves}**

**U F16K 11/00**

**Multiple-way valves, e.g. mixing valves; Pipe fittings incorporating such valves**

- U F16K 11/02 · with all movable sealing faces moving as one unit
- U F16K 11/06 · · comprising only sliding valves, {i.e. sliding closure elements}
- U F16K 11/065 · · · with linearly sliding closure members
- U F16K 11/07 · · · · with cylindrical slides
- F16K 11/0716 · · · · · {with fluid passages through the valve member ([F16K 11/0704](#), [F16K 11/0708](#), [F16K 11/0712](#) take precedence)}

**F16K 15/00 -  
F16K 24/00**

**Functional types**

**NOTE**

Attention is drawn to Note (2) following the title of subclass [G05D](#) and also the subdivisions of that subclass, according to which pressure regulators and flow regulators, e.g. flow regulating valves with pressure compensator, even with the whole regulating system contained in a valve, operating with or without auxiliary power, are covered by groups [G05D 16/00](#) or [G05D 7/00](#), respectively. However, details of the valve parts, per se, are classified in the appropriate groups of this subclass.

- U F16K 15/18                   · with actuating mechanism; Combined check valves and actuated valves  
F16K 15/183               · · {for ball check valves ([F16K 15/186](#)-, [F16K 15/188](#) take precedence)}
- F16K 21/00**               **Fluid-delivery valves, {e.g. self-closing valves} (for liquid handling [B67D](#)-; for flushing devices for water-closets or the like [E03D](#))**
- F16K 24/00**               **Devices, e.g. valves, for venting or aerating enclosures (equalising valves [F16K 17/00](#)-; arrangement or mounting in pipes or pipe systems [F16L 55/07](#)-; venting or aerating as an additional function of steam traps or like apparatus [F16T](#)-; ventilation of rooms, vehicles, see the appropriate subclass, e.g. [F24F](#))**
- U F16K 31/00**             **{Actuating devices;} Operating means; Releasing devices {(regulating means [G05D](#))}**
- U F16K 31/02               · electric {([F16K 31/004](#) takes precedence)}; magnetic
- U F16K 31/06               · · using a magnet (e.g. diaphragm valves, cutting off by means of a liquid)
- U F16K 31/08               · · · using a permanent magnet
- F16K 31/084               · · · · {the magnet being used only as a holding element to maintain the valve in a specific position, e.g. check valves ([F16K 31/082](#)-, [F16K 31/086](#) take precedence)}
- F16K 31/12               · actuated by fluid ({fluid-actuated lift valves [F16K 1/126](#)}; fluid-actuated check valves [F16K 15/00](#)-; fluid-actuated safety valves [F16K 17/00](#))
- F16K 31/122               · · {the fluid acting on a piston ([F16K 31/143](#)-, [F16K 31/163](#)-, [F16K 31/363](#)-, [F16K 31/383](#) take precedence)}
- F16K 31/126               · · {the fluid acting on a diaphragm, bellows, or the like ([F16K 31/145](#)-, [F16K 31/165](#)-, [F16K 31/365](#)-, [F16K 31/385](#) take precedence)}
- F16K 31/18               · · actuated by a float (floats [F16K 33/00](#)-; float-actuated valves in steam-traps [F16T 1/20](#)-, in boilers [F22D 5/08](#))
- U F16K 35/00**             **Means to prevent accidental or unauthorised actuation**
- F16K 35/06               · using a removable actuating or locking member, e.g. a key ([F16K 35/10](#)-, [F16K 35/12](#) take precedence)
- U F16K 41/00**             **Spindle sealings**
- U F16K 41/02               · with stuffing-box; {Sealing rings}
- F16K 41/023               · · {for spindles which only rotate, i.e. non-rising spindles ([F16K 41/043](#)-, [F16K 41/063](#) and [F16K 41/083](#) take precedence)}
- F16K 49/00**               **Means in or on valves for heating or cooling (for pipes [F16L 53/00](#)-; thermal insulation in connection with pipes or pipe systems [F16L 59/16](#))**
- U F16K 99/00**             **Subject matter not provided for in other groups of this subclass**
- F16K 99/0001             · {Micro-valves (micro-devices [B81B 1/00](#)-; manufacture or treatment of devices or systems in or on a substrate [B81C 1/00](#)-; micro-fluidic structures [B01L 3/5027](#)-; micro-pumps [F04B 19/006](#))}

**Project: N/A (F16L)**

- F16L 25/00 Constructive types of pipe joints not provided for in groups [F16L 13/00](#) to [F16L 23/00](#) (adjustable joints [F16L 27/00](#); couplings of the quick-acting type [F16L 37/00](#); specially adapted to be made of plastics or to be used with pipes made of plastics [F16L 47/00](#) ){Details of pipe joints not otherwise provided for, e.g. electrically conducting or insulating means}
- F16L 43/00 Bends; Siphons (with cleaning apertures [F16L 45/00](#); {-expansion-compensation arrangements making use of bends [F16L 51/04](#)}; siphons for water-closets [E03D 11/18](#); siphons in general [F04F 10/00](#))
- F16L 59/00 Thermal insulation in general (heat, sound insulation in buildings [E04B](#); heat insulation of steam engines [F01B 31/08](#); {-thermal or acoustic isolation for combustion engines [F02B 77/11](#)}; heat insulation in rotary piston machines [F01C 21/06](#); heat insulation of pumps [F04C 29/04](#); thermal insulation of pressure vessels [F17C 1/12](#); vessels not under pressure, with provision for insulation [F17C 3/02](#))

**Project: N/A (F16M)**

- F16M 7/00 Details of attaching or adjusting engine beds, frames, or supporting-legs on foundation or base; Attaching non-moving engine parts, e.g. cylinder blocks (elastic or equivalent mounting for absorbing vibrations [F16F](#), especially [F16F 15/04](#))
- F16M 11/00 Stands or trestles as supports for apparatus or articles placed thereon {Stands for scientific apparatus such as gravitational force meters} (without heads [F16K 13/00](#); easels or stands for blackboard or the like [A47B 97/04](#); show-stands [A47F 7/00](#); for workmen [E04G 1/32](#); {-sockets or holders for poles or posts [E04H 12/22](#)} ; supporting, suspending for lighting devices [F21V 21/00](#); special modifications for particular apparatus or articles, see the appropriate subclasses)
- U F16M 11/02 · Heads
- U F16M 11/04 · · Means for attachment of apparatus; Means allowing adjustment of the apparatus relatively to the stand
- U F16M 11/06 · · · allowing pivoting
- U F16M 11/12 · · · · in more than one direction
- F16M 11/14 · · · · · with ball-joint (ball-jointed hinges [F16C 11/06](#){ {adjustable mountings employing universal joints for lighting devices [F21V 21/26](#) to [F21V 21/30](#)})
- U F16M 11/20 · Undercarriages with or without wheels
- F16M 11/2007 · · {comprising means allowing pivoting adjustment}
- WARNING  
This group is not complete pending reclassification; see also group [F16M 11/06](#), [F16M 11/08](#), [F16M 11/10](#), [F16M 11/12](#), [F16M 11/14](#) depending on the type of movement allowed
- F16M 13/00 Other supports for positioning apparatus or articles (heads thereof [F16M 11/02](#); {-undercarriages thereof [F16M 11/20](#)} ; adapted to be stuck in the ground [A45F 3/44](#); {-sockets or holders for poles or posts [E04H 12/22](#)}); Means for steadying hand-held apparatus or articles {(supports for measuring instruments [G01D 11/30](#); supports for casings of remote control switching devices [H01H 9/025](#))}

**Project: N/A (F16N)**

- U F16N 31/00** **Means for collecting, retaining, or draining-off lubricant in or on machines or apparatus (oil separators for separating oil from exhaust steam [F22G](#))**
- F16N 31/02
- Oil catchers; Oil wipers (oil-scraping rings for pistons [F16J 9/20](#); {cleaning means for indicating or measuring dip members, e.g. dipstick wipers [G01F 23/045](#)})

**Project: N/A (F16S)**

- U F16S 1/00** **Sheets, panels, or other members of similar proportions; Constructions comprising assemblies of such members (built-up gratings [F16S 3/00](#); layered products [B32B](#))**

NOTE

In general shape the members may be flat or curved, but they may depart from such shape in detail over part or all of their area, e.g. they may be corrugated, ribbed, flanged; ribs, flanges or the like may be separately formed.

- F16S 1/14
- Assemblies of such members with members of forms covered by group [F16S 3/00](#) or [F16S 5/00](#) (such other members being for jointing only [F16S 1/02](#))

**Project: N/A (F21K)**

F21K

**LIGHT SOURCES NOT OTHERWISE PROVIDED FOR**WARNINGS

1. The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">F21K 5/04</a>	covered by	<a href="#">G03B 15/0457</a>
<a href="#">F21K 5/06</a>	" "	<a href="#">G03B 15/0442</a>
<a href="#">F21K 5/08</a>	" "	<a href="#">F21K 5/02</a> _____ ,
<a href="#">G03B 15/0442</a>		
<a href="#">F21K 5/10</a>	" "	<a href="#">G03B 15/0442</a>
<a href="#">F21K 5/12</a>	" "	<a href="#">F21K 5/023</a>
<a href="#">F21K 5/14</a>	" "	<a href="#">F21K 5/026</a> _____ ,
<a href="#">G03B 15/0489</a>		
<a href="#">F21K 5/16</a>	" "	<a href="#">G03B 15/0452</a>
<a href="#">F21K 5/18</a>	" "	<a href="#">G03B 15/0452</a>
<a href="#">F21K 5/20</a>	" "	<a href="#">G03B 15/0447</a>
<a href="#">F21K 5/22</a>	" "	<a href="#">G03B 15/0442</a>

2. Groups [F21K 9/00](#) to [F21K 9/90](#) do not correspond to former or current IPC groups.

Concordance CPC : IPC for these groups is as follows:

- [F21K 9/00](#) to [F21K 9/90](#) : [F21K 99/00](#)

F21K 2/00

**Light sources using luminescence (using excitation by another light source [F21V 9/16](#); lamps, other than those in which all the electrodes are within the vessel, in which a screen or coating is excited to luminesce by radioactive material located inside the vessel [H01J 65/08](#); using electroluminescence [H05B 33/00](#))**

F21K 5/00

**Light sources using a charge of combustible material, e.g. illuminating flash devices (explosive or thermic compositions [C06B](#); fireworks [F42B 4/00](#); photographic flash units [G03B 15/03](#))**

U F21K 5/02

- ignited in a non-disrupting container, e.g. photo-flash bulb

- F21K 5/023
- {Ignition devices in photo flash bulbs (ignition devices being part of a shutter mechanism included in a camera [G03B 9/70](#); ignition devices not being part of a shutter mechanism included in a camera [G03B 15/04](#); ignition circuits for combustion lamps [H05B 43/02](#))}

**F21K 9/00** {Electric lamps using semiconductor devices as light generating elements, e.g. using light emitting diodes [LED] or lasers (light emitting diodes per se [H01L 33/00](#), [H01L 51/50](#); semiconductor lasers per se [H01S 5/00](#); electric lamps using a combination of different types of light generation [H05B 35/00](#))}

WARNING

This group is not complete pending a reclassification; see also [F21K 99/00](#), [H01L 33/00](#), [H01S 5/00](#), [H05B 35/00](#)

**Project: N/A (F21S)**

**F21S 2/00** **Systems of lighting devices, not provided for in main groups [F21S 4/00](#) to [F21S 10/00](#) or [F21S 19/00](#), e.g. of modular construction**

**F21S 6/00** **Lighting devices intended to be free-standing ([F21S 9/00](#), [F21S 10/00](#), [F21S 13/12](#)) take precedence; {lighting devices specially adapted to be transported from place to place, e.g. lighting devices carried on wheeled supports [F21L](#); details of supports for lighting devices [F21V 21/00](#))}**

- F21S 6/001
- {being candle-shaped (with varying lighting effect of simulating flames [F21S 10/04](#); string of light sources [F21S 4/00](#))}

**F21S 8/00** **Lighting devices intended for fixed installation ([F21S 9/00](#), [F21S 10/00](#) take precedence; using a string or strip of light sources [F21S 4/00](#))**

- F21S 8/02
- of recess-mounted type, e.g. downlighters ([F21S 8/10](#) takes precedence; {-details of recessed bases [F21V 21/04](#))}

- F21S 8/03
- {of surface-mounted type ([F21S 8/02](#), [F21S 8/04](#) take precedence; details of wall or floor bases [F21V 21/02](#))}

WARNING

Group [F21S 8/03](#) does not correspond to former or future IPC groups. Correspondence CPC : IPC for this group is as following: - [F21S 8/03](#) : [F21S 8/00](#)

- F21S 8/038
- {intended to be mounted on a light track (suspended from a light track [F21S 8/066](#); details of supporting elements displaceable along a guiding element [F21V 21/34](#))}

- F21S 8/04
- intended only for mounting on a ceiling or the like overhead structures ([F21S 8/02](#) takes precedence; {-details of ceiling bases [F21V 21/03](#))}

**U F21S 10/00** **Lighting devices or systems producing a varying lighting effect**

- F21S 10/02
- changing colors {([F21S 10/002](#) to [F21S 10/007](#), [F21S 10/04](#) take precedence)}

**F21S 11/00** **Non-electric lighting devices or systems using daylight {(roofs with sky-light opening [E04D 13/03](#); sun blinds for windows with means for redirecting light onto ceiling of a room [E06B 9/00](#); hybrid lighting devices combining artificial and natural light [F21S 19/00](#); solar heat collectors [F24J 2/00](#); solar cells or solar cell modules [H01L 31/00](#))}**

**F21S 15/00** **Non-electric lighting devices or systems employing light sources not covered by main groups [F21S 11/00](#), [F21S 13/00](#) or [F21S 19/00](#)**

**Project: N/A (F21V)**

- F21V 1/00** Shades for light sources {-i.e. lampshades for table, floor, wall or ceiling lamps}
- F21V 1/12 • Composite shades {-i.e. shades being made of distinct parts}
- F21V 11/00** Screens not covered by groups [F21V 1/00](#), [F21V 3/00](#), [F21V 7/00](#) or [F21V 9/00](#) (characterised by cooling arrangements [F21V 29/502](#))
- F21V 11/06 • using crossed laminae or strips, {-e.g. grid-shaped louvers}; using lattices or honeycombs
- F21V 11/16 • using sheets without apertures, {-i.e. masks for shielding light,} e.g. fixed ([F21V 11/02](#), [F21V 11/06](#) take precedence; {-for vehicle head lamps [F21S 48/145](#)})
- F21V 13/00** Producing particular characteristics or distribution of the light emitted by means of a combination of elements specified in two or more of main groups [F21V 1/00](#)[F21V 11/00](#) (by means of a combination of two or more elements covered by a single one of main groups [F21V 1/00](#)[F21V 11/00](#), see the relevant group; changing the characteristics or distribution of the light emitted by adjustment of parts [F21V 14/00](#))
- U F21V 14/00** Changing the characteristics or distribution of the light emitted by adjustment of parts {or by interposition of elements with electrically controlled variable light transmissivity}{reflectors with provision for adjusting the curvature [F21V 7/16](#); light filters with provision for variation of colour or intensity [F21V 9/10](#); screens using iris-type diaphragms [F21V 11/10](#); adjustable mountings for lighting devices [F21V 21/14](#)}
- F21V 14/08 • by movement of the screens {-or filters}
- U F21V 15/00** Protecting lighting devices from damage (protection from thermal damage [F21V 29/00](#); gas-tight or water-tight arrangements [F21V 31/00](#))
- F21V 15/01 • Housings, e.g. material or assembling of housing parts ([F21V 15/02](#) takes precedence {-housings forming signs or letters [G09F 13/04](#)})
- WARNING  
Not complete, see [F21V 15/00](#)
- F21V 15/04 • Resilient mountings, e.g. shock absorbers (in general [F16F 15/04](#){shock absorbing devices of vehicle headlamp housings [B60Q 1/0491](#)})
- F21V 17/00** Fastening of component parts of lighting devices, e.g. shades, globes, refractors, reflectors, filters, screens, grids or protective cages (of light sources or light holders [F21V 19/00](#); gas-tight or water-tight arrangements [F21V 31/00](#); {-for vehicle rear lights [F21S 48/20](#); for vehicle head lights [F21S 48/10](#)})
- F21V 19/00** Fastening of light sources or lamp holders (fastening electric light source solely by the coupling device [H01R 33/00](#); {-special means for attaching candle to candle holder [F21V 35/003](#)})
- U F21V 21/00** Supporting, suspending, or attaching arrangements for lighting devices ([F21V 17/00](#), [F21V 19/00](#) take precedence; arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general [B60Q](#), stands for supporting apparatus or articles in general [F16M 11/00](#)); Hand grips
- U F21V 21/08** • Devices for easy attachment to any desired place, e.g. clip, clamp, magnet
- F21V 21/084 • • Head fittings (for medical purposes [A61B 1/06](#){hats or helmets with lamps [A42B 3/044](#)})

- U F21V 23/00 Arrangement of electric circuit elements in or on lighting devices**  
**{{characterised by cooling arrangements [F21V 29/508](#)}}**
- F21V 23/02 · the elements being transformers, impedances {-or power supply units, e.g. a transformer with a rectifier}
- F21V 23/06 · the elements being coupling devices, {-e.g. connectors}
- F21V 27/00 Cable-stowing arrangements structurally associated with lighting devices, e.g. reels (storing lengths of cable in general [B65H](#) {the lighting devices being vehicle headlamps [F21S 48/1109](#); the lighting devices being vehicle lights [F21S 48/212](#)})**
- U F21V 29/00 Protecting lighting devices from thermal damage; Cooling or heating arrangements specially adapted for lighting devices or systems (lighting fixtures combined with outlets for air-treatment systems [F24F 13/078](#))**
- WARNING**
- Groups [F21V 29/002](#) - [F21V 29/006](#), [F21V 29/02](#), [F21V 29/20](#), [F21V 29/2212](#), [F21V 29/30](#), [F21V 29/40](#), and [F21V 29/402](#) are no longer used for the classification of documents as of January 15, 2015. The backfile of these groups is being reclassified into groups [F21V 29/002](#) - [F21V 29/89](#).
- Until reclassification is complete, groups [F21V 29/002](#) - [F21V 29/006](#) and [F21V 29/02](#), [F21V 29/20](#), [F21V 29/2212](#), [F21V 29/30](#), [F21V 29/40](#), and [F21V 29/402](#) should be considered in order to perform a complete search.
- F21V 29/02  
 (Frozen)
- Cooling by forcing air {-or gas} over or around the light source (cooling arrangements structurally associated with electric {-discharge or incandescent} lamps [H01J 61/52](#), [H01K 1/58](#))
- WARNING**
- Group [F21V 29/02](#) is no longer used for the classification of documents as of January 15, 2015. The backfile of this group is being reclassified into groups [F21V 29/503](#), and [F21V 29/60](#) - [F21V 29/89](#).
- Until reclassification is complete, group [F21V 29/02](#) should also be considered in order to perform a complete search.

**Project: N/A (F22B)**

- U F22B 1/00 Methods of steam generation characterised by form of heating method (solar heating [F24J](#); jackets or other cooling means in which steam is generated and which serve for cooling other apparatus, see the subclasses for such apparatus)**
- U F22B 1/22 · using combustion under pressure substantially exceeding atmospheric pressure
- F22B 1/26 · · Steam boilers of submerged-flame type, i.e. the flame being surrounded by, or impinging on, the water to be vaporised{ {e.g. water in sprays}
- U F22B 37/00 Component parts or details of steam boilers (venting devices [F16K 24/00](#); steam traps or like apparatus [F16T](#))**
- U F22B 37/02 · applicable to more than one kind or type of steam boiler
- F22B 37/42 · · Applications, arrangements, or dispositions of alarm or automatic safety devices (for feed-water heaters [F22D 1/14](#); {-emergency feed-water supply [F22D 11/003](#)}; alarms responsive to undesired or abnormal conditions [G08B](#))

**Project: N/A (F22D)**

**F22D** PREHEATING, OR ACCUMULATING PREHEATED, FEED-WATER; FEED-WATER SUPPLY; CONTROLLING WATER LEVEL; AUXILIARY DEVICES FOR PROMOTING WATER CIRCULATION WITHIN BOILERS (chemical treatment of water, e.g. purification, [C02F](#); enclosed heat-exchange apparatus in general [F28D](#); controlling in general [G05](#))

**Project: N/A (F23B)**

**F23B** METHODS OR APPARATUS FOR COMBUSTION USING ONLY SOLID FUEL (for combustion of fuels that are solid at room temperatures, but burned in melted form, e.g. candle wax, [C11C 5/00](#), [F23C](#), [F23D](#); using solid fuel suspended in air [F23C](#), [F23D 1/00](#); using solid fuel suspended in liquids [F23C](#), [F23D 11/00](#); using solid fuel and fluent fuel simultaneously or alternately [F23C](#), [F23D 17/00](#); burning of low grade fuel [F23G](#); grates [F23H](#); feeding solid fuel to combustion apparatus [F23K](#); combustion chambers, not otherwise provided for [F23M](#); domestic apparatus [F24](#); central heating boilers [F24D](#); package boilers [F24H](#))

NOTE

This subclass is only concerned with the combustion of lump fuel, or of pulverulent or granulated fuel if no use is made of its fluent nature.

**Project: N/A (F23C)**

**F23C 1/00** Combustion apparatus specially adapted for combustion of two or more kinds of fuel simultaneously or alternately, at least one kind of fuel being fluent (combustion apparatus characterised by the combination of two or more combustion chambers [F23C 6/00](#); pilot flame igniters [F23Q 9/00](#))

**F23C 5/00** Disposition of burners with respect to the combustion chamber or to one another; Mounting of burners in combustion apparatus ([F23C 1/00](#), [F23C 15/00](#) take precedence)

**F23C 9/00** Combustion apparatus characterised by arrangements for returning combustion products or flue gases to the combustion chamber (fluidised bed combustion apparatus with means for recirculation of particles entrained from the bed [F23C 10/02](#); fluidised bed combustion apparatus with devices for removal and partial reintroduction of material from the bed [F23C 10/26](#))

**F23C 13/00** Apparatus in which combustion takes place in the presence of catalytic material (in a fluidised bed of catalytic particles [F23C 10/01](#); radiant gas burners using catalysis for flameless combustion [F23D 14/18](#))

**F23C 15/00** Apparatus in which combustion takes place in pulses influenced by acoustic resonance in a gas mass {(for generating combustion products of high pressure or high velocity [F23R 7/00](#); starting devices [F23D 11/42](#))}

**U F23C 99/00** Subject-matter not provided for in other groups of this subclass

**F23C 99/001** • {Applying electric means or magnetism to combustion (for combustion engines [F02B 51/04](#), [F02M 27/04](#))}

**F23C 99/003** • {Combustion process using sound or vibrations (for combustion engines [F02B 51/06](#), [F02M 27/08](#); liquid fuel burners using ultrasonic means for spraying the fuel [F23D 11/34](#))}

**Project: N/A (F23G)**

- U F23G 7/00** Incinerators or other apparatus for consuming industrial waste, e.g. chemicals (incinerator closets [A47K 11/02](#); oxidation of sludge [C02F 11/06](#); burners in general, burner details [F23D](#); incinerating radioactive waste [G21F 9/00](#))
- F23G 7/06
- of waste gases or noxious gases, e.g. exhaust gases (exhaust apparatus for engines with means for rendering the exhaust innocuous, e.g. by thermal or catalytic conversion, [F01N 3/08](#); combustion of uncombusted material from primary combustion within apparatus for combustion of solid or fluent fuel [F23B](#), {-of non combusted material from primary combustion of solid fuels [F23B 5/00](#); of gases produced by primary combustion of solid fuels [F23B 90/04](#)}, [F23C](#))

**Project: N/A (F23H)**

- F23H 7/00 Inclined {-or stepped} grates (inclined travelling grates [F23H 11/12](#))

**Project: N/A (F23J)**

- F23J 3/00 Removing solid {-deposited} residues from passages or chambers beyond the fire, e.g. from flues by soot blowers {(soot blowers per se [F28G 1/16](#))}

- F23J 11/00 Devices for conducting smoke or fumes, e.g. flues ({removing fumes other than combustion fumes from the area where they are produced, in general [B08B 15/00](#)}; heat insulation therefor [E04B 1/94](#); chimneys [E04H 12/28](#); removing cooking fumes from domestic stoves or ranges [F24C 15/20](#); {-fume conduits of furnaces, kilns, ovens, or retorts [F27D 17/002](#)})

**Project: N/A (F23N)**

- F23N REGULATING OR CONTROLLING COMBUSTION (control devices specially adapted for fluidised-bed combustion apparatus [F23C 10/28](#); condition reponsive controls for regulating combustion in domestic stoves with open fires for solid fuel [F24B 1/187](#))

- F23N 5/00 Systems for controlling combustion ([F23N 1/00](#), [F23N 3/00](#) take precedence)

- F23N 5/003
- {using detectors sensitive to combustion gas properties ([F23N 5/02](#), [F23N 5/18](#) to [F23N 5/26](#) take precedence)}

- U F23N 5/02**
- using devices responsive to thermal changes or to thermal expansion of a medium

- F23N 5/12
- • using ionisation-sensitive elements, i.e. flame rods {(testing of other ignition means, e.g. flame [F02P 17/12](#); analysing gases by investigating the ionisation by using heat [G01N 27/626](#))}

**Project: N/A (F24B)**

- U F24B 1/00** Stoves or ranges

- U F24B 1/02**
- Closed stoves

- F24B 1/04
- • built-up from glazed tiles ([F24B 1/08](#), [F24B 1/14](#) take precedence)

- F24B 1/06
- • • Construction of tiles and bracing means therefor, e.g. shim liner (forming of tiles [B28B](#); glazing of tiles [C04B](#))

- U F24B 1/18**
- Stoves with open fires, e.g. fireplaces

- U F24B 1/185
- with air-handling means, heat exchange means, or additional provisions for convection heating ([F24B 1/183](#) takes precedence; component parts or accessories having air-handling means, heat exchange means, or additional provisions for convection heating [F24B 1/191](#)); Regulating combustion; Controls therefor
- F24B 1/187
- • Condition responsive controls for regulating combustion (valves or dampers for air supply [F23L](#); regulating or controlling combustion [F23N](#); controlling or regulating in general [G05](#))
- F24B 1/189
- • characterised by air-handling means, i.e. of combustion-air, heated-air, or flue-gases, e.g. draught control dampers ([F24B 1/187](#); [F24B 1/188](#) take precedence)
- U F24B 1/191
- • Component parts; Accessories
- F24B 1/192
- • Doors; Screens; Fuel guards {(fire-screens [A47G 5/04](#); protective guards [F24C 15/36](#))}
- F24B 3/00**
- Heaters not covered by group [F24B 1/00](#), e.g. charcoal brazier (for cooking [A47J 27/00](#) to [A47J 37/00](#))**
- U **F24B 5/00**
- Combustion-air or flue-gas circulation in or around stoves or ranges (stoves with open fires with air-handling means [F24B 1/185](#))**
- U F24B 5/02
- in or around stoves
- F24B 5/021
- {combustion-air circulation (regulating combustion [F23N](#); air supply for combustion apparatus [F23L](#))}
- F24B 7/00**
- Stoves, ranges or flue-gas ducts, with additional provisions for convection heating (stoves with open fires characterised by use of heat exchange means [F24B 1/185](#); air heaters having heat generating means [F24H 3/00](#))**
- F24B 9/00**
- Stoves, ranges or flue-gas ducts, with additional provisions for heating water ([F24B 1/182](#); [F24B 1/183](#) take precedence)**
- F24B 13/00**
- Details solely applicable to stoves or ranges burning solid fuels (component parts or accessories for stoves with open-fires [F24B 1/191](#); removing ash, clinker or slag from combustion chambers [F23J 1/00](#); removing solid residues from passages or chambers beyond the fire [F23J 3/00](#); joints or connections for chimneys or flues [F23J 13/04](#); mouths or inlet holes for chimneys or flues [F23J 13/06](#); means for supervising combustion [F23M 11/04](#))**
- F24B 13/02
- Arrangement or mountings of fire-grate assemblies (grates [F23H](#)); Arrangement or mountings of linings for fire-boxes, e.g. fire-back (ceramic materials [C04B 33/00](#); [C04B 35/00](#); casings, linings, walls for combustion chambers [F23M](#))
- F24B 15/00**
- Implements for use in connection with stoves or ranges (ash sieves {in general} [B07B](#); fire lighters [C10L 11/00](#); removal of ashes [F23J](#); other devices for igniting [F23Q](#))**
- F24B 15/005
- {Igniting devices; Fire-igniting fans (bellows [F04B 45/02](#); gas pokers [F23Q 13/02](#))}

**Project: N/A (F24C)**

- F24C 9/00**
- Stoves or ranges heated by a single type of energy supply not covered by groups [F24C 3/00](#) to [F24C 7/00](#) or [F24B](#) (using the heat from an exothermal reaction not involving a supply of free oxygen gas, {using special gaseous fuel e.g. acetylene, hydrogen,} using solar energy [F24J](#))**
- U **F24C 15/00**
- Details**
- F24C 15/16
- Shelves, racks, {rotisserie spits,} or trays inside ovens; Supports therefor

**Project: N/A (F24D)**

- U F24D 3/00** Hot-water central heating systems ([F24D 10/00](#), [F24D 11/00](#) take precedence)
- F24D 3/10 · Feed-line arrangements, e.g. providing for heat-accumulator tanks, expansion tanks {-Hydraulic components of a central heating system}
- F24D 9/00** Central heating systems employing combinations of heat transfer fluids covered by two or more of groups [F24D 1/00](#) to [F24D 7/00](#) ([F24D 10/00](#), [F24D 11/00](#) take precedence)
- U F24D 19/00** Details (of water or air heaters [F24H 9/00](#); of heat-exchange or heat-transfer apparatus, of general application [F28F](#))
- F24D 19/10 · Arrangement or mounting of control or safety devices (control valves [F16K](#); only the heater being controlled [F24H 9/20](#)){-including control or safety methods}

**Project: N/A (F24F)**

- F24F 1/00** Rooms units, e.g. receiving primary air from a central station {-or with supply of heating or cooling agents from a central station, such as those applied to air-treatment systems included in [F24F 3/00](#) and [F24F 5/00](#) (arrangement or assembly of components for the primary treatment of air [F24F 11/08](#); mixing chambers for air [F24F 13/04](#))}
- WARNING  
[F24F 1/08](#) to [F24F 1/24](#) and [F24F 1/28](#) to [F24F 1/68](#) not complete pending the completion of a reclassification; see also other groups of [F24F 1/00](#)
- F24F 5/00** Air-conditioning systems or apparatus not covered by [F24F 1/00](#) or [F24F 3/00](#){ e.g. using solar heat; combined with household units such as an oven or water heater}
- F24F 6/00** Air-humidification, e.g. for increasing comfort in living spaces by "room humidifiers" {-cooling by humidification}
- F24F 7/00** Ventilation, {-e.g. by means of wall-ducts; systems using window or roof apertures}

**Project: N/A (F24H)**

- F24H 1/44 · · with combinations of two or more of the types covered by groups [F24H 1/24](#) to [F24H 1/40](#),{ e.g. boilers having a combination of features covered by [F24H 1/24](#) to [F24H 1/40](#)}
- U F24H 9/00** Details
- F24H 9/06 · Arrangement of mountings or supports {-for heaters, e.g. boilers, other than space heating radiators (space heating radiators [F24D 19/02](#))}
- F24H 9/20 · Arrangement or mounting of control or safety devices {-or methods}{control valves [F16K](#); safety devices for burners [F23D](#); combustion control devices [F23N](#); of systems comprising a heater, see the relevant subclasses, e.g. of control heating systems [F24D 19/10](#); automatic switching for electric heating apparatus [H05B 1/02](#)}

**Project: N/A (F25B)**

- F25B 25/00** Machines, plant, or systems, using a combination of modes of operation covered by two or more of the groups [F25B 1/00](#) to [F25B 23/00](#) (combinations of two or more modes of operation covered by a single main group, see the relevant group)

## Project: N/A (F25D)

**F25D** REFRIGERATORS; COLD ROOMS; ICE-BOXES; COOLING OR FREEZING APPARATUS NOT COVERED BY ANY OTHER SUBCLASS (refrigerated show cases [A47F 3/04](#); thermally-insulated vessels for domestic use [A47J 41/00](#); refrigerated vehicles, see the appropriate subclasses of classes [B60](#) to [B64](#); containers with thermal insulation in general [B65D 81/38](#); heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants, or materials for the production of heat or cold by chemical reactions other than by combustion [C09K 5/00](#); thermally-insulated vessels for liquefied or solidified gases [F17C](#); air-conditioning or air-humidification [F24F](#); refrigeration machines, plants or systems [F25B](#); cooling of instruments and comparable apparatus without refrigeration [G12B](#); cooling of engines or pumps, see the relevant classes)

## NOTES

- In this subclass, the following term is used with the meaning indicated:
  - "device" means an enclosed space to be cooled; such devices being associated either with refrigerating machinery, e.g. in a refrigerator, or with other cold sources, e.g. in an ice-box.
- Attention is drawn to Note (2) following the title of subclass [F24F](#).

**F25D 15/00** Devices not covered by group [F25D 11/00](#) or [F25D 13/00](#), e.g. non-self-contained movable devices

**F25D 21/00** Defrosting; Preventing frosting; Removing condensed or defrost water (removing ice or water from heat-exchange apparatus in general [F28F 17/00](#); heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#))

**U F25D 23/00** General constructional features ([F25D 21/00](#) takes precedence)  
**F25D 23/02** · Doors; Covers ([F25D 23/08](#) takes precedence; {locks or fastenings [E05B 65/0042](#)})

## Project: N/A (F25J)

**F25J** LIQUEFACTION, SOLIDIFICATION OR SEPARATION OF GASES OR GASEOUS {-or liquefied gaseous} MIXTURES BY PRESSURE AND COLD TREATMENT {-or by bringing them into the supercritical state (cryogenic pumps [F04B 37/08](#); gas storage vessels, gas holders [F17](#); filling vessels with, or discharging from vessels, compressed, liquefied or solidified gases [F17C](#); refrigeration machines, plants, or systems [F25B](#))}

**U F25J 1/00** Processes or apparatus for liquefying or solidifying gases or gaseous mixtures {(for ammonia in general [C01C 1/00](#); solidification of carbonic acid [C01B 31/22](#); recovering volatile solvents by condensation [B01D 5/00](#); vapor recovery systems combined with filling nozzles [B67D 7/54](#))(not used)}

**F25J 1/02** · requiring the use of refrigeration, e.g. of helium or hydrogen {-Details and kind of the refrigeration system used; Integration with other units or processes; Controlling aspects of the process (not used)}

**F25J 3/00** Processes or apparatus for separating the constituents of gaseous {-or liquefied gaseous} mixtures involving the use of liquefaction or solidification {(not used)}

**F25J 3/02** · by rectification, i.e. by continuous interchange of heat and material between a vapour stream and a liquid stream ([F25J 3/08](#) takes precedence; {-purification of hydrocarbons in general [C07C 7/00](#); not used})

**F25J 3/06** · by partial condensation ([F25J 3/08](#) takes precedence; by rectification [F25J 3/02](#); {-purification of hydrocarbons in general [C07C 7/00](#); not used})

F25J 3/08      · Separating gaseous impurities from gases or gaseous mixtures {-or from liquefied gases or liquefied gaseous mixtures}(cold traps [B01D 8/00](#))

F25J 2290/00      **Other details not covered by groups [F25J 2200/00](#) to [F25J 2280/00](#) (not used)**

## Project: N/A (F26B)

## F26B

**DRYING SOLID MATERIALS OR OBJECTS BY REMOVING LIQUID THEREFROM** (racks for drying fruit and vegetables [A01F 25/12](#); drying foodstuffs [A23](#); drying hair [A45D 20/00](#); body-drying implements [A47K 10/00](#); drying household articles [A47L](#), {e.g. drying footwear [A47L 23/20](#); } drying gases and vapours [B01D](#); chemical and physical processes for dewatering or like separating liquids from solids [B01D 43/00](#); centrifugal apparatus [B04](#); drying ceramics [C04B 33/30](#); drying yarns and fabrics in association with some other form of treatment [D06C](#); drying frames for laundry without heating or positive air circulation, domestic and like spin-dryers, wringing and hot pressing laundry [D06F](#); furnaces, kilns, ovens [F27](#); {-treatment including a drying step of semiconductor substrates, e.g. wafers, [H01L 21/67028](#)})

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">F26B 11/06</a>	covered by	<a href="#">F26B 11/0486</a>
<a href="#">F26B 13/02</a>	covered by	<a href="#">F26B 13/10</a>
<a href="#">F26B 13/04</a>	covered by	<a href="#">F26B 13/10</a>
<a href="#">F26B 13/20</a>	covered by	<a href="#">F26B 13/104</a>
<a href="#">F26B 23/08</a>	covered by	<a href="#">F26B 3/343</a> <del>_____</del> ,
<a href="#">F26B 3/347</a>		

**U F26B 1/00 Preliminary treatment of solid materials or objects to facilitate drying, {e.g. mixing or backmixing the materials to be dried with predominantly dry solids ([F26B 5/005](#) takes precedence)}**

F26B 1/005      · {by means of desintegrating, e.g. crushing, shredding, milling the materials to be dried ([F26B 17/102](#); [F26B 17/103](#) take precedence)}

**U F26B 3/00 Drying solid materials or objects by processes involving the application of heat (in specific machines or apparatus [F26B 9/00](#) to [F26B 19/00](#))**

U F26B 3/02      · by convection, i.e. heat being conveyed from a heat source to the materials or objects to be dried by a gas or vapour, e.g. air {([F26B 3/283](#) and [F26B 3/343](#) take precedence)}

U F26B 3/06      · · the gas or vapour flowing through the materials or objects to be dried ([F26B 3/14](#) takes precedence)

F26B 3/08      · · · so as to loosen them, e.g. to form a fluidised bed {"fluidised-bed" technique in general [B01J 8/24](#); centrifugal fluidised beds [F26B 7/007](#)})

**F26B 5/00 Drying solid materials or objects by processes not involving the application of heat (separating liquids from solids by straining [B01D](#); replacing liquids in wet solids by other liquids, e.g. water by spirit, [B01D 12/00](#); drying by electrophoresis [B01J](#))**

F26B 5/04      · by evaporation or sublimation of moisture under reduced pressure, e.g. in a vacuum {([F26B 11/049](#) and [F26B 17/128](#) take precedence)}

NOTE

In subgroups [F26B 5/04](#) and [F26B 5/06](#), the term "not including the application of heat" is disregarded for classification purposes. When drying with the use of

vacuum, frequently heat is applied to compensate for the cooling effect or to promote sublimation from the frozen state

- F26B 7/00**      **Drying solid materials or objects by processes using a combination of processes not covered by a single one of groups [F26B 3/00](#) and [F26B 5/00](#) {([F26B 1/005](#)-, [F26B 5/04](#)-, [F26B 23/026](#) take precedence)}**
- U F26B 9/00**      **Machines or apparatus for drying solid materials or objects at rest or with only local agitation; Domestic airing cupboards {(domestic laundry drying cabinets or chambers having heating or ventilating means [D06F 58/10](#))}**
- U F26B 9/06      · in stationary drums or chambers
- F26B 9/063      · · {for drying granular material in bulk e.g. grain bins or silos with false floor (shallow layer rotary sweep drying bins [F26B 9/10](#)-; perforated wall silos with drying air channels in the stack [F26B 9/103](#))}
- F26B 9/08      · · including agitating devices, {e.g. pneumatic recirculation arrangements (unloading devices [F26B 25/002](#)-; spouted beds [F26B 3/0926](#))}
- U F26B 11/00**      **Machines or apparatus for drying solid materials or objects with movement which is non-progressive**
- U F26B 11/02      · in moving drums or other mainly-closed receptacles ([F26B 11/18](#) takes precedence)
- F26B 11/04      · · rotating about a horizontal or slightly-inclined axis {([F26B 11/022](#)-, [F26B 11/024](#)-, [F26B 11/026](#)-, [F26B 11/028](#) take precedence)}
- F26B 11/044      · · · {the drum or receptacle having a variable outer or inner diameter in axial direction, e.g. tronconical; the drum or receptacle having a polygonal or non-cylindrical shape ([F26B 11/0436](#)-, [F26B 11/049](#) take precedence)}
- F26B 11/0463      · · · {having internal elements, e.g. which are being moved or rotated by means other than the rotating drum wall ([F26B 11/0404](#)-, [F26B 11/0445](#) take precedence)}
- U F26B 11/18      · on or in moving dishes, trays, pans, or other mainly-open receptacles
- U F26B 11/181      · · {the receptacle being a foraminous, perforated or open-structured drum or drum-like container, e.g. rotating around a substantially horizontal or vertical axis; the receptacle being multiple perforated drums, e.g. in superimposed arrangement}
- F26B 11/184      · · · {provided with internal means for mixing, stirring or conveying the materials to be dried ([F26B 11/182](#)-, [F26B 11/185](#) take precedence)}
- F26B 15/00**      **Machines or apparatus for drying objects with progressive movement; Machines or apparatus with progressive movement for drying batches of material in compact form ([F26B 13/00](#)-, [F26B 17/00](#) take precedence; conveyers in general [B65G](#))**
- U F26B 15/10      · with movement in a path composed of one or more straight lines, e.g. compound, {the movement being in alternate horizontal and vertical directions}
- U F26B 15/12      · · the lines being all horizontal or slightly inclined
- F26B 15/14      · · · the objects or batches of materials being carried by trays or racks {or receptacles, which may be connected to endless chains or belts (trays, racks per se [F26B 25/18](#)-; with vertical movement [F26B 15/22](#))}
- F26B 15/143      · · · · {the receptacles being wholly or partly foraminous, e.g. containing a batch of loose material ([F26B 15/146](#)-, [F26B 15/205](#)-, [F26B 15/26](#) take precedence)}
- F26B 17/00**      **Machines or apparatus for drying materials in loose, plastic, or fluidised form, e.g. granules, staple fibres, with progressive movement ([F26B 13/00](#) takes precedence; {feed or discharge arrangements [F26B 25/002](#))}**

- U F26B 17/001      · {the material moving down superimposed floors (superimposed belts [F26B 17/08](#))}
- F26B 17/005      · · {with rotating floors, e.g. around a vertical axis, which may have scrapers ([F26B 17/002](#)-, [F26B 17/006](#)-, [F26B 17/007](#) take precedence)}
- F26B 17/008      · {the material being a slurry or paste applied onto moving elements, e.g. chains, plates, for drying thereon, and subsequently removed therefrom (the element being an endless web or belt-like conveyer [F26B 17/023](#)-, the element being a disc [F26B 17/282](#)-, the element being loose inert particles [F26B 3/205](#))}
- F26B 17/02      · with movement performed by belts carrying the materials; with movement performed by belts {or elements attached to endless belts or chains} propelling the materials over stationary surfaces {(the movement being in a helical path [F26B 15/26](#)-, [F26B 17/003](#)-, [F26B 17/263](#) take precedence)}
- F26B 17/06      · · the belts being all vertical or steeply inclined ([F26B 17/08](#) takes precedence; {for materials in discrete batches [F26B 15/22](#))}
- U F26B 17/12      · with movement performed solely by gravity, {i.e. the material moving through a substantially vertical drying enclosure, e.g. shaft}
- U F26B 17/14      · · the materials moving through a counter-current of gas
- F26B 17/1433      · · · {the drying enclosure, e.g. shaft, having internal members or bodies for guiding, mixing or agitating the material, e.g. imposing a zig-zag movement onto the material ([F26B 17/1408](#)-, [F26B 17/16](#) take precedence)}
- U **F26B 19/00**      **Machines or apparatus for drying solid materials or objects not covered by groups [F26B 9/00](#) to [F26B 17/00](#)**
- F26B 19/005      · {Self-contained mobile devices, e.g. for agricultural produce (movable devices with radiation means [F26B 3/28](#)-, small self-contained devices for drying objects at rest [F26B 9/003](#))}
- U **F26B 21/00**      **Arrangements {or duct systems, e.g. in combination with pallet boxes,} for supplying and controlling air or gases for drying solid materials or objects ({[F26B 9/10](#) takes precedence; systems for vehicle body drying [B60S 3/002](#)} ; air conditioning or ventilation in general [F24F](#))**
- F26B 21/004      · {Nozzle assemblies; Air knives; Air distributors; Blow boxes ([F26B 3/082](#)-, [F26B 13/104](#)-, [F26B 13/108](#)-, [F26B 21/006](#) take precedence)}
- F26B 21/02      · Circulating air or gases in closed cycles, e.g. wholly within the drying enclosure ([F26B 21/08](#)-, [F26B 21/14](#)-, {[F26B 23/022](#)} take precedence)
- U F26B 21/14      · using gases or vapours other than air or steam, {e.g. inert gases}
- F26B 21/145      · · {Condensing the vapour onto the surface of the materials to be dried (using condensing steam [F26B 3/00](#)-, using chemical liquids [F26B 5/005](#))}
- U **F26B 23/00**      **Heating arrangements ({by radiation, e.g. infra-red, ultra-violet, solar [F26B 3/28](#) and [F26B 3/30](#)} ; using heated air or gases [F26B 21/00](#))**
- F26B 23/02      · using combustion heating ({[F26B 3/305](#)-, [F26B 13/186](#)-, [F26B 21/001](#)-, } [F26B 23/10](#) take precedence)
- F26B 25/00**      **Details of general application not covered by group [F26B 21/00](#) or [F26B 23/00](#) (loading, conveying, and unloading in general [B65G](#))**
- U F26B 25/06      · Chambers, containers, or receptacles {(large containers having means for heating, cooling, aerating or other conditioning of contents [B65D 88/74](#))}
- F26B 25/063      · · {Movable containers or receptacles, e.g. carts, trolleys, pallet-boxes (for use in freeze-drying apparatus [F26B 5/06](#)-, in general [B62D](#))}
- U F26B 25/14      · · Chambers, containers, receptacles of simple construction
- U F26B 25/18      · · · mainly open, e.g. dish, tray, pan, {rack (for drying agricultural produce [A01F 25/12](#))}

F26B 25/185      · · · {Spacers; Elements for supporting the goods to be dried, i.e. positioned in-between the goods to build a ventilated stack (separators for articles packaged in stacks [B65D 57/00](#); manipulating spacers for stacking purposes [B65G 57/005](#))}

F26B 25/20      · Rollers ([F26B 25/06](#), [F26B 13/14](#)) take precedence)

**Project: N/A (F27D)**

F27D 25/00      **Devices {-or methods} for removing incrustations, {-e.g. slag, metal deposits, dust};** **f** {Devices or methods for preventing the adherence of slag}

**Project: N/A (F28C)**

F28C 1/00      **Direct-contact trickle coolers, e.g. cooling towers (building construction [E04H 5/12](#); enclosed spaces cooled by trickle [F25](#); components parts of trickle coolers [F28F 25/00](#); {-indirect-contact cooling towers [F28B 1/06](#))}**

**Project: N/A (F28D)**

U    F28D 21/00      **Heat-exchange apparatus not covered by any of the groups [F28D 1/00](#) to [F28D 20/00](#)**

NOTE

{ Particular use of heat exchangers is classified in [F28D 21/00](#) and subgroups, whereas additionally the type of the heat exchangers is classified in the groups [F28D 1/00](#) to [F28D 20/00](#)}

U    F28D 2021/0019      · {Other heat exchangers for particular applications; Heat exchange systems not otherwise provided for}

U    F28D 2021/0068      · · {for refrigerant cycles}

F28D 2021/007      · · · {Condensers (for vehicles [F28D 2021/0084](#); for compression systems [F25B 39/04](#), *cold exchangers for separating constituents of gaseous mixtures [F25J 3/06](#)*); *cold exchangers for separating constituents of gaseous mixtures [F25J 3/06](#)*}

**Project: N/A (F28G)**

F28G 7/00      **Cleaning by vibration {-or pressure waves}**

**Project: N/A (F41A)**

F41A      **FUNCTIONAL FEATURES OR DETAILS COMMON TO BOTH SMALLARMS AND ORDNANCE, e.g. CANNONS; MOUNTINGS FOR SMALLARMS OR ORDNANCE**

NOTES

1. This subclass covers those features or details which are considered to be of a kind generally applicable to, or to be concerned with intrinsic functions common to, both smallarms and ordnance.

2. Such features or details are classified in this subclass, even if they are stated to be applied only to smallarms or only to ordnance.

3. Attention is drawn to the definitions given in Note (2) following the title of class [F41](#).

F41A 1/00      **Missile propulsion characterised by the use of explosive or combustible propellant charges (projecting missiles without use of explosive or combustible propellant charge [F41B](#); launching rockets or torpedoes [F41F 3/00](#); missile self-propulsion [F42B 15/00](#))**

U    F41A 3/00      **Breach mechanisms, e.g. locks**

- U F41A 3/64 · Mounting of breech-blocks; Accessories for breech-blocks or breech-block mountings
- F41A 3/72 · · Operating handles or levers; Mounting thereof in breech-blocks or bolts ({[F41C 7/02](#)-, [F41C 7/06](#) take precedence)}
- U F41A 9/00 Feeding or loading of ammunition ({conveying ammunition through pipes by the action of flowing gases [B65G 51/025](#)}; adaptations for feeding or loading missiles from magazines in air guns [F41B 11/50](#)); Magazines; Guiding means for the extracting of cartridges (cartridge extractors or ejectors [F41A 15/00](#))**
- F41A 9/35 · Feeding multibarrel guns
- NOTE  
Feeding elements or concepts of general interest, not specially adapted for feeding multibarrel guns, are classified in groups [F41A 9/01](#) or [F41A 9/29](#)-.
- U F41A 9/37 · Feeding two or more kinds of ammunition to the same gun; Feeding from two sides
- F41A 9/375 · · {Feeding propellant charges and projectiles as separate units}
- NOTE  
Feeding elements or concepts of general interest, not specially adapted for feeding two or more kinds of ammunition or from two sides, are classified in groups [F41A 9/01](#) to [F41A 9/29](#)-.
- F41A 11/00 Assembly or disassembly features; Modular concepts; Articulated or collapsible guns ([F41A 3/64](#)-, [F41A 19/10](#) to [F41A 19/15](#)-, [F41A 21/48](#)-, [F41A 25/26](#) take precedence)**
- F41A 11/04 · Articulated or collapsible guns, i.e. with hinged or telescopic parts for transport or storage (breakdown shotguns or rifles [F41C 7/11](#)-.; folding or telescopic stocks or stock parts [F41C 23/04](#))
- U F41A 13/00 Cooling or heating systems; Blowing-through of gun barrels; Ventilating systems**
- F41A 13/12 · Systems for cooling the outer surface of the barrel ([F41A 13/10](#)-, [F41A 21/24](#) take precedence)
- F41A 15/00 Cartridge extractors, i.e. devices for pulling cartridges or cartridge cases at least partially out of the cartridge chamber; Cartridge ejectors, i.e. devices for throwing the extracted cartridges or cartridge cases free of the gun ([F41A 9/54](#)-, {[F41C 9/08](#)} take precedence; {Means for removing duds or misfires in rocket throwers [F41F 3/058](#)})**
- U F41A 17/00 Safety arrangements, e.g. safeties**
- F41A 17/06 · Electric or electromechanical safeties ([F41A 17/04](#)-, [F41A 17/08](#) take precedence)
- F41A 17/20 · Grip or stock safeties, i.e. safeties disengaged by clasping the grip or stock (thumb-operated sliding safeties [F41A 17/52](#)-, [F41A 17/62](#)-, [F41A 17/70](#)-, [F41A 17/80](#))
- F41A 17/42 · Safeties for locking the breech-block or bolt in a safety position ([F41A 17/32](#)-, [F41A 17/36](#)-, [F41A 17/40](#) take precedence {; anti-rebound arrangements [F41A 3/70](#)})
- U F41A 19/00 Firing or trigger mechanisms; Cocking mechanisms**
- F41A 19/03 · Shot-velocity control ([F41A 3/78](#)-, [F41A 5/28](#)-, [F41A 19/05](#)-, [F41A 19/66](#) take precedence)

- F41A 19/06
- Mechanical firing mechanisms, {e.g. counterrecoil firing, recoil actuated firing mechanisms} ([F41A 19/01](#) to [F41A 19/05](#)-, [F41A 19/59](#) take precedence)
- F41A 19/58
- Electric firing mechanisms ([F41A 17/10](#)-, [F41A 17/12](#) take precedence)
- U F41A 21/00**      **Barrels; Gun tubes; Muzzle attachments; Barrel mounting means**  
([F41A 25/00](#) takes precedence; barrel attachments for firing grenades or riot-control ammunition from smallarms [F41C 27/06](#))
- F41A 21/12
- Cartridge chambers; Chamber liners ([F41A 3/74](#)-, [F41A 9/46](#)-, [F41A 21/04](#) take precedence)
- F41A 21/28
- Gas-expansion chambers; Barrels provided with gas-relieving ports ([F41A 1/06](#)-, [F41A 13/08](#){ and [F41A 21/36](#)}) take precedence)
- F41A 21/32
- Muzzle attachments or glands ([F41A 21/26](#)-, [F41A 21/30](#)-, [F41A 21/46](#) take precedence; {-for projectile velocity measurements [G01P 3/665](#)-, [G01P 3/685](#)})
- F41A 23/00**      **Gun mountings, e.g. on vehicles; Disposition of guns on vehicles**  
([F41A 25/00](#)-, [F41A 27/00](#) take precedence)
- U F41A 23/02**
- Mountings without wheels
- NOTE  
Shooting stands for hunting [A01M 31/02](#)
- F41A 23/18
- Rests for supporting smallarms in non-shooting position (racks for storage [A47B 81/00](#)-, racks in vehicles {[B60R 7/14](#)})
- F41A 23/24
- Turret gun mountings (feeding, loading or guiding ammunition [F41A 9/00](#)-, mechanical elevating or traversing systems for turret guns [F41A 27/18](#))
- U F41A 23/28**
- Wheeled-gun mountings; Endless-track gun mountings
- F41A 23/32
- with split trails ([F41A 23/30](#)-, [F41A 23/46](#) takes precedence)
- F41A 23/56
- Arrangements for adjusting the gun platform in the vertical or horizontal position ([F41A 17/10](#)-, [F41A 17/12](#) take precedence; {-ground engaging vehicle fittings for lifting or supporting it [B60S 9/04](#)-, supports for mobile cranes [B66C 23/78](#)})
- U F41A 27/00**      **Gun mountings permitting traversing or elevating movement, e.g. gun carriages**
- F41A 27/06
- Mechanical systems ([F41A 27/02](#)-, [F41A 27/04](#)-, [F41A 27/30](#) take precedence)
- F41A 27/26
- Fluid-operated systems ([F41A 27/02](#)-, [F41A 27/04](#)-, [F41A 27/30](#) take precedence)
- F41A 27/28
- Electrically-operated systems ([F41A 27/02](#)-, [F41A 27/04](#)-, [F41A 27/30](#) take precedence)
- F41A 29/00**      **Cleaning or lubricating arrangements (injecting fluids into barrels or cartridge chambers [F41A 13/04](#)-, {-ammunition for cleaning purposes [F42B 5/24](#)})**
- F41A 33/00**      **Adaptations for training (adaptations of barrels for recoil reinforcement [F41A 21/26](#)); Gun simulators (teaching or practice apparatus for gun-aiming or gun-laying [F41G 3/26](#)-, {-shooting games [A63F 9/02](#)-, military simulation [G09B 9/003](#)})**
- Project: N/A (F41B)**
- F41B 9/00**      **Liquid ejecting guns, e.g. water pistols, {-devices ejecting electrically charged liquid jets, devices ejecting liquid jets by explosive pressure}**

**Project: N/A (F41G)**

- F41G 1/00 Sighting devices (for indirect laying of fire [F41G 3/16](#); bombsights [F41G 3/24](#); {structurally associated with laser telemeters [F41G 3/065](#); mounting tubular or beam shaped aiming devices on firearms [F41G 11/001](#)})
- F41G 3/00 Aiming means; Laying means (sighting-devices [F41G 1/00](#); {-mounting tubular or beam shaped aiming devices on firearms [F41G 11/001](#);} determining direction, distance or velocity by use of radio or other waves [G01S](#); computer [G06](#); aerials [H01Q](#))
- F41G 7/00 Direction control systems for self-propelled missiles (flight control [B64C](#), [G05D 1/00](#); {-counter-measures against guided missiles [F41H 11/02](#); spin-stabilised missiles [F42B 10/26](#)}; self-propelled or guided missiles having direction control systems only installed aboard [F42B 15/01](#); rocket torpedoes [F42B 17/00](#); marine torpedoes or sea-mines having self-propulsion means [F42B 19/00](#); locating by use of radio or other waves [G01S](#); computing aspects [G06](#))
- U F41G 11/00 Details of sighting or aiming apparatus; Accessories {(Tools for adjustment of sights [F41G 1/545](#)})
- U F41G 11/001 • {Means for mounting tubular or beam shaped sighting or aiming devices on firearms}
- F41G 11/004 • • {Mountings with clamping means on the device embracing at least a part of the firearm, e.g. the receiver or a dustcover ([F41G 11/003](#) takes precedence [F41G 11/003](#) takes precedence)}

**Project: N/A (F41H)**

- F41H 5/00 Armour; Armour plates (processes for manufacturing or treating [B21](#), [C21](#), {heat treatment [C21D 9/42](#); wall or panel structure for safes [E05G 1/024](#)})
- U F41H 5/02 • Plate construction
- U F41H 5/04 • • composed of more than one layer {(outerwear resistant to mechanical aggressions [A41D 31/0055](#); layered products [B32B](#); shaping reinforced articles [B29C 67/00](#))}
- F41H 5/0407 • • • {Transparent bullet-proof laminates}{-informative reference: layered products essentially comprising glass in general [B32B 17/06](#), e.g. [B32B 17/10009](#); manufacture or composition of glass, e.g. joining glass to glass [C03](#); permanent multiple-glazing windows, e.g. with spacing therebetween, [E06B 3/66](#)}
- U F41H 5/06 • Shields (in ships [B63G 9/00](#); in aircraft [B64D 7/00](#) {blasting mats [F42D 5/05](#)})
- F41H 5/08 • • for personal use, {-i.e. hand held shields}
- F41H 5/22 • Manhole covers, e.g. on tanks; {-Doors on armoured vehicles or structures}
- F41H 5/26 • Peepholes; Windows; {-Loopholes}{-informative reference: transparent bullet-proof laminates [F41H 5/0407](#); layered products essentially comprising glass [B32B 17/06](#)})
- F41H 11/00 Defence installations; Defence devices (constructional aspects see Section E, e.g. {air-raid shelters} [E04H 9/04](#); {protective arrangements for buildings [E04B 1/92](#); extinguishing or preventing the spread of fire from, incendiary bombs [A62C 3/06](#); dynamic armour [F41H 5/007](#); ballistically deployed systems for restraining persons or animals [F41H 13/0006](#); electronic countermeasures [G01S](#)})

F41H 11/02

- Anti-aircraft or anti-guided missile {-or anti-torpedo} defence installations or systems (cartridges or missiles for producing smoke or for dispensing radar chaff or infra-red material [F42B 5/15](#), [F42B 12/48](#), [F42B 12/70](#); {-informative reference: details of radar or sonar systems [G01S 7/00](#); jamming or electronic countermeasures [G01S 7/38](#), [G01S 7/495](#), [H04K 3/00](#)})

**Project: N/A (F41J)****U F41J 1/00**

**Targets; Target stands; Target holders ([F41J 2/00](#) to [F41J 11/00](#) take precedence; targets combined with bullet catchers [F41J 13/02](#))**

F41J 1/01

- Target discs characterised by their material, structure or surface, {-e.g. clay pigeon targets characterised by their material}([F41J 5/044](#) takes precedence)

**Project: N/A (F42B)****U F42B 5/00**

**Cartridge ammunition, e.g. separately-loaded propellant charges (shotgun ammunition [F42B 7/00](#); practice or training ammunition [F42B 8/00](#); missiles therefor [F42B 12/00](#),[F42B 14/00](#),[F42B 15/00](#))**

U F42B 5/02

- Cartridges, i.e. cases with charge and missile

U F42B 5/18

- · Caseless ammunition; Cartridges having combustible cases

F42B 5/192

- · · Cartridge cases characterised by the material {-of the casing wall (cartridge bags [F42B 5/38](#))}

**Project: N/A (F42C)****U F42C 1/00**

**Impact fuzes, i.e. fuzes actuated only by ammunition impact**

U F42C 1/02

- with firing-pin structurally combined with fuze

F42C 1/08

- · with delayed action after ignition of fuze (time fuzes [F42C 9/00](#) ){or after impact}

**Project: N/A (F42D)**

F42D

**BLASTING (fuses, e.g. fuse cords, [C06C 5/00](#); {-for obtaining fluid from wells [E21B 43/00](#); for mining or quarrying [E21C 37/00](#); for making tunnels or galleries [E21D 9/006](#)}; cartridges [F42B 3/00](#))**

**U F42D 1/00**

**Blasting methods or apparatus, e.g. loading or tamping**

F42D 1/04

- Arrangements for ignition {(ignition systems for shaped charge perforators [E21B 43/1185](#); ignition devices for seismic energy generators [G01V 1/06](#))}

F42D 1/06

- · Relative timing of multiple charges ({[F42D 1/043](#) and } [F42D 1/055](#) take precedence)

F42D 3/00

**Particular applications of blasting techniques {(explosive welding [B23K 20/08](#); explosive bolts or actuators [F42B 3/006](#); explosive valves [F16K 13/06](#); cutting devices actuated by explosion [B23D 15/145](#); pyrotechnical actuators [F15B 15/19](#); switching devices actuated by explosion [H01H 39/00](#))}**

**U F42D 5/00**

**Safety arrangements**

F42D 5/04

- Rendering explosive charges harmless, e.g. destroying ammunition ({[F42B 39/14](#) and [F42B 39/20](#) take precedence } ; extracting primers, dismantling ammunition [F42B 33/04](#), [F42B 33/06](#); {-chemical deactivating of explosives [C06B 21/0091](#)}); Rendering detonation of explosive charges harmless

## Project: N/A (G01B)

## G01B

MEASURING LENGTH, THICKNESS OR SIMILAR LINEAR DIMENSIONS; MEASURING ANGLES; MEASURING AREAS; MEASURING IRREGULARITIES OF SURFACES OR CONTOURS {(measuring human body, see the relevant places, where such exist, e.g. [A41H 1/00](#), [A43D 1/02](#), [A61B 5/103](#); measuring appliances combined with walking-sticks [A45B 3/08](#); sorting according to dimensions [B07](#); tool-setting or drawing instruments not specially modified for measuring [B23B 49/00](#), [B23Q 15/00](#) to [B23Q 17/00](#), [B43L](#); combinations of measuring devices with writing-appliances [B43K 29/08](#); geodetical, nautical or aeronautical measuring, surveying, rangefinding [G01C](#); photogrammetry [G01C 11/00](#); measuring force or stress, in general [G01L 1/00](#); investigating or analysing particle size, investigating or analysing surface area of porous material [G01N](#); measuring position, distance or direction, in general, by reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation [G01S](#); geophysical measuring [G01V](#); measuring length or roll diameter of film in cameras or projectors [G03B 1/60](#); combinations of measuring devices with means for controlling or regulating [G05](#); methods or arrangements for converting the position of a manually-operated writing or tracing member into an electrical signal [G06K 11/00](#); measuring elapsed travel of recording medium in recording and playback equipment, sensing diameter of record in autochange gramophones [G11B](#); means structurally associated with electric rotary current collectors for indicating brush wear [H01R 39/58](#); indicating consumption of electrodes in arc lamps [H05B 31/34](#)}

## NOTES

1. This subclass covers measuring of position or displacement in terms of linear or angular dimensions.
2. In this subclass, the groups are distinguished by the means of measurement which is of major importance. Thus the mere application of other means for giving a final indication does not affect the classification.
3. Attention is drawn to the Notes following the title of class [G01](#).
4. Machines operated on similar principles to the hand-held devices specified in this subclass are classified with these devices.
5. Measuring arrangements or details thereof covered by two or more of groups [G01B 3/00](#) - [G01B 17/00](#) are classified in group [G01B 21/00](#) if no single other group can be selected as being predominantly applicable.

## G01B 3/00

Instruments as specified in the subgroups and characterised by the use of mechanical measuring means (arrangements for measuring particular parameters [G01B 5/00](#); devices of general interest specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material [B65H 75/34](#))

U G01B 3/56  
G01B 3/563

- Gauges for measuring angles or tapers, e.g. conical calipers
- {Protractors (for use in geodesy [G01C 1/00](#); protractor heads for drawing machines [B43L 13/08](#))}

## U G01B 5/00

Measuring arrangements characterised by the use of mechanical means (instruments of the types covered by group [G01B 3/00](#) per se [G01B 3/00](#))

G01B 5/02

- for measuring length, width or thickness ([G01B 5/004](#), [G01B 5/08](#) take precedence)

## U G01B 7/00

Measuring arrangements characterised by the use of electric or magnetic means

- G01B 7/02 · for measuring length, width or thickness ([G01B 7/004](#)-, [G01B 7/12](#) take precedence)
- U G01B 11/00 Measuring arrangements characterised by the use of optical means (instruments of the types covered by group [G01B 9/00](#) per se [G01B 9/00](#))**
- U G01B 11/02 · for measuring length, width or thickness ([G01B 11/08](#) takes precedence)
- G01B 11/028 · · {by measuring lateral position of a boundary of the object ([G01B 11/022](#)-, [G01B 11/024](#)-, [G01B 11/04](#) take precedence)}
- U G01B 11/24 · for measuring contours or curvatures
- G01B 11/245 · · using a plurality of fixed, simultaneously operating transducers ({[G01B 11/2408](#) to [G01B 11/2425](#)-, } [G01B 11/255](#) take precedence)
- G01B 15/00 Measuring arrangements characterised by the use of wave or particle radiation ([G01B 9/00](#)-, [G01B 11/00](#) take precedence; {-by radar technique [G01S](#)})**
- U G01B 21/00 Measuring arrangements or details thereof in so far as they are not adapted to particular types of measuring means of the preceding groups**
- NOTE
- Measuring arrangements or details thereof covered by two or more of groups [G01B 3/00](#) - [G01B 17/00](#) are classified in this group if no single other group can be selected as being predominantly applicable.
- U G01B 21/02 · for measuring length, width, or thickness ([G01B 21/10](#) takes precedence)
- U G01B 21/04 · · by measuring coordinates of points
- G01B 21/042 · · · {Calibration or calibration artifacts ([G01B 3/30](#)-, [G01B 9/02072](#) take precedence)}

**Project: N/A (G01C)**

- G01C 3/00 Measuring distances in line of sight; optical rangefinders (tapes, chains or wheels for measuring length [G01B](#)-, coupling rangefinders with operating parts of photographic apparatus [G03B](#))**
- G01C 5/00 Measuring height; Measuring distances transverse to line of sight; Levelling between separated points; Surveyors` levels ([G01C 3/20](#)-, [G01C 3/30](#) take precedence; tracing profiles [G01C 7/00](#)-, levels indicating inclination at a single point [G01C 9/00](#))**
- G01C 5/005 · {altimeters for aircraft ([G01C 5/02](#)-, [G01C 5/06](#) take precedence)}
- G01C 5/02 · involving automatic stabilisation of the line of sight; (tilt compensation in general [G12B](#)-, regulation of direction in general [G05D 3/00](#))
- G01C 11/00 Photogrammetry or videogrammetry, e.g. stereogrammetry; Photographic surveying (cameras combined with surveying instruments, e.g. with theodolites, [G01C 1/00](#)-, [G01C 3/00](#)-, [G01C 5/00](#)-, [G01C 9/00](#)-, surveying cameras [G03B 37/00](#))**
- WARNING
- The following IPC group is not used in the CPC scheme: Subject-matter covered by this group is classified in the following CPC groups: [G01C 11/36](#) covered by [G01C 11/00](#) to [G01C 11/34](#)
- G01C 13/00 Surveying specially adapted to open water, e.g. sea, lake, river, canal (liquid level metering [G01F](#)-, measuring liquid velocity [G01P](#)-, determining existence of flow of underground water [G01V](#))**

- G01C 17/00**      **Compasses; Devices for ascertaining true or magnetic north for navigation or surveying purposes (using gyroscopic effect [G01C 19/00](#); for geophysical or prospecting purposes [G01V 3/00](#))**
- U G01C 19/00**      **Gyroscopes; Turn-sensitive devices using vibrating masses; Turn-sensitive devices without moving masses; Measuring angular rate using gyroscopic effects**
- U G01C 19/02      · Rotary gyroscopes
- U G01C 19/04      · · Details
- U G01C 19/06      · · · Rotors
- G01C 19/065      · · · · {Measurement or control of angular velocity, specifically adapted to gyrorotors (measuring angular speed in general [G01P](#); controlling angular speed [G05D 13/00](#); controlling electrical motors [H02P](#))}
- G01C 19/16      · · · Suspensions; Bearings (bearings in general [F16C](#); balancing rotors [G01M](#))
- G01C 19/18      · · · · providing movement of rotor with respect to its rotational axes ([G01C 19/20](#); [G01C 19/24](#) takes precedence)
- G01C 21/00**      **Navigation; Navigational instruments not provided for in preceding groups (measuring distance traversed on the ground by a vehicle [G01C 22/00](#); measuring linear or angular speed or acceleration [G01P](#); control of position, course, altitude or attitude of vehicles [G05D 1/00](#); traffic control systems [G08G](#))**
- G01C 21/02      · by astronomical means ([G01C 21/24](#); [G01C 21/26](#) take precedence; measuring time by using position of the sun, moon, or stars [G04B 49/00](#))
- G01C 21/04      · by terrestrial means ([G01C 21/24](#); [G01C 21/26](#) take precedence; marking of navigation route for ships [B63B 51/00](#))
- G01C 21/10      · by using measurements of speed or acceleration ([G01C 21/24](#); [G01C 21/26](#) take precedence)
- G01C 21/20      · Instruments for performing navigational calculations ([G01C 21/24](#); [G01C 21/26](#) take precedence; adaptations of digital computers to a specific function or application [G06F 17/00](#); [G06F 19/00](#))
- U G01C 21/26      · specially adapted for navigation in a road network
- U G01C 21/34      · · Route searching; Route guidance
- U G01C 21/3407      · · · {specially adapted for specific applications}
- G01C 21/343      · · · · {Calculating itineraries, i.e. routes leading from a starting point to a series of categorical destinations using a global route restraint, round trips, touristic trips (travelling salesman problem [G06Q 10/04](#); optimisation of routes [G06Q 10/047](#))}
- G01C 21/36      · · · Input/output arrangements of navigation systems; {(Input arrangements for transferring data to be processed into a form capable of being handled by the computer, and output arrangements for transferring data from processing unit to output unit, e.g. interface arrangements [G06F 3/00](#); pointing devices displaced or positioned by the user, e.g. mice, trackballs, pens or joysticks, and accessories therefor [G06F 3/033](#); interaction techniques for graphical user interfaces, e.g. interaction with windows, icons or menus [G06F 3/048](#); Manipulating 3D models or images for computer graphics [G06T 19/00](#))}
- U G01C 21/3626      · · · · {Details of the output of route guidance instructions (Traffic control systems for road vehicles involving transmission of navigation instructions to the vehicle [G08G 1/0968](#))}
- U G01C 21/3635      · · · · · {Guidance using 3D or perspective road maps}

- G01C 21/3638 . . . . . {including 3D objects and buildings (three dimensional [3D]) modelling, e.g. data description of 3D objects [G06T 17/00](#); geographic models [G06T 17/05](#)}
- U G01C 21/3679 . . . . {Retrieval, searching and output of POI information, e.g. hotels, restaurants, shops, filling stations, parking facilities ([G01C 21/3611](#) takes precedence)}
- G01C 21/3682 . . . . . {output of POI information on a road map ([G01C 21/3614](#), [G01C 21/3685](#) take precedence)}
- U **G01C 22/00** **Measuring distance traversed on the ground by vehicles, persons, animals, or other moving solid bodies, e.g. using odometers, using pedometers (counting mechanisms per se [G06M](#))**
- G01C 22/02 . by conversion into electric waveforms and subsequent integration, e.g. using tachometer generator ({[G01C 22/002](#), [G01C 22/004](#), [G01C 22/006](#) take precedence)}
- U **G01C 23/00** **Combined instruments indicating more than one navigational value, e.g. for aircraft; Combined measuring devices for measuring two or more variables of movement, e.g. distance, speed, acceleration**
- G01C 23/005 . {Flight directors (indicating arrangements specially adapted for rotary gyroscopes [G01C 19/32](#); indicating or recording in connection with measuring, in general [G01D](#); control of course of land or air vehicles by controlling or regulating non-electric variables [G05D 1/00](#); arrangements or adaptations of instruments for aircraft [B64D 43/00](#))}

## Project: N/A (G01F)

## G01F

**MEASURING VOLUME, VOLUME FLOW, MASS FLOW OR LIQUID LEVEL; METERING BY VOLUME (milk flow sensing devices in milking machines or devices [A01J 5/01](#); measuring or recording blood flow [A61B 5/02](#), [A61B 8/06](#); metering media to the human body [A61M 5/168](#); burettes or pipettes [B01L 3/02](#); arrangements of liquid volume meters or volume-flow meters in liquid-delivering apparatus, e.g. for retail sale purposes, [B67D 7/16](#); pumps, fluid motors, details common to measuring or metering devices and pumps or fluid motors [F01](#) to [F04](#); {-sampling [G01N 1/00](#)}; locating, determining distance or velocity using reflection or reradiation of radio waves, analogous arrangements using other waves [G01S](#); systems for ratio control [G05D 11/00](#); {-coin-freed apparatus for metering flow of liquid or gas [G07F 15/00](#))}**

NOTE

Attention is drawn to the Notes following the title of class [G01](#).

## Project: N/A (G01G)

- U **G01G 19/00** **Weighing apparatus or methods adapted for special purposes not provided for in the preceding groups {(electric measuring arrangements involving comparison with a reference value [G01R 17/00](#))}**
- U G01G 19/02 . for weighing wheeled or rolling bodies, e.g. vehicles
- G01G 19/03 . . for weighing during motion ([G01G 19/04](#), [G01G 19/07](#) take precedence {check weighing of materials dispensed into removable containers [G01G 15/00](#); weighing a continuous stream of material during flow [G01G 11/00](#); [G01G 19/02](#), e.g. [G01G 19/022](#), [G01G 19/045](#) take precedence})

**Project: N/A (G01H)**

- U G01H 3/00** Measuring {characteristics of} vibrations by using a detector in a fluid ([G01H 7/00](#), [G01H 9/00](#), [G01H 11/00](#) take precedence)
- G01H 3/005 · {Testing or calibrating of detectors covered by the subgroups of [G01H 3/00](#) (calibrating geophysical instruments, e.g. seismic receivers [G01V 13/00](#))}

**Project: N/A (G01L)**

- G01L 7/00** Measuring the steady or quasi-steady pressure of a fluid or a fluent solid material by mechanical or fluid pressure-sensitive elements ([G01L 11/004](#) takes precedence; ) transmitting or indicating the displacement of mechanical pressure-sensitive elements by electric, {e.g. photoelectric} or magnetic means [G01L 9/00](#); measuring differences of two or more pressure values [G01L 13/00](#); measuring two or more pressure values simultaneously [G01L 15/00](#); measuring tyre pressure or the pressure of other inflated bodies [G01L 17/00](#); vacuum gauges [G01L 21/00](#); hollow bodies deformable or displaceable under internal pressure, per se [G12B 1/04](#); {pressure sensitive switches using Bourbon gauges [H01H 9/00](#); pressure sensitive fluidum level or volume measuring devices [G01F 17/00](#); [G01F 23/14](#), [G01F 23/16](#) pressure sensitive depth meters [G01C 13/008](#); aircraft altitude meters [G01C 5/005](#))}
- U G01L 9/00** Measuring steady or quasi-steady pressure of a fluid or a fluent solid material by electric or magnetic pressure-sensitive elements ([G01L 11/004](#) takes precedence); Transmitting or indicating the displacement of mechanical pressure-sensitive elements, used to measure the steady or quasi-steady pressure of a fluid or fluent solid material by electric or magnetic means (measuring differences of two or more pressure values [G01L 13/00](#); measuring two or more pressure values simultaneously [G01L 15/00](#); vacuum gauges [G01L 21/00](#); transferring the output of the sensing member to the indicating or recording part in general [G01D 5/00](#))
- G01L 9/08 · by making use of piezo-electric devices {-, i.e. electric circuits therefor}
- G01L 9/10 · by making use of variation in inductance {-, i.e. electric circuits therefor}
- G01L 9/12 · by making use of variation in capacitance {-, i.e. electric circuits therefor}
- U G01L 19/00** Details of, or accessories for, apparatus for measuring steady or quasi-steady pressure of a fluent medium insofar as such details or accessories are not special to particular types of pressure gauges
- G01L 19/04 · Means for compensating for effects of changes of temperature {-, i.e. other than electric compensation (electric compensation [G01L 9/025](#), [G01L 9/045](#), [G01L 9/065](#), [G01L 9/085](#), [G01L 9/105](#) or [G01L 9/125](#))}

**Project: N/A (G01M)**

- G01M 1/00** Testing static or dynamic balance of machines or structures (balancing rotary bowls of centrifuges [B04B 9/14](#); apparatus characterised by the means for holding wheels or parts thereof [B60B 30/00](#); determining the stability factors of ships [B63B](#); stabilising of aircraft [B64C 17/00](#); control systems for balancing automatically in operation [G05](#); balancing rotors of dynamo-electric machines [H02K 15/16](#))
- U G01M 1/14** · Determining unbalance ([G01M 1/30](#) takes precedence)
- U G01M 1/16** · · by oscillating or rotating the body to be tested
- G01M 1/22 · · · and converting vibrations due to unbalance into electric variables (measuring vibrations in general [G01H](#); microphones or like acoustic electromechanical transducers [H04R](#))

- G01M 3/00** Investigating fluid-tightness of structures (investigating permeability of porous material, investigating the presence of flaws in general [G01N](#) {membrane leak detection in blood dialysis [A61M 1/1692](#); detecting infusion flow leakage [A61M 5/16831](#)})
- G01M 3/005 · {using pigs or moles ([G01M 3/246](#), [G01M 3/2823](#) take precedence)}
  - U G01M 3/02 · by using fluid or vacuum
  - U G01M 3/04 · · by detecting the presence of fluid at the leakage point
  - G01M 3/16 · · · using electric detection means ([G01M 3/06](#), [G01M 3/12](#), [G01M 3/20](#), [G01M 3/24](#), [G01M 3/26](#) take precedence {[G01M 3/045](#) takes precedence})
  - U G01M 3/26 · · by measuring rate of loss or gain of fluid, e.g. by pressure-responsive devices, by flow detectors
  - U G01M 3/28 · · · for pipes, cables or tubes; for pipe joints or seals; for valves {for welds (not used)}
  - G01M 3/2807 · · · · {for pipes ([G01M 3/2892](#), [G01M 3/30](#) take precedence)}
  - U G01M 3/32 · · · for containers, e.g. radiators
  - U G01M 3/3236 · · · · {by monitoring the interior space of the containers}
  - G01M 3/3254 · · · · · {using a flow detector ([G01M 3/3245](#), [G01M 3/3272](#) take precedence)}
  - G01M 3/3263 · · · · · {using a differential pressure detector ([G01M 3/3245](#), [G01M 3/3272](#) take precedence)}
- G01M 7/00** Vibration-testing of structures; Shock-testing of structures ([G01M 9/00](#) takes precedence; {generating vibrations [B06](#), [G10](#), [H04R](#); vibration measurement [G01H](#); material testing [G01N 3/00](#)})
- U **G01M 9/00** Aerodynamic testing; Arrangements in or on wind tunnels (building aspects Section E; investigating properties of materials in general [G01N](#))
  - U G01M 9/06 · Measuring arrangements specially adapted for aerodynamic testing
  - G01M 9/065 · · {dealing with flow (measuring volume flow [G01F](#); measuring speed of fluids [G01P 5/00](#))}
- G01M 10/00** Hydrodynamic testing; Arrangements in or on ship-testing tanks or water tunnels (building aspects Section E; investigating properties of materials in general [G01N](#); {methods for designing, building, maintaining, converting, refitting, repairing or determining properties of vessels, not otherwise provided for and using towing tanks or model basins for designing [B63B 9/02](#); for determining vessel properties with respect to stability or balance [B63B 9/08](#); apparatus for indicating vessel attitude, e.g. inclination or duration of roll [B63B 39/00](#)})
- G01M 15/00** Testing of engines
- NOTE  
 Informative note  
 References listed below indicate IPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:  
 Measurement of mechanical vibrations in general [G01H](#)  
 Analysing gases in general [G01N](#)  
 Arrangements for testing electrical properties; Arrangements for locating electric faults; Arrangements for electrical testing characterised by what is being tested not provided for elsewhere [G01R 31/00](#).
- G01M 15/04 · Testing of internal-combustion engines, e.g. diagnostic testing of piston engines
- NOTES  
 1. Informative note

References listed below indicate IPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:

Monitoring or diagnostic devices for exhaust-gas treatment apparatus

[F01N 11/00](#)

Indicating or supervising devices of internal-combustion engines [F02B 77/08](#)

Running in of internal-combustion engines [F02B 79/00](#)

Controlling combustion engines [F02D](#)

Apparatus for testing, tuning or synchronising carburettors, e.g. carburettor flow stands [F02M 19/01](#)

Testing fuel-injection apparatus [F02M 65/00](#)

Testing internal-combustion engine ignition, e.g. timing [F02P 17/00](#)

Devices for determining the value of power, e.g. by measuring and simultaneously multiplying the values of torque and revolutions per unit of time, by multiplying the values of tractive or propulsive force and velocity [G01L 3/24](#)

Determining the characteristic of torque in relation to revolutions per unit of time [G01L 5/26](#)

Devices for detecting or indicating knocks in internal-combustion engines [G01L 23/22](#)

Devices for measuring pressure in inlet or exhaust ducts of internal combustion engines [G01L 23/24](#)

Means for indicating positions of pistons or cranks of internal-combustion engines by measuring pressure [G01L 23/30](#).

2. Group [G01M 15/05](#) takes precedence over groups [G01M 15/042](#) and [G01M 15/06](#) to [G01M 15/12](#).

- U G01M 15/10
  - • by monitoring exhaust gases {or combustion flame (analyses of gases per se [G01N](#))}
- U G01M 15/102
  - • • {by monitoring exhaust gases}
- G01M 15/104
  - • • {using oxygen or lambda-sensors (testing catalytic converters [F01N 3/18](#), [F01N 11/007](#))}
- G01M 15/14
  - Testing of gas-turbine plants or jet-propulsion plants

#### NOTE

Informative note

References listed below indicate IPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:

Rocket-engine plants characterised by specially adapted arrangements for testing or measuring [F02K 9/96](#).

#### G01M 17/00

**Testing of vehicles ([G01M 15/00](#) takes precedence; testing fluid tightness [G01M 3/00](#); testing elastic properties of bodies or chassis, e.g. torsion testing [G01M 5/00](#); testing alignment of vehicle head-lighting devices [G01M 11/06](#); {testing brakes [G01L 5/28](#)})**

- U G01M 17/007
  - {of wheeled or endless-tracked vehicles ([G01M 17/08](#) takes precedence)}
- G01M 17/0072
  - • {the wheels of the vehicle co-operating with rotatable rolls ([G01M 17/022](#), [G01M 17/045](#), [G01M 17/065](#) take precedence)}
- G01M 17/0078
  - • {Shock-testing of vehicles (shock-testing of structures in general [G01M 7/08](#), [G01N 3/30](#))}
- U G01M 17/02
  - • of tyres
- U G01M 17/022
  - • • {the tyre co-operates with rotatable rolls}
- G01M 17/024
  - • • • {combined with tyre surface correcting or marking means (compensating unbalance [G01M 1/30](#); marking location of unbalance [G01M 1/26](#))}

- G01M 17/06
- of steering behaviour; of rolling behaviour (measuring steering angles [G01B](#); measuring steering forces [G01L](#))

**U G01M 99/00****Subject matter not provided for in other groups of this subclass**

G01M 99/005

- {Testing of complete machines, e.g. washing-machines or mobile phones (testing of machine parts [G01M 13/00](#); testing of electric apparatus or components [G01R 31/02](#))}

NOTE

This group covers mechanical testing of complete machines

**Project: N/A (G01N)**

G01N

**INVESTIGATING OR ANALYSING MATERIALS BY DETERMINING THEIR CHEMICAL OR PHYSICAL PROPERTIES** (separating components of materials in general [B01D](#), [B01J](#), [B03](#), [B07](#); apparatus fully provided for in a single other subclass, see the relevant subclass e.g. [B01L](#); measuring or testing processes other than immunoassay, involving enzymes or micro-organisms [C12M](#), [C12Q](#); investigation of foundation soil in situ [E02D 1/00](#); sensing humidity changes for compensating measurements of other variables or for compensating readings of instruments for variations in humidity, see [G01D](#) or the relevant subclass for the variable measured; testing or determining the properties of structures [G01M](#); measuring or investigating electric or magnetic properties of materials [G01R](#); systems or methods in general, using reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, [G01S](#); determining sensitivity, graininess, or density of photographic materials [G03C 5/02](#); testing component parts of nuclear reactors [G21C 17/00](#); {-controlling or regulating non-electric variables [G05D](#); measuring degree of ionisation of ionised gases, i.e. plasma [H05H 1/0006](#); testing electrographic developer properties [G03G 15/0848](#)})

NOTES

1. In this subclass, the following terms are used with the meanings indicated :
  - "investigating" means testing or determining;
  - "materials" includes solid, liquid or gaseous media, e.g. the atmosphere.
2. Attention is drawn to the Notes following the title of class [G01](#).
3. Inventions relating to investigating the properties of materials, specially adapted for use in processes covered by subclass [B23K](#), are classified in group [B23K 31/12](#).

**U G01N 1/00****Sampling; Preparing specimens for investigation**

G01N 1/02

- Devices for withdrawing samples (for medical or veterinary purposes [A61](#); {sampling of foundation soil [E02D 1/04](#) ; obtaining samples of soil or well fluids [E21B 49/00](#); {-collecting or conveying radioactive samples [G01T 7/00](#)-, e.g. [G01T 7/02](#)-, [G01T 7/08](#)})

G01N 1/10

- in the liquid or fluent state {(burettes, pipettes [B01L 3/02](#); Sampling of ground water [E02D 1/06](#); metering by volume of fluids or fluent solid material [G01F 11/00](#)-, [G01F 13/00](#))}

G01N 1/16

- with provision for intake at several levels {[G01N 1/2035](#)}([G01N 1/12](#)-, [G01N 1/14](#) take precedence)

G01N 1/18

- with provision for splitting samples into portions ([G01N 1/12](#)-, [G01N 1/14](#) take precedence); fraction-collection apparatus for chromatography [B01D 15/08](#))

G01N 1/20

- for flowing or falling materials {[G01N 1/2035](#)}([G01N 1/12](#)-, [G01N 1/14](#) take precedence)

- G01N 1/22
- in the gaseous state {(specially adapted for biological material [G01N 33/497](#);- measuring breath flow [A61B 5/087](#))}
- G01N 1/28
- Preparing specimens for investigation{ (including physical details of (bio-)chemical methods covered elsewhere, e.g. [G01N 33/50](#)-, [C12Q](#))(mounting specimens on microscopic slides [G02B 21/34](#);- means for supporting the objects or the materials to be analysed in electron microscopes [H01J 37/20](#);- {-laboratory gas handling apparatus [B01L 5/00](#))}
- G01N 1/286
- {involving mechanical work, e.g. chopping, disintegrating, compacting, homogenising (microtomes [G01N 1/06](#);- pulverising in general [B02C](#);- mixing in general [B01F](#))}
- U G01N 3/00**
- Investigating strength properties of solid materials by application of mechanical stress (strain gauges [G01B](#); measuring stress in general [G01L](#))**
- NOTE
- This group covers the stressing of materials not only below but also beyond the elastic limit, e.g. until breaking occurs.
- G01N 3/20
- by applying steady bending forces ([G01N 3/26](#)-, [G01N 3/28](#) take precedence)
- G01N 3/22
- by applying steady torsional forces ([G01N 3/26](#)-, [G01N 3/28](#) take precedence)
- G01N 3/24
- by applying steady shearing forces ([G01N 3/26](#)-, [G01N 3/28](#) take precedence)
- G01N 3/32
- by applying repeated or pulsating forces (generation of such forces in general, see the relevant classes or subclasses, e.g. [B06](#)-, [G10](#))
- U G01N 15/00**
- Investigating characteristics of particles; Investigating permeability, pore-volume, or surface-area of porous materials (identification of micro-organisms [C12Q](#))**
- G01N 15/02
- Investigating particle size or size distribution ([G01N 15/04](#)-, [G01N 15/10](#) take precedence; by measuring osmotic pressure [G01N 7/10](#);- by filtering [B01D](#);- by sifting [B07B](#))
- G01N 15/06
- Investigating concentration of particle suspensions ([G01N 15/04](#)-, [G01N 15/10](#) take precedence; by weighing [G01N 5/00](#))
- NOTE
- References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group and its subgroups:
- Investigating or analysing materials;
  - by the use of optical means: [G01N 21/00](#)-, e.g. [G01N 21/47](#)-, [G01N 21/90](#);-
  - by other radiations or by particles: [G01N 23/00](#)-, e.g. [G01N 23/02](#)-, [G01N 23/201](#);-
  - by measuring impedance: [G01N 27/02](#)-, e.g. [G01N 27/06](#)-, [G01N 27/22](#);-
  - by electrochemical means: [G01N 27/00](#)-, e.g. [G01N 27/26](#);-
  - by measuring absorption of sonic or ultrasonic vibrations: [G01N 29/00](#)-, e.g. [G01N 29/02](#)
- G01N 15/0656
- {using electric, e.g. electrostatic methods or magnetic methods (by investigating individual particles [G01N 15/1031](#)-, [G01N 15/12](#))}
- U G01N 15/10**
- Investigating individual particles
- G01N 15/1031
- {by measuring electrical or magnetic effects thereof, e.g. onconductivity or capacity (using nano-scale size effects, other than for sizing or counting, by translocation through nano-pores [G01N 33/48721](#);- involving the use of Coulter counters [G01N 15/12](#))}
- U G01N 15/14**
- Electro-optical investigation, e.g. flow cytometers

- G01N 15/1484      · · · {micro-structural devices}
- WARNING  
This group is incomplete; see provisionally also groups [G01N 15/14](#), [G01N 15/1404](#), [G01N 15/1456](#) and related indexing codes
- U G01N 19/00      Investigating materials by mechanical methods ([G01N 3/00](#) to [G01N 17/00](#) take precedence)**
- G01N 19/02      · Measuring coefficient of friction between materials {(testing of tyres [G01M 17/02](#); determinations of friction coefficient used in vehicle braking or traction control systems [B60T 8/172](#))}
- G01N 21/00      Investigating or analysing materials by the use of optical means, i.e. using infra-red, visible or ultra-violet light ([G01N 3/00](#)-[G01N 19/00](#) take precedence)**
- NOTE  
This group does not cover the investigation of spectral properties of light per se, or measurements of the properties of materials where spectral properties of light are sensed and primary emphasis is placed on creating, detecting or analysing the spectrum providing that the properties of the materials to be investigated are of minor importance (see also Note (4) after the title of class [G01](#)). Those subjects are covered by group [G01J 3/00](#).
- U G01N 21/01      · Arrangements or apparatus for facilitating the optical investigation
- U G01N 21/03      · · Cuvette constructions
- G01N 21/0332      · · · {with temperature control (control of temperature [G05D 23/00](#); cryostats [F17C 3/08](#))}
- U G01N 21/17      · Systems in which incident light is modified in accordance with the properties of the material investigated (where the material investigated is optically excited causing a change in wavelength of the incident light [G01N 21/63](#))
- U G01N 21/25      · · Colour; Spectral properties, i.e. comparison of effect of material on the light at two or more different wavelengths or wavelength bands
- G01N 21/27      · · · using photo-electric detection ([G01N 21/31](#) takes precedence){circuits for computing concentration (logarithmic circuits [G06G 7/24](#); photometric circuits in general [G01J](#))}
- G01N 21/47      · · Scattering, i.e. diffuse reflection ([G01N 21/25](#), [G01N 21/41](#) take precedence {[G01N 21/55](#) takes precedence})
- U G01N 21/55      · · Specular reflectivity
- U G01N 21/552      · · · Attenuated total reflection
- G01N 21/553      · · · · {and using surface plasmons (fluorescence excitation [G01N 21/648](#); enhanced Raman [G01N 21/658](#))}
- U G01N 21/62      · Systems in which the material investigated is excited whereby it emits light or causes a change in wavelength of the incident light
- U G01N 21/63      · · optically excited
- U G01N 21/64      · · · Fluorescence; Phosphorescence
- G01N 21/6428      · · · · {Measuring fluorescence of fluorescent products of reactions or of fluorochrome labelled reactive substances, e.g. measuring quenching effects, using measuring "optrodes" (in vivo [A61B 5/00](#); immunoassay [G01N 33/53](#))}
- G01N 21/75      · Systems in which material is subjected to a chemical reaction, the progress or the result of the reaction being investigated (systems in which material is burnt in a flame or plasma [G01N 21/72](#), [G01N 21/73](#))
- U G01N 21/77      · · by observing the effect on a chemical indicator

- G01N 21/7703
  - • • {using reagent-clad optical fibres or optical waveguides (using measurement of total internal reflection or attenuated total reflection [G01N 21/552](#); optical fibres or waveguides per se [G02B](#))}
- U G01N 21/84
  - Systems specially adapted for particular applications
- G01N 21/8483
  - • {Investigating reagent band (test-element handling not specific to a test method [G01N 33/4875](#); analytical elements specific to chemical analysis of biological material [G01N 33/52](#); autometer with reagent band [G01N 35/04](#))}
- U G01N 21/86
  - • Investigating moving sheets ([G01N 21/89](#) takes precedence)
- G01N 2021/8663
  - • • {Paper, e.g. gloss, moisture content (inspecting the presence of flaws in moving materials, e.g. paper [G01N 21/89](#); measurement of gloss in general [G01N 21/57](#))}
- U G01N 21/88
  - • Investigating the presence of flaws or contamination
- G01N 21/8851
  - • • {Scan or image signal processing specially adapted therefor, e.g. for scan signal adjustment, for detecting different kinds of defects, for compensating for structures, markings, edges ([G01N 21/8806](#) and [G01N 21/93](#) to [G01N 21/95692](#) take precedence; optical measurement of dimensions [G01B 11/00](#); optical scanning [G02B 26/10](#); image transformation [G06T 3/00](#); computerised image enhancement [G06T 5/00](#); image processing per se for flaw detection [G06T 7/0002](#))}
- G01N 21/89
  - • • in moving material, e.g. running paper or textiles ([G01N 21/90](#), [G01N 21/91](#), [G01N 21/94](#) take precedence)
- G01N 21/95
  - • • characterised by the material or shape of the object to be examined ([G01N 21/89](#) to [G01N 21/91](#), [G01N 21/94](#) take precedence)
- G01N 21/956
  - • • • Inspecting patterns on the surface of objects (contactless testing of electronic circuits [G01R 31/308](#); testing currency [G07D](#) {manufacturing processes per se of semiconductor devices implementing a measuring step [H01L 22/10](#))}
- G01N 22/00**

**Investigating or analysing materials by the use of microwaves ([G01N 3/00](#) to [G01N 17/00](#), [G01N 24/00](#) take precedence)**
- G01N 23/00**

**Investigating or analysing materials by the use of wave or particle radiation not covered by [G01N 21/00](#) or [G01N 22/00](#), e.g. X-rays or neutrons ([G01N 3/00](#) to [G01N 17/00](#) take precedence; measuring stress in general [G01L 1/00](#); measurement of nuclear or X-radiation [G01T](#); introducing objects or materials into nuclear reactors, or removing them therefrom, or storing them after treatment therein [G21C](#); construction or operation of X-ray apparatus or circuits therefor [H05G](#))**
- U G01N 23/02
  - by transmitting the radiation through the material
- U G01N 23/06
  - • and measuring the absorption
- U G01N 23/08
  - • • using electric detection means
- G01N 23/16
  - • • • the material being a moving sheet {or a sheet or tube examined by a scanning probe} ([G01N 23/09](#), [G01N 23/18](#) take precedence)
- U G01N 23/20
  - by using diffraction of the radiation, e.g. for investigating crystal structure; by using reflection of the radiation
- G01N 23/20008
  - • {Constructional details; Accessories (monochromators for XRays using crystals [G21K 1/06](#); using gratings [G01J 3/1833](#))}
- U G01N 23/207
  - • by means of diffractometry using detectors, e.g. using an analysing crystal or a crystal to be analysed in a central position and one or more displaceable detectors in circumferential positions ([G01N 23/201](#) {[G01N 23/2073](#)} take precedence; spectrometry of detected or measured radiation intensity [G01T 1/36](#))

- G01N 23/2076
- • • {for spectrometry, i.e. using an analysing crystal, e.g. for measuring X-ray fluorescence spectrum of a sample with wavelength-dispersion, i.e. WDXFS (analysis by X-ray fluorescence in general [G01N 23/223](#); Spectrometry of X-rays or gamma-ray beams per se [G01T 1/36](#))}
- G01N 23/22
- by measuring secondary emission
- NOTE  
Devices per se are classified in the relevant places, e.g. [H01J 37/00](#)-, [H01J 49/00](#)
- U G01N 24/00**      **Investigating or analyzing materials by the use of nuclear magnetic resonance, electron paramagnetic resonance or other spin effects (arrangements or instruments for measuring magnetic resonance effects [G01R 33/20](#))**
- G01N 24/002
- {Using resonance on molecular beams (atomic clocks [G04F 5/14](#);-; beam masers [H01S 1/06](#))}
- G01N 24/006
- {using optical pumping (magnetometers using optical pumping [G01R 33/26](#);-; optical pumping of lasers [H01S 3/091](#))}
- U G01N 25/00**      **Investigating or analyzing materials by the use of thermal means ([G01N 3/00](#) to [G01N 23/00](#) take precedence)**
- U G01N 25/14
- by using distillation, extraction, sublimation, condensation, freezing, or crystallisation ([G01N 25/02](#) takes precedence)
- G01N 25/145
- • {Accessories, e.g. cooling devices (in general [B01L](#)-, [F25D](#))}
- G01N 25/18
- by investigating thermal conductivity (by calorimetry [G01N 25/20](#);-; by measuring change of resistance of an electrically-heated body [G01N 27/18](#))
- U G01N 25/20
- by investigating the development of heat, i.e. calorimetry, e.g. by measuring specific heat, by measuring thermal conductivity (calorimeters per se [G01K](#))
- U G01N 25/48
- • on solution, sorption, or a chemical reaction not involving combustion or catalytic oxidation
- U G01N 25/4806
- • • {Details not adapted to a particular type of sample}
- U G01N 25/4813
- • • • {concerning the measuring means}
- G01N 25/482
- • • • • {concerning the temperature responsive elements (measuring temperature or quantity of heat, thermally-sensitive elements [G01K](#);-; thermoelectric devices [H01L 35/00](#)-, [H01L 37/00](#))}
- U G01N 27/00**      **Investigating or analysing materials by the use of electric, electro-chemical, or magnetic means ([G01N 3/00](#) to [G01N 25/00](#) take precedence; measurement or testing electric or magnetic variables or of electric or magnetic properties of materials [G01R](#))**
- U G01N 27/02
- by investigating the impedance of the material
- U G01N 27/04
- • by investigating resistance {(for measuring the amount of particles [G01N 15/0656](#))}
- G01N 27/045
- • • {Circuits (measuring resistance per se [G01R 27/00](#)-, e.g. [G01R 27/22](#))}
- G01N 27/06
- • • of a liquid (involving electrolysis [G01N 27/26](#);-; involving polarography [G01N 27/48](#);-; measuring electric resistance of fluids [G01R 27/22](#))
- U G01N 27/12
- • • of a solid body in dependence upon absorption of a fluid; of a solid body in dependence upon reaction with a fluid, {for detecting components in the fluid}
- G01N 27/129
- • • • {Diode type sensors, e.g. gas sensitive Schottky diodes (capacitor type sensors [G01N 27/227](#);-; field-effect transistor type sensors [G01N 27/414](#))}
- U G01N 27/22
- • by investigating capacitance

- G01N 27/221
  - • • {by investigating the dielectric properties (using microwaves [G01N 22/00](#); measuring loss factors or dielectric constants per se [G01R 27/26](#))}
- G01N 27/26
  - by investigating electrochemical variables; by using electrolysis or electrophoresis (investigating resistance to corrosion [G01N 17/00](#); investigating or analysing materials by separation into components using adsorption, absorption or similar phenomena or using ion-exchange, e.g. chromatography, [G01N 30/00](#); immunoelectrophoresis [G01N 33/561](#); electrochemical processes or apparatus in general [B01J](#); standard cells [H01M 6/28](#))
- U G01N 27/28
  - • Electrolytic cell components
- U G01N 27/30
  - • • Electrodes, e.g. test electrodes; Half-cells ([G01N 27/414](#) takes precedence)
- G01N 27/302
  - • • • {pH sensitive, e.g. quinhydrone, antimony or hydrogen electrodes (ion selective electrodes [G01N 27/333](#), glass electrodes [G01N 27/36](#))}
- G01N 27/327
  - • • • Biochemical electrodes {electrical and mechanical details of in vitro measurements (chemical and biological details [C12Q 1/00](#), [G01N 33/543](#); in vivo [A61B 5/00](#))}
- G01N 27/3271
  - • • • • {Amperometric enzyme electrodes for analytes in body fluids, e.g. glucose in blood (amperometry per se [G01N 27/49](#); aspects concerning the enzyme reagent [C12Q 1/001](#))}
- U G01N 27/3275
  - • • • • {Sensing specific biomolecules, e.g. nucleic acid strands, based on an electrode surface reaction}
- G01N 27/3276
  - • • • • • {being a hybridisation with immobilised receptors (using a FET type sensor [G01N 27/4145](#); concerning the hybridisation [C12Q 1/68](#))}
- G01N 27/3277
  - • • • • • {being a redox reaction, e.g. detection by cyclic voltammetry (voltammetry per se [G01N 27/42](#), [G01N 27/48](#))}
- G01N 27/3278
  - • • • • • {involving nanosized elements, e.g. nanogaps or nanoparticles (nanopores [G01N 33/48721](#); magnetic beads [G01N 27/745](#))}
- G01N 27/416
  - • Systems ([G01N 27/27](#) takes precedence {-; for testing batteries [G01R 31/36](#))}
- G01N 27/4162
  - • • {investigating the composition of gases, by the influence exerted on ionic conductivity in a liquid (conductometry in general [G01N 27/06](#); amperometric gas sensors [G01N 27/404](#))}
- G01N 27/4163
  - • • {checking the operation of, or calibrating, the measuring apparatus ([G01N 27/3274](#), [G01N 27/4175](#) and [G01N 33/0006](#) take precedence)}
- U G01N 27/4166
  - • • {measuring a particular property of an electrolyte}
- G01N 27/4167
  - • • • {pH (electrodes therefor [G01N 27/302](#), [G01N 27/36](#))}
- G01N 27/447
  - • • using electrophoresis {(aspects concerning peptides or proteins [C07K 1/26](#); for non-analytical purposes [B01D 57/02](#); separating particles by dielectrophoresis [B03C 5/00](#))}
- U G01N 27/72
  - by investigating magnetic variables
- U G01N 27/74
  - • of fluids ([G01N 24/00](#) takes precedence)
- G01N 27/745
  - • • {for detecting magnetic beads used in biochemical assays (concerning the assays [G01N 33/54326](#); sensors therefor [G01R 33/1269](#); automatic analysers therefor [G01N 35/0098](#))}
- G01N 27/92
  - by investigating breakdown voltage ([G01N 27/60](#), [G01N 27/62](#) take precedence; testing of articles or specimens of solids or fluids for dielectric strength or breakdown voltage [G01R 31/12](#))

- G01N 29/00** Investigating or analysing materials by the use of ultrasonic, sonic or infrasonic waves; Visualisation of the interior of objects by transmitting ultrasonic or sonic waves through the object (**G01N 3/00** to **G01N 27/00** take precedence; measuring or indicating of ultrasonic, sonic or infrasonic waves in general **G01H**; systems using the reflection or reradiation of acoustic waves, e.g. acoustic imaging, **G01S 15/00**; obtaining records by techniques analogous to photography using ultrasonic, sonic or infrasonic waves **G03B 42/06**; {medical diagnosis by ultrasounds **A61B 8/00**; generating or transmitting mechanical or acoustic waves **B06B**, **G10K**; seismic or acoustic prospecting or detecting **G01V 1/00**)
- G01N 29/02
- Analysing fluids (using acoustic emission techniques **G01N 29/14**; {constructional or flow details for analysing fluids **G01N 29/222**; optoacoustic fluid cells **G01N 29/2425**)
- U G01N 29/04
- Analysing solids (using acoustic emission techniques **G01N 29/14**)
- G01N 29/045
- • {by imparting shocks to the workpiece and detecting the vibrations or the acoustic waves caused by the shocks (measuring resonant frequency **G01H 13/00**; measuring strength properties by application of mechanical stress **G01N 3/00**)
- G01N 29/046
- • • {using the echo of particles imparting on a surface; using acoustic emission of particles (investigating concentration of particle suspensions **G01N 15/06**; devices for measuring flow of solids in suspension **G01F 1/74**)}
- G01N 29/06
- • Visualisation of the interior, e.g. acoustic microscopy {(medical or veterinary diagnosis using sonic waves **A61B 8/00**; representation of acoustic wave distribution **G01H 3/125**, **G01H 9/002**; short-range imaging systems using reflection of acoustic waves **G01S 15/8906**)}
- U G01N 29/07
- • by measuring propagation velocity or propagation time of acoustic waves
- G01N 29/075
- • • {by measuring or comparing phase angle (measuring frequencies or phase angles per se **G01R 23/00**, **G01R 25/00**)}
- G01N 29/12
- • by measuring frequency or resonance of acoustic waves {(measuring frequency or resonant frequency of mechanical vibrations or acoustic waves in general **G01H 1/06**, **G01H 3/04**, **G01H 13/00**; acoustic resonators **G10K 11/04**; vibration or shock testing of structures **G01M 7/00**)}
- G01N 29/14
- using acoustic emission techniques {(echo of particles **G01N 29/046**; measuring mechanical vibrations or acoustic waves in solids in general **G01H 1/00**)}
- U G01N 29/22
- Details, {e.g. general constructional or apparatus details}
- G01N 29/221
- • {Arrangements for directing or focusing the acoustical waves (electronic orientation or focusing **G01N 29/262**; sound directing or focusing **G10K 11/26**; mechanical steering of sound transducers or their beams **G10K 11/35**)}
- G01N 29/24
- • Probes {(transducers for acoustic waves **B06B**, **G10K**; for measuring **G01H**)}
- G01N 29/2412
- • • {using the magnetostrictive properties of the material to be examined, e.g. electromagnetic acoustic transducers [EMAT]; (investigating the presence of flaws using eddy currents **G01N 27/90**, magnetostrictive transducers **B06B 1/08**; measuring magnetostrictive properties **G01R 33/18**)}
- G01N 29/2418
- • • {using optoacoustic interaction with the material, e.g. laser radiation, photoacoustics (photoacoustic cells **G01N 21/1702**; measuring characteristics of vibrations by using radiation-sensitive means **G01H 9/00**; acousto-optical conversion techniques for short-range imaging **G01S 15/8965**; sound-producing devices using laser bundle **G10K 15/046**)}

- U G01N 29/34 · Generating the ultrasonic, sonic or infrasonic waves, {e.g. electronic circuits specially adapted therefor}
- G01N 29/348 · · {with frequency characteristics, e.g. single frequency signals, chirp signals (measuring frequency of mechanical vibrations or acoustic waves in general [G01H 1/06](#)-, [G01H 3/04](#)-,; measuring frequency or analysing frequency spectra [G01R 23/00](#))}
- U G01N 29/44 · Processing the detected response signal, {e.g. electronic circuits specially adapted therefor (digital signal processing per se [G06F 17/00](#))}
- G01N 29/449 · · {Statistical methods not provided for in [G01N 29/4409](#)-, e.g. averaging, smoothing and interpolation}

**G01N 30/00**

**Investigating or analysing materials by separation into components using adsorption, absorption or similar phenomena or using ion-exchange, e.g. chromatography ([G01N 3/00](#) to [G01N 29/00](#) take precedence; separation for the preparation or production of components [B01D 15/00](#)-, [B01D 53/02](#)-, [B01D 53/14](#)-,; solid sorbent compositions in general [B01J 20/00](#)-,; ion-exchange in general [B01J 39/00](#) to [B01J 49/00](#) )}{or field flow fractionation (for preparation or production of components [B01D 21/00](#)-, [B01D 43/00](#)-, [B01D 45/00](#) or [B03C](#))}**

**NOTE**

In this group, the following term is used with the meaning indicated:

- "conditioning" refers to the adjustment or control of environmental parameters, e.g. temperature or pressure.

- U G01N 30/02 · Column chromatography
- G01N 30/88 · · Integrated analysis systems specially adapted therefor, not covered by a single one of the groups [G01N 30/04](#) to [G01N 30/86](#) (signal analysis systems per se [G06F](#), [G06G](#))
- G01N 30/96 · using ion-exchange ([G01N 30/02](#)-, [G01N 30/90](#) take precedence)

**G01N 31/00**

**Investigating or analysing non-biological materials by the use of the chemical methods specified in the subgroup (testing the effectiveness or completeness of sterilisation procedures without using enzymes or microorganisms [A61L 2/28](#)-,; measuring or testing processes involving enzymes or micro-organisms [C12Q 1/00](#)); Apparatus specially adapted for such methods**

- U G01N 31/005 · {investigating the presence of an element by oxidation ([G01N 31/12](#) takes precedence)}
- G01N 31/007 · · {by measuring the quantity of water resulting therefrom ([G01N 31/12](#) takes precedence)}

**NOTE**

The observation of the progress of the reaction specified below by any of the methods specified in groups [G01N 3/00](#) to [G01N 3/00](#) to [G01N 29/00](#)-, if this is of major importance, is dealt with in the group concerned.

- U G01N 31/22 · using chemical indicators ([G01N 31/02](#) takes precedence)
- G01N 31/223 · · {for investigating presence of specific gases or aerosols ([G01N 31/221](#)-, [G01N 31/222](#) take precedence; actuation of fire alarm by presence of smoke or gases [G08B 17/10](#))}

**U G01N 33/00**

**Investigating or analysing materials by specific methods not covered by the preceding groups**

- G01N 33/0004 · {Gaseous mixtures, e.g. polluted air (gaseous biological material [G01N 33/497](#)-,; exhaust gas of internal combustion engines [G01M 15/102](#))}

- U G01N 33/0009
  - • {General constructional details of gas analysers, e.g. portable test equipment ([G01N 1/22](#) takes precedence)}
- U G01N 33/0062
  - • • {concerning the measuring method, e.g. intermittent, or the display, e.g. digital}
- G01N 33/0063
  - • • • {using a threshold to release an alarm or displaying means (alarm arrangements [G08B](#), e.g. fire alarm actuated by the presence of smoke or gases [G08B 17/10](#), for other abnormal conditions [G08B 21/00](#))}
- G01N 33/15
  - Medicinal preparations; {Physical properties thereof, e.g. dissolubility (drug screening with animal cells [G01N 33/5008](#), drug screening with microorganisms [C12Q 1/025](#))}
- U G01N 33/18
  - Water {(treatment of water [C02F](#))}
- G01N 33/182
  - • {specific anions in water (electrochemical analysis [G01N 27/26](#); detection of ions by colorimetry [G01N 31/22](#))}
- G01N 33/24
  - earth materials ([G01N 33/42](#) takes precedence; {-testing the nature of borehole walls, formation testing [E21B 49/00](#); investigation of foundation soil in situ [E02D 1/00](#); geophysics, e.g. prospecting [G01V](#))}
- G01N 33/241
  - • {for hydrocarbon content (drilling mud [G01N 33/2823](#); drilling per se [E21B](#); prospecting [G01V](#))}
- U G01N 33/26
  - oils; viscous liquids; paints; inks ([G01N 33/22](#) takes precedence)
- U G01N 33/28
  - • Oils {, i.e. hydrocarbon liquids}{(gaseous fuels [G01N 33/225](#);} edible oils or edible fats [G01N 33/03](#))}
- G01N 33/2823
  - • • {raw oil, drilling fluid or polyphasic mixtures (hydrocarbon content of earth materials [G01N 33/241](#); prospecting [G01V](#); drilling per se [E21B](#))}
- U G01N 33/2835
  - • • {specific substances contained in the oil or fuel}
- G01N 33/2847
  - • • • {Water in oil (basic sediment and water [G01N 33/2823](#); oil in water [G01N 33/1833](#))}
- G01N 33/48
  - biological material, e.g. blood, urine ([G01N 33/02](#) to [G01N 33/14](#), [G01N 33/26](#), [G01N 33/44](#), [G01N 33/46](#) take precedence; determining the germinating capacity of seeds [A01C 1/02](#)); Haemocytometers (counting blood corpuscles distributed over a surface by scanning the surface [G06M 11/02](#))
- U G01N 33/483
  - • Physical analysis of biological material
- U G01N 33/487
  - • • of liquid biological material
- G01N 33/48707
  - • • • {by electrical means ([G01N 33/49](#), [G01N 33/493](#) take precedence)}
- G01N 33/48721
  - • • • • {Investigating individual macromolecules, e.g. by translocation through nanopores (Coulter counters in general [G01N 15/12](#); fabrication methods for nano-scale apertures [B81B 1/00](#); sequencing of nucleic acids [C12Q 1/68](#))}
- G01N 33/48735
  - • • • • {Investigating suspensions of cells, e.g. measuring microbe concentration (by chemical means [C12Q 1/04](#); colony counters [C12M 1/34](#); concentration of particle suspensions in general [G01N 15/06](#))}
- G01N 33/4875
  - • • • {Details of handling test elements, e.g. dispensing or storage, not specific to a particular test method (test-elements per se [B01L](#), automatic analysers [G01N 35/00](#), in-vivo analysis on the human body for medical diagnosis [A61B](#))}
- U G01N 33/48785
  - • • • {Electrical and electronic details of measuring devices for physical analysis of liquid biological material not specific to a particular test method, e.g. user interface or power supply}
- G01N 33/48792
  - • • • • {Data management, e.g. communication with processing unit (for in vivo diagnostics [A61B 5/0002](#); medical informatics [G06F 19/30](#); transmission systems for measured values [G08C](#))}

- G01N 33/49
  - • • Blood {(taking blood samples [A61B 5/15](#); chemical methods for determining blood cell populations [G01N 33/5094](#); chemical analysis of blood groups or blood types [G01N 33/80](#)}
- G01N 33/4905
  - • • • {Determining clotting time of blood (by chemical methods [G01N 33/86](#), [C12Q 1/54](#))}
- G01N 33/50
  - • Chemical analysis of biological material, e.g. blood, urine; Testing involving biospecific ligand binding methods; Immunological testing (measuring or testing processes involving enzymes or micro-organisms, compositions or test papers therefor; processes for forming such compositions, condition responsive control in microbiological or enzymological processes [C12Q](#))

NOTES

1. The expression "involving", when used in relation to a material includes the testing for the material as well as employing the material as a determinant or reactant in a test for a different material.
2. In groups [G01N 33/52](#) to [G01N 33/96](#), in the absence of an indication to the contrary, an invention is also classified in the last appropriate place.
3. Documents relating to new peptides or new DNA or its corresponding mRNA, encoding for the peptides, and their use in measuring or testing processes are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in diagnostics. However, if the investigating or analysing aspects are of interest, the documents are classified in this group

- G01N 33/5097
  - • • {involving plant cells (immunoassays of plant cells [G01N 33/56961](#); unicellular algae, photoplankton and photosynthetic bacteria in screening assays [C12Q 1/025](#))}
- G01N 33/52
  - • • Use of compounds or compositions for colorimetric, spectrophotometric or fluorometric investigation, e.g. use of reagent paper {and including single- and multilayer analytical elements (immunological elements [G01N 33/54386](#); involving labelled immunochemicals [G01N 33/58](#); for haemoglobin or occult blood [G01N 33/72](#))}
- G01N 33/53
  - • • Immunoassay; Biospecific binding assay (preparations containing antigens or antibodies for therapeutic purposes [A61K 39/00](#); haptens in general, see the relevant places in class [C07](#); proteins in general [C07K](#))
- U G01N 33/543
  - • • • with an insoluble carrier for immobilising immunochemicals
- G01N 33/5436
  - • • • • {with ligand physically entrapped within the solid phase (liposomes [G01N 33/5432](#); immunological test elements [G01N 33/54386](#))}
- U G01N 33/569
  - • • • for micro-organisms, e.g. protozoa, bacteria, viruses
- G01N 33/571
  - • • • • for venereal disease, e.g. syphilis, gonorrhoea {(herpes [G01N 33/56994](#); chlamydia [G01N 33/56927](#))}
- G01N 33/98
  - • • involving alcohol, e.g. ethanol in breath

NOTE

In groups [G01N 35/00](#) to [G01N 35/085](#), the indexing codes of [G01N](#) are added

- U **G01N 35/00** **Automatic analysis not limited to methods or materials provided for in any single one of groups [G01N 1/00](#) to [G01N 33/00](#); Handling materials therefor**
- G01N 35/0098
  - {involving analyte bound to insoluble magnetic carrier, e.g. using magnetic separation (magnetic particles used in immunoassays [G01N 33/54326](#); magnetic separation in general [B03C](#))}
- U G01N 35/10
  - Devices for transferring samples {or any liquids} to, in, or from, the analysis apparatus, e.g. suction devices, injection devices {([G01N 35/0099](#) takes precedence)}

- G01N 35/1095
- • {for supplying the samples to flow-through analysers (for a specific analyser see relevant groups, e.g. under [G01N 15/00](#)-, [G01N 21/00](#)-, [G01N 27/00](#)-, [G01N 30/00](#)-, [H01J 49/00](#))}
- U G01N 2333/00 Assays involving biological materials from specific organisms or of a specific nature**
- NOTE  
In groups [G01N 2333/47](#) to [G01N 2333/994](#) indexing codes are assigned according to the chemical nature of the materials irrespective of the source organism.
- G01N 2333/195
- from bacteria
- NOTE  
In groups [G01N 2333/20](#) to [G01N 2333/365](#)-, where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets.
- U G01N 2333/435**
- from animals; from humans
- G01N 2333/575
- • Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [G01N 2333/665](#)-, corticotropin [G01N 2333/695](#))
- U G01N 2333/705**
- • Assays involving receptors, cell surface antigens or cell surface determinants
- G01N 2333/70575
- • • NGF/TNF-superfamily, e.g. CD70, CD95L, CD153 or CD154 (NGF [G01N 2333/48](#)-, TNF [G01N 2333/525](#))
- G01N 2333/70578
- • • NGF-receptor/TNF-receptor superfamily, e.g. CD27, CD30 CD40 or CD95 (NGF-receptor [G01N 2333/71](#)-, TNF-receptor [G01N 2333/7151](#))
- U G01N 2400/00 Assays, e.g. immunoassays or enzyme assays, involving carbohydrates**
- G01N 2400/02
- involving antibodies to sugar part of glycoproteins (lectins from plants [G01N 2333/42](#)-, lectins from mammals [G01N 2333/4724](#))
- U G01N 2496/00 Reference solutions for assays of biological material**
- G01N 2496/25
- containing added polymers to stabilise biological material against degradation or maintain viscosity or density, e.g. gelatin, polyacrylamides, polyvinyl alcohol (casein [G01N 2333/4731](#)-, albumins [G01N 2333/76](#)-, polysaccharides [G01N 2400/10](#))
- G01N 2560/00 Chemical aspects of mass spectrometric analysis of biological material**
- NOTES
1. Analysis of proteins, peptides or amino acids by mass spectrometry is classified in [G01N 33/6848](#) and [G01N 33/6851](#)-.
  2. Analysis of nucleic acids by mass spectrometry is classified in [C12Q 1/6872](#)-, [C12Q 2563/167](#) and [C12Q 2565/627](#)-.

**G01N 2800/00**      **Detection or diagnosis of diseases**NOTES

1. The indexing codes [G01N 2800/02](#) - [G01N 2800/44](#) are based on The Merck Manual of Diagnosis and Therapy (17th. Edition, Mark Beers and Robert Berkow).
2. For diseases caused by micro-organism where the microorganism is detected, which subject matter is classified in [G01N 33/569](#) and subgroups, [G01N 33/571](#) or [G01N 33/576](#), the present indexing scheme is not used.
3. For cancers, which subject matter is classified in [G01N 33/574](#) and subgroups, the present indexing scheme is not used.
4. When indexing in the following scheme, the organ takes precedence, e.g. inflammation of the skin is indexed with dermatological disorders and not with immunology or allergic disorders, asthma with pulmonary disorders and not with immunology or allergic disorders. Exception is made for thrombosis which is indexed with haematological disorders.

**Project: N/A (G01P)****G01P**

**MEASURING LINEAR OR ANGULAR SPEED, ACCELERATION, DECELERATION, OR SHOCK; INDICATING PRESENCE, ABSENCE, OR DIRECTION, OF MOVEMENT (measuring or recording blood flow [A61B 5/02](#), [A61B 8/06](#); monitoring speed or deceleration of electrically-propelled vehicles [B60L 3/00](#); vehicle lighting systems adapted to indicate speed [B60Q 1/54](#); determining position or course in navigation, measuring ground distance in geodesy or surveying [G01C](#); combined measuring devices for measuring two or more variables of movement [G01C 23/00](#); measuring velocity of sound [G01H](#); measuring velocity of light [G01J 7/00](#); measuring direction or velocity of solid objects by reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, [G01S](#); measuring speed of nuclear radiation [G01T](#); measuring acceleration of gravity [G01V](#); {-measuring or recording the speed of trains [B61L 23/00](#); speed indicators incorporated in motor vehicles [B60K 35/00](#); measuring frequency or phase [G01R](#); traffic control [G08G](#)})**

NOTES

1. This subclass covers measuring direction or velocity of flowing fluids using propagation effects of radiowaves or other waves caused in the fluid itself, e.g. by laser anemometer, by ultrasonic flowmeter with "sing-around-system".
2. Attention is drawn to the Notes following the title of class [G01](#).

**U    G01P 3/00      Measuring linear or angular speed; Measuring differences of linear or angular speeds ([G01P 5/00](#) to [G01P 11/00](#) take precedence; {direction and speed indication [G01P 13/045](#)}; counting mechanisms [G06M](#))**

NOTE

The sub-groups of this group are distinguished by the method of measurement which is of major importance. Thus the mere application of other methods for giving a final indication does not affect the classification.

- U    G01P 3/64      · Devices characterised by the determination of the time taken to traverse a fixed distance**
- G01P 3/68      · · using optical means, i.e. using infra-red, visible, or ultra-violet light ([G01P 3/80](#) takes precedence; {-by reflection of waves [G01S 17/58](#)})**

**U    G01P 15/00      Measuring acceleration; Measuring deceleration; Measuring shock, i.e. sudden change of acceleration**

- G01P 15/02      · by making use of inertia forces {using solid seismic masses}(G01P 15/14 takes precedence)

**Project: N/A (G01R)****G01R**

**MEASURING ELECTRIC VARIABLES; MEASURING MAGNETIC VARIABLES** (measuring physical variables of any kind by conversion into electric variables, see Note (4) following the title of class [G01](#); measuring diffusion of ions in an electric field, e.g. electrophoresis, electro-osmosis [G01N](#); investigating non-electric or non-magnetic properties of materials by using electric or magnetic methods [G01N](#); indicating correct tuning of resonant circuits [H03J 3/12](#); monitoring electronic pulse counters [H03K 21/40](#); monitoring operation of communication systems [H04](#))

**NOTES**

1. This subclass covers:
  - measuring all kinds of electric or magnetic variables directly or by derivation from other electric or magnetic variables;
  - measuring all kinds of electric or magnetic properties of materials;
  - testing electric or magnetic devices, apparatus or networks, (e.g. discharge tubes, amplifiers) or measuring their characteristics;
  - indicating presence or sign of current or voltage;
  - NMR, EPR or other spin-effect apparatus, not specially adapted for a particular application;
  - equipment for generating signals to be used for carrying out such tests and measurements.
2. In this subclass, the following terms or expressions are used with the meanings indicated :
  - "measuring" includes investigating;
  - "instruments" or "measuring instruments" means electro-mechanical measuring mechanisms;
  - "arrangements for measuring" means apparatus, circuits, or methods for measuring;
3. Attention is drawn to the Notes following the title of class [G01](#).
4. In this subclass, group [G01R 17/00](#) takes precedence over groups [G01R 19/00](#) to [G01R 31/00](#).

**G01R 1/00**

**Details of instruments or arrangements of the types included in groups [G01R 5/00](#) to [G01R 13/00](#) and [G01R 31/00](#) (constructional details particular to {electromechanical} arrangements for measuring the electric consumption [G01R 11/02](#))**

- U G01R 1/02      · General constructional details (details of a kind applicable to measuring arrangements not specially adapted for a specific variable [G01D 7/00](#))
- G01R 1/04      · · Housings; Supporting members; Arrangements of terminals ("burn-in" aspects [G01R 31/286](#); terminals [H01R](#); terminal strips or boards [H02B](#); housings for electrical apparatus [H05K](#))
- G01R 1/0408      · · · {Test fixtures or contact fields; Connectors or connecting adaptors; Test clips; Test sockets ([G01R 1/067](#) takes precedence; mass production testing systems [G01R 31/01](#); testing of connections [G01R 31/04](#); for testing printed circuit boards [G01R 31/2808](#))}
- G01R 1/0416      · · · {Connectors, terminals ([G01R 1/0425](#) and [G01R 1/0433](#) take precedence; with measurement function for battery poles [G01R 31/3696](#); in general [H01R](#))}
- G01R 1/06      · · Measuring leads; Measuring probes ([G01R 19/145](#), [G01R 19/165](#) take precedence; end pieces for leads [H01R 11/00](#))

- G01R 1/067
- • • Measuring probes {(plugs, sockets or clips [G01R 1/0408](#); testing of connections [G01R 31/04](#); contacting IC`s for test purposes when probe design is not the essential feature [G01R 31/2886](#); using radiation beam as probe [G01R 31/302](#); end pieces for wires terminating in a probe [H01R 11/18](#))}
- G01R 1/073
- • • • Multiple probes {([G01R 1/06783](#), [G01R 1/06794](#), [G01R 1/071](#), [G01R 1/072](#) take precedence)}
- U G01R 1/20
- Modifications of basic electric elements for use in electric measuring instruments; Structural combinations of such elements with such instruments (instrument transformers per se [H01F 38/20](#))
- G01R 1/203
- • {Resistors used for electric measuring e.g. decade resistors standards, resistors for comparators, series resistors, shunts (resistors in general [H01C](#); microwave or radiowave terminations [H01P 1/26](#); coupling devices [H01R](#))}
- U G01R 5/00**
- Instruments for converting a single current or a single voltage into a mechanical displacement (vibration galvanometers [G01R 9/02](#))**
- G01R 5/28
- Electrostatic instruments (combined with radiation detector [G01T](#); {electrometers without passively moving electrodes [G01R 15/165](#); measuring electrostatic fields [G01R 29/12](#); measuring charge [G01R 29/24](#))}
- G01R 11/00**
- Electromechanical arrangements for measuring time integral of electric power {i.e. electric energy} or current, e.g. of consumption ({other arrangements for measuring time integral of electric power or current [G01R 22/00](#); Boards, panels, desks for energy meters, [H02B 1/03](#)}; monitoring electric consumption of electrically-propelled vehicles [B60L 3/00](#))**
- NOTE  
For the definition of "arrangement" see Note (2) under [G01R](#)
- U G01R 11/02
- Constructional details (applicable to electric measuring instruments in general [G01R 1/00](#))
- G01R 11/24
- • Arrangements for avoiding or indicating fraudulent use {(measures against unauthorised operation of bolts, nuts or pins [F16B 41/005](#); security seals [G09F 3/03](#); preventing of tampering with detection circuits in signaling or alarm circuits [G08B 29/046](#))}
- G01R 11/25
- • Arrangements for indicating or signalling faults (seals [G09F 3/03](#); preventing tampering with detection circuits in signalling or alarm circuits [G08B 29/046](#))
- NOTE  
Groups [G01R 11/48](#) to [G01R 11/66](#) take precedence over groups [G01R 11/30](#) to [G01R 11/46](#).
- G01R 13/00**
- Arrangements for displaying electric variables or waveforms (display by mechanical displacement only [G01R 5/00](#), [G01R 7/00](#), [G01R 9/00](#); recording frequency spectrum [G01R 23/18](#))**
- G01R 13/02
- for displaying measured electric variables in digital form ({using LCD`s or LED`s [G01R 13/40](#)}; counters [G06M](#); analogue/digital conversion in general [H03M 1/00](#))
- G01R 13/20
- Cathode-ray oscilloscopes; {Oscilloscopes using other screens than CRT`s, e.g. LCD`s; (control arrangements or circuits for cathode-ray tube indicators [G09G 1/00](#); cathode ray tubes [H01J 31/00](#))}
- G01R 13/202
- • {Non-electric appliances, e.g. scales, masks (luminescent screens for CRT provided with permanent marks or references [H01J 29/34](#); optical or photographic arrangements combined with CRT vessels [H01J 29/89](#))}

- G01R 13/38
- using the steady or oscillatory displacement of a light beam by an electromechanical measuring system (such measuring systems per se [G01R 5/00](#)-, [G01R 7/00](#)-, [G01R 9/00](#))
- G01R 15/00**
- Details of measuring arrangements of the types provided for in groups [G01R 17/00](#) to [G01R 29/00](#) and [G01R 33/00](#) to [G01R 35/00](#) (details of instruments [G01R 1/00](#)-, overload protection arrangements [G01R 1/36](#))**
- G01R 15/14
- Adaptations providing voltage or current isolation, e.g. for high-voltage or high-current networks (instrument transformers [H01F 38/20](#)-, voltage dividers [G01R 15/04](#)-, {-means for converting the output of a sensing member to another variable [G01D 5/00](#)-, visible signalling arrangements or devices [G08B 5/00](#)-, transmission systems for measured values [G08C 17/00](#)-, [G08C 23/00](#)})
- U G01R 15/146
- • {Measuring arrangements for current not covered by other subgroups of [G01R 15/14](#), e.g. using current dividers, shunts, or measuring a voltage drop (if no voltage isolation is involved [G01R 1/203](#) or [G01R 19/0092](#))}
- G01R 15/148
- • • {involving the measuring of a magnetic field or electric field ([G01R 15/18](#)-, [G01R 15/20](#)-, [G01R 15/24](#)-, [G01R 15/26](#) take precedence)}
- WARNING  
Not complete pending reorganization; see also [G01R 15/20](#)
- U G01R 15/16
- • using capacitive devices {(circuits constituting a voltage divider [G01R 15/06](#))}
- G01R 15/165
- • • {measuring electrostatic potential, e.g. with electrostatic voltmeters or electrometers, when the design of the sensor is essential (electrometers with passively moving electrodes [G01R 5/28](#)-, measuring electrostatic fields [G01R 29/12](#)-, measuring charge [G01R 29/24](#)-, measuring in circuits with high internal resistance [G01R 19/0023](#))}
- U G01R 15/18
- • using inductive devices, e.g. transformers
- U G01R 15/183
- • • {using transformers with a magnetic core}
- G01R 15/185
- • • • {with compensation or feedback windings or interacting coils, e.g. 0-flux sensors (using galvano-magnetic field sensors [G01R 15/20](#)-, conversion of DC into AC using transducers [G01R 19/20](#))}
- G01R 15/188
- • • {comprising rotatable parts, e.g. moving coils (galvanometers [G01R 5/02](#)-, [G01R 5/14](#))}
- G01R 15/20
- • using galvano-magnetic devices, e.g. Hall-effect devices, {i.e. measuring a magnetic field via the interaction between a current and a magnetic field, e.g. magneto resistive or Hall effect devices (electromechanical such devices, [G01R 5/00](#)-, [G01R 7/00](#)-, [G01R 9/00](#)-, measuring magnetic fields [G01R 33/02](#))}
- U G01R 17/00**
- Measuring arrangements involving comparison with a reference value, e.g. bridge**
- U G01R 17/10
- ac or dc measuring bridges (automatic comparison or re-balancing arrangements [G01R 17/02](#))
- G01R 17/14
- • with indication of measured value by calibrated null indicator, e.g. percent bridge, tolerance bridge ([G01R 17/12](#)-, [G01R 17/16](#) take precedence)

- G01R 19/00** Arrangements for measuring currents or voltages or for indicating presence or sign thereof (**G01R 5/00** takes precedence; {-voltage measurements using secondary electron emission when testing electronic circuits **G01R 31/305**} ; for measuring bio-electric currents or voltages **A61B 5/04**)
- NOTE**  
 Within groups **G01R 19/02** to **G01R 19/32**-, group **G01R 19/28** takes precedence. Groups **G01R 19/18** to **G01R 19/257** take precedence over groups **G01R 19/02** to **G01R 19/17** and **G01R 19/30**-.
- G01R 19/0007 • {Frequency selective voltage or current level measuring (measuring frequency **G01R 23/00**;-; testing attenuation in line transmission systems **H04B 3/48**;-; monitoring testing in transmission systems **H04B 17/00**)}
  - G01R 19/0023 • {Measuring currents or voltages from sources with high internal resistance by means of measuring circuits with high input impedance, e.g. OP-amplifiers (Electrostatic instruments **G01R 5/28**;-; measuring electrostatic potential **G01R 15/165**;-; measuring electrostatic fields **G01R 29/12**;-; amplifiers per se **H03F**)}
  - G01R 19/0046 • {characterised by a specific application or detail not covered by any other subgroup of **G01R 19/00** (contains no documents)}
  - G01R 19/0053 • • {Noise discrimination; Analog sampling; Measuring transients (measuring characteristics of individual pulses **G01R 29/02**;-; digital sampling **G01R 19/2509**;-; measuring noise figure **G01R 29/26**)}
  - G01R 19/145 • Indicating the presence of current or voltage {(measuring probes in general **G01R 1/06**;-; indicating continuity or short circuits in electric apparatus or lines or components **G01R 31/024**)}
  - G01R 19/165 • Indicating that current or voltage is either above or below a predetermined value or within or outside a predetermined range of values (circuits with regenerative action, e.g. Schmitt trigger **H03K 3/00**;-; threshold switches **H03K 17/00**)}
  - U G01R 19/16533 • • {characterised by the application (contains no documents)}
  - U G01R 19/16538 • • • {in AC or DC supplies (**G01R 19/16519** and **G01R 19/16528** take precedence)}
  - G01R 19/16547 • • • • {voltage or current in AC supplies (switching for protection **H02H**;-; circuits for emergency power supply **H02J 9/00**)}
  - G01R 19/16566 • • {Circuits and arrangements for comparing voltage or current with one or several thresholds and for indicating the result not covered by subgroups **G01R 19/16504**-, **G01R 19/16528**-, **G01R 19/16533** (contains no documents)}
  - G01R 19/16571 • • • {comparing AC or DC current with one threshold, e.g. load current, over-current, surge current or fault current} (**G01R 19/16514**-, **G01R 19/16519**-, **G01R 19/16528**-, **G01R 19/16533**-, **G01R 19/1659** take precedence; measuring currents by using elements sensitive to the magnetic field generated **G01R 15/14**;-; measuring earth resistance **G01R 27/18**;-; testing for leakage or short circuits in electrical apparatus **G01R 31/025**)}
  - G01R 19/16576 • • • {comparing DC or AC voltage with one threshold (**G01R 19/16514**-, **G01R 19/16519**-, **G01R 19/16528**-, **G01R 19/16533** and **G01R 19/1659** take precedence)}
  - G01R 19/16585 • • • • {for individual pulses, ripple or noise and other applications where timing or duration is of importance (**G01R 19/16519**-, **G01R 19/16538** and **G01R 19/16595** take precedence; for pulse duration and rise time, see **G01R 29/02** and subgroups)}

- G01R 19/1659
- • • {to indicate that the value is within or outside a predetermined range of values (window) ([G01R 19/16514](#)-, [G01R 19/16519](#)-, [G01R 19/16528](#) and [G01R 19/16533](#) take precedence)}
- U G01R 19/18
- using conversion of dc into ac, e.g. with choppers {(DC amplifiers with modulators at input and demodulator at output [H03F 3/38](#))}
- G01R 19/20
- • using transducers {i.e. a magnetic core transducer the saturation of which is cyclically reversed by an AC source on the secondary side (other DC current transducers, e.g. using the 0-flux principle, [G01R 15/185](#);-; magnetic amplifiers [H03F 9/00](#))}
- G01R 19/25
- using digital measurement techniques (arrangements for displaying measured electric variables in digital form [G01R 13/02](#){ {Analogue/digital conversion [H03M](#)})}
- G01R 19/2506
- • {Arrangements for conditioning or analysing measured signals, e.g. for indicating peak values ([G01R 19/003](#) takes precedence); Details concerning sampling, digitizing or waveform capturing (displaying waveforms [G01R 13/00](#);-; analog sampling [G01R 19/0053](#))}
- G01R 19/30
- Measuring the maximum or the minimum value of current or voltage reached in a time interval ([G01R 19/04](#) takes precedence; modifications of instruments to indicate the maximum or the minimum value reached in a time interval [G01R 1/40](#);-; {-using digital methods [G01R 19/2506](#)})}
- U **G01R 21/00** **Arrangements for measuring electric power or power factor ([G01R 7/12](#) takes precedence)**
- G01R 21/001
- {Measuring real or reactive component; Measuring apparent energy ([G01R 21/01](#)-, [G01R 21/02](#)-, [G01R 21/08](#)-, [G01R 21/10](#) and [G01R 21/127](#) take precedence)}
- G01R 21/007
- {Adapted for special tariff measuring ([G01R 21/01](#)-, [G01R 21/02](#)-, [G01R 21/08](#)-, [G01R 21/10](#)-, [G01R 21/1278](#) and [G01R 21/1333](#) take precedence)}
- G01R 21/01
- in circuits having distributed constants ([G01R 21/04](#)-, [G01R 21/07](#)-, [G01R 21/09](#)-, [G01R 21/12](#) take precedence)
- G01R 21/08
- by using galvanomagnetic effect devices, e.g. Hall effect devices (such devices per se [H01L](#);-; {-for current measurements only, see [G01R 15/20](#)})}
- G01R 21/127
- by using pulse modulation ([G01R 21/133](#) takes precedence; {-digital multiplication via delta sigma modulation [G06F 7/60](#)})}
- G01R 22/00** **Arrangements for measuring time integral of electric power or current, e.g. by electricity meters {(electromechanical arrangements therefor [G01R 11/00](#);-; monitoring electric consumption of electrically-propelled vehicles [B60L 3/00](#);-; coin freed devices [G07F 15/00](#))}**
- NOTE
- An arrangement for measuring time integral of electric power is classified in group [G01R 21/00](#) if the essential characteristic is the measuring of electric power.
- G01R 23/00** **Arrangements for measuring frequencies; Arrangements for analysing frequency spectra (frequency discriminators [H03D](#);-; {-high frequency probes [G01R 1/06772](#)})}**
- G01R 23/16
- Spectrum analysis; Fourier analysis {(computing with Fourier series or Walsh functions [G06F 17/14](#)-, [G06G 7/19](#);-; spectral data processing)}
- G01R 25/00** **Arrangements for measuring phase angle between a voltage and a current, or between voltages or currents (measuring power factor [G01R 21/00](#);-; measuring position of individual pulses in a pulse train [G01R 29/02](#);-; phase discriminators [H03D](#))}**

- U G01R 27/00 Arrangements for measuring resistance, reactance, impedance, or electric characteristics derived therefrom {(measuring super-conductive properties G01R 33/1238)}**
- U G01R 27/02
- Measuring real or complex resistance, reactance, impedance, or other two-pole characteristics derived therefrom, e.g. time constant (by measuring phase angle only [G01R 25/00](#))
- NOTE  
Groups [G01R 27/02](#) to [G01R 27/22](#) cover variables that directly or indirectly can be measured over two poles of a component or a Thevenin two-pole equivalent. Subgroup [G01R 27/26](#) also covers other techniques, e.g. using electro magnetic waves or network analyzers
- G01R 27/14
- • Measuring resistance by measuring current or voltage obtained from a reference source ([G01R 27/16](#)-, [G01R 27/20](#)-, [G01R 27/22](#) take precedence)
- U G01R 27/26
- • Measuring inductance or capacitance; Measuring quality factor, e.g. by using the resonance method; Measuring loss factor; Measuring dielectric constants; {Measuring impedance or related variables}
- G01R 27/2617
- • • {Measuring dielectric properties, e.g. constants (testing dielectric strength [G01R 31/12](#)-, detecting insulation faults [G01R 31/025](#)-, [G01R 27/2688](#) takes precedence)}
- G01R 27/2623
- • • • {Measuring-systems or electronic circuits ([G01R 27/2635](#)-, [G01R 27/2682](#) take precedence)}
- G01R 27/2688
- • • {Measuring quality factor or dielectric loss, e.g. loss angle, or power factor (power factor related to power measurements [G01R 21/006](#)-, testing capacitors [G01R 31/016](#))}
- U G01R 29/00 Arrangements for measuring or indicating electric quantities not covered by groups G01R 19/00 to G01R 27/00**
- G01R 29/02
- Measuring characteristics of individual pulses, e.g. deviation from pulse flatness, rise time, duration (of amplitude [G01R 19/00](#)-, of repetition rate [G01R 23/00](#)-, of phase difference of two cyclic pulse trains [G01R 25/00](#)-, monitoring pattern of pulse trains [H03K 5/19](#))
- G01R 29/08
- Measuring electromagnetic field characteristics {(measuring electrostatic fields [G01R 29/12](#)-, for determining a voltage [G01R 15/14](#)-, measuring magnetic fields [G01R 33/00](#)-, Measuring or estimating received signal strength [H04B 17/318](#))}
- U G01R 29/0807
- • {characterised by the application (not used, see subgroups)}
- U G01R 29/0814
- • • {Field measurements related to measuring influence on or from apparatus, components or humans (EMC, EMI and similar testing in general [G01R 31/001](#)), e.g. in ESD, EMI, EMC, EMP testing, measuring radiation leakage; detecting presence of micro- or radiowave emitters; dosimetry; testing shielding; measurements related to lightning}
- G01R 29/085
- • • • {for detecting presence or location of electric lines or cables (fault detection [G01R 31/02](#)-, fault location [G01R 31/08](#))}
- U G01R 29/0864
- • {characterised by constructional or functional features (not used, see subgroups)}
- G01R 29/0871
- • • {Complete apparatus or systems; circuits, e.g. receivers or amplifiers ([G01R 29/0878](#)-, [G01R 29/0892](#) take precedence; dosimeters, warning devices [G01R 29/0857](#))}
- U G01R 29/10
- • Radiation diagrams of aerials; {Antenna testing in general}
- G01R 29/105
- • • {using anechoic chambers; Chambers or open field sites used therefor (test sites used for measuring on other objects than aerials [G01R 29/0828](#)-, wave absorbing devices [H01Q 17/00](#))}

- G01R 29/24
- Arrangements for measuring quantities of charge (electrostatic instruments [G01R 5/28](#); indicating presence of current [G01R 19/15](#); electrolytic meters, calorimetric meters, for measuring time integral of electric current [G01R 22/02](#), [G01R 22/04](#))
- G01R 29/26
- Measuring noise figure; Measuring signal-to-noise ratio {Measuring jitter, i.e. phase noise, (distortion [G01R 23/20](#); noise measuring in individual transistors [G01R 31/2616](#), [G01R 31/2626](#))}
- G01R 31/00**
- Arrangements for testing electric properties; Arrangements for locating electric faults; Arrangements for electrical testing characterised by what is being tested not provided for elsewhere (measuring leads, measuring probes [G01R 1/06](#); {-measuring superconductive properties [G01R 33/1238](#)}; indicating electrical condition of switchgear or protective devices [H01H 71/04](#), [H01H 73/12](#), [H02B 11/10](#), [H02H 3/04](#); testing or measuring semiconductors or solid state devices during manufacture [H01L 22/00](#); testing substation equipment, e.g. mobile phones [H04M 1/24](#); testing or monitoring of control systems [G05B 23/02](#); {-testing or monitoring transmitters or receivers [H04B 17/00](#)})**
- G01R 31/001
- {Measuring interference from external sources to, or emission from, the device under test, e.g. EMC, EMI, EMP or ESD testing (measuring electromagnetic fields [G01R 29/08](#); circuits for generating HV pulses in dielectric strength testing [G01R 31/14](#))}
- G01R 31/003
- {Environmental or reliability tests (of individual semiconductors [G01R 31/2642](#); of PCB's [G01R 31/2817](#); of IC's [G01R 31/2855](#); of other circuits [G01R 31/2849](#))}
- G01R 31/01
- Subjecting similar articles in turn to test, e.g. "go/no-go" tests in mass production; Testing objects at points as they pass through a testing station ([G01R 31/18](#) takes precedence; {-for testing batteries [G01R 31/36](#)})
- G01R 31/013
- {- Testing passive components (relays [G01R 31/3278](#); electrical windings, e.g. inductors [G01R 31/06](#))}
- G01R 31/02
- Testing of electric apparatus, lines or components, for short-circuits, discontinuities, leakage {of current}, or incorrect line connection {([G01R 31/001](#), [G01R 31/005](#), [G01R 31/01](#), [G01R 31/08](#), [G01R 31/12](#), [G01R 31/24](#), [G01R 31/26](#), [G01R 31/28](#), [G01R 31/327](#), [G01R 31/34](#), [G01R 31/36](#), [G01R 31/40](#), [G01R 31/44](#) take precedence; measuring electromagnetic field leakage [G01R 29/0821](#); testing of sparking plugs [H01T 13/58](#))}
- G01R 31/021
- {- Testing of cables or conductors (testing of electric windings [G01R 31/06](#); testing of insulation of cables [G01R 31/1272](#); testing LANs [H04L 12/2697](#); testing line transmission systems [H04B 3/46](#))}
- G01R 31/024
- {- Arrangements for indicating continuity or short-circuits in electric apparatus or lines, leakage or ground faults (in electric windings [G01R 31/06](#); measuring resistance to earth [G01R 27/18](#))}
- G01R 31/06
- {- Testing of electric windings {e.g. of solenoids, inductors}, e.g. for polarity {([G01R 31/027](#) and [G01R 31/346](#) take precedence; measuring number of turns, transformation ratio, or coupling factor [G01R 29/20](#); monitoring or fail-safe circuits for electromagnets [H01F 7/1844](#))}
- G01R 31/08
- Locating faults in cables, transmission lines, or networks (emergency protective circuit arrangements [H02H](#) {installing, maintaining, repairing or dismantling electric cables or lines [H02G 1/00](#); testing LAN's [H04L 12/2697](#)})

- G01R 31/12
  - Testing dielectric strength or breakdown voltage; {Testing or monitoring effectiveness or level of insulation, e.g. of a cable or of an apparatus, for example using partial discharge measurements; Electrostatic testing ([G01R 31/06](#), [G01R 31/08](#) and [G01R 31/327](#) take precedence; measuring in plasmas [G01R 19/0061](#); Measuring dielectric constants [G01R 27/2617](#); ESD, EMC or EMP testing of circuits [G01R 31/002](#))}
- G01R 31/1227
  - • {of components, parts or materials ([G01R 31/1209](#), [G01R 31/1218](#), [G01R 31/18](#) take precedence; circuits therefor [G01R 31/14](#); testing vessels of electrodes [G01R 31/16](#))}
- G01R 31/1254
  - • • {of gas-insulated power appliances or vacuum gaps (testing switches [G01R 31/327](#); detecting electrical or mechanical defects in encased switchgear [H02B 13/065](#))}
- U G01R 31/24
  - Testing of discharge tubes (during manufacture [H01J 9/42](#))
- U G01R 31/25
  - • Testing of vacuum tubes
- G01R 31/257
  - • • {Testing of beam-tubes, e.g. cathode-ray tubes, image pick-up tubes (of channel image intensifier arrays [G01R 31/252](#); of transit time tubes [G01R 31/255](#))}
- U G01R 31/26
  - Testing of individual semiconductor devices (testing or measuring during manufacture or treatment [H01L 22/00](#); testing of photovoltaic devices [H02S 50/10](#))
- G01R 31/2601
  - • {Apparatus or methods therefor ([G01R 31/2607](#), [G01R 31/2642](#) take precedence)}
- U G01R 31/2607
  - • {Circuits therefor ([G01R 31/2642](#) takes precedence)}
- G01R 31/2637
  - • • {for testing other individual devices ([G01R 31/2608](#) to [G01R 31/2632](#), [G01R 31/27](#) take precedence)}
- G01R 31/2646
  - • {for measuring noise ([G01R 31/2616](#), [G01R 31/2626](#) take precedence)}
- G01R 31/2648
  - • {Characterising semiconductor materials (testing of materials or semi-finished products [G01R 31/2831](#); testing during manufacture [H01L 22/00](#))}
- G01R 31/28
  - Testing of electronic circuits, e.g. by signal tracer ({EMC, EMP or similar testing of electronic circuits [G01R 31/002](#)}; testing for short-circuits, discontinuities, leakage or incorrect line connection [G01R 31/02](#); checking computers {or computer components} [G06F 11/00](#); checking static stores for correct operation [G11C 29/00](#); {-testing receivers or transmitters of transmission systems [H04B 17/00](#))}
- G01R 31/2801
  - • {Testing of printed circuits, backplanes, motherboards, hybrid circuits or carriers for multichip packages [MCP] ([G01R 31/318508](#) takes precedence; contactless testing [G01R 31/302](#); testing contacts or connections [G01R 31/04](#))}
- G01R 31/2806
  - • • {Apparatus therefor, e.g. test stations, drivers, analysers, conveyers ([G01R 31/2805](#), [G01R 31/281](#), [G01R 31/2818](#) take precedence)}
- U G01R 31/281
  - • • {Specific types of tests or tests for a specific type of fault, e.g. thermal mapping, shorts testing ([G01R 31/2818](#) takes precedence)}
- G01R 31/2813
  - • • • {Checking the presence, location, orientation or value, e.g. resistance, of components or conductors (orientation of the DUT with respect to the test fixture [G01R 1/06705](#), [G01R 31/281](#))}
- G01R 31/2815
  - • • • {Functional tests, e.g. boundary scans, using the normal I/O contacts (contacting devices [G01R 31/2808](#); testing digital circuits [G01R 31/317](#), [G06F 11/00](#))}
- G01R 31/2817
  - • • • {Environmental-, stress-, or burn-in tests (of IC's [G01R 31/2855](#); of individual semiconductors [G01R 31/2642](#); of other circuits [G01R 31/2849](#))}

- U G01R 31/282
- • {Testing of electronic circuits specially adapted for particular applications not provided for elsewhere ([G01R 31/2801](#) and [G01R 31/2851](#) take precedence)}
- NOTE  
References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:
- testing of individual LEDs [G01R 31/2635](#)
  - testing of lamps [G01R 31/44](#)
  - testing of displays and display drivers, e.g. LCDs [G09G 3/006](#)
  - testing of ADCs or DACs [H03M 1/1071](#)
- G01R 31/2825
- • • {in household appliances or professional audio/video equipment (testing loudspeakers [H04R 29/00](#); testing LAN's [H04L 12/2697](#); testing TV systems [H04N 17/00](#))}
- G01R 31/2827
- • • {Testing of electronic protection circuits (testing switches [G01R 31/327](#); checking alarm systems [G08B 29/00](#); self test of summation current transformers [H02H 3/335](#))}
- U G01R 31/2832
- • {Specific tests of electronic circuits not provided for elsewhere (contains no documents; [G01R 31/2801](#) and [G01R 31/316](#) take precedence)}
- U G01R 31/2836
- • • {Fault-finding or characterising ([G01R 31/2822](#) to [G01R 31/2831](#) take precedence)}
- G01R 31/2839
- • • • {using signal generators, power supplies or circuit analysers ([G01R 31/2879](#) takes precedence; multimeters [G01R 15/12](#); network analysers [G01R 27/28](#))}
- G01R 31/2849
- • • • {Environmental or reliability testing, e.g. burn-in or validation tests (of individual semiconductors [G01R 31/2642](#); of printed circuits boards [G01R 31/2817](#); of IC's [G01R 31/2855](#))}
- G01R 31/2851
- • {Testing of integrated circuits [IC] ([G01R 31/317](#) takes precedence; testing individual devices [G01R 31/26](#); testing printed circuits [G01R 31/2801](#))}
- U G01R 31/2886
- • • {Features relating to contacting the IC under test, e.g. probe heads; chucks ([G01R 31/2865](#) takes precedence, test connections, e.g. test sockets, or probes per se, [G01R 1/04](#) or [G01R 1/06](#))}
- G01R 31/2887
- • • • {involving moving the probe head or the IC under test; docking stations (moving single probes [G01R 1/06705](#); moving individual probes in multiple probes [G01R 1/07392](#))}
- G01R 31/2896
- • • {Testing of IC packages; Test features related to IC packages (containers per se [H01L 23/02](#); encapsulations per se [H01L 23/28](#))}
- G01R 31/302
- • Contactless testing (non contact-making probes [G01R 1/07](#)) ([G01R 31/04](#) takes precedence)}
- G01R 31/317
- • Testing of digital circuits
- WARNING  
The following subgroups of [G01R 31/317](#) are not complete due to an ongoing reorganisation : [G01R 31/31702](#), [G01R 31/31708](#), [G01R 31/31711](#), [G01R 31/31717](#), [G01R 31/31718](#), [G01R 31/31728](#), [G01R 31/31901](#). See also [G01R 31/317](#) and its other subgroups
- G01R 31/31703
- • • {Comparison aspects, e.g. signature analysis, comparators (concerning scan tests [G01R 31/318566](#); concerning testers [G01R 31/3193](#))}
- G01R 31/31704
- • • {Design for test; Design verification (concerning scan tests [G01R 31/318583](#); computer-aided design [G06F 17/50](#))}
- G01R 31/31705
- • • {Debugging aspects, e.g. using test circuits for debugging, using dedicated debugging test circuits (generation of test sequences therefor [G01R 31/31835](#); using scan test therefor [G01R 31/318544](#))}

- G01R 31/31708
  - • • {Analysis of signal quality ([G01R 31/31901](#) takes precedence; measuring frequencies or analysing frequency spectra per se [G01R 23/00](#); measuring non-linear distortion per se [G01R 23/20](#))}
- G01R 31/31709
  - • • • {Jitter measurements; Jitter generators (measuring jitter, noise figure or signal-to-noise ratio per se [G01R 29/26](#); analysis of tester signals [G01R 31/31901](#))}
- G01R 31/31718
  - • • {Logistic aspects, e.g. binning, selection, sorting of devices under test, tester/handler interaction networks, Test management software, e.g. software for test statistics or test evaluation, yield analysis (mechanical aspects [G01R 31/2808](#), [G01R 31/2851](#))}
- G01R 31/31727
  - • • {Clock circuits aspects, e.g. test clock circuit details, timing aspects for signal generation, circuits for testing clocks ([G01R 31/31725](#) takes precedence; concerning scan test [G01R 31/318552](#), for tester hardware [G01R 31/31922](#))}
- G01R 31/31728
  - • • {Optical aspects, e.g. opto-electronics used for testing, optical signal transmission for testing electronic circuits, electro-optic components to be tested in combination with electronic circuits, measuring light emission of digital circuits (probes having electro-optic elements [G01R 1/071](#); electro-optic sampling for oscilloscopes [G01R 13/347](#); contactless testing of individual semiconductor devices by optical means [G01R 31/2656](#))}
- U G01R 31/3181
  - • • Functional testing ([G01R 31/3177](#) takes precedence)
- U G01R 31/3183
  - • • • Generation of test inputs, e.g. test vectors, patterns or sequence
- G01R 31/318314
  - • • • • {Tools, e.g. program interfaces, test suite, test bench, simulation hardware, test compiler, test program languages (simulation software [G01R 31/318357](#); emulators [G06F 11/261](#))}
- G01R 31/318335
  - • • • • {Test pattern compression or decompression (compression or decompression of scan patterns [G01R 31/318547](#); compression or decompression hardware [G01R 31/31921](#))}
- G01R 31/318392
  - • • • • {for sequential circuits ([G01R 31/318544](#) takes precedence [G01R 31/318544](#) takes precedence)}
- U G01R 31/3185
  - • • • Reconfiguring for testing, e.g. LSSD, partitioning
- G01R 31/318522
  - • • • • {Test of Sequential circuits (test of microprocessors [G06F 11/2236](#), test of ALU's [G06F 11/2226](#))}
- G01R 31/319
  - • • • • Tester hardware, i.e. output processing circuit {(logic analyzers [G01R 31/3177](#), Memory tester hardware [G11C 29/56](#))}
- G01R 31/327
  - Testing of circuit interrupters, switches or circuit-breakers (structural association with switches [H01H](#); {-detecting faults in encased switchgear [H02B 13/065](#); monitoring in addition to disconnection by a protective circuit [H02H 3/04](#))}
- U G01R 31/3277
  - {of low voltage devices, e.g. domestic or industrial devices, such as motor protections, relays, rotation switches}
- G01R 31/3278
  - • • {of relays, solenoids or reed switches (measuring contact resistance [G01R 27/205](#); testing electric windings [G01R 31/06](#); high voltage magnetic switches [G01R 31/3271](#), [G01R 31/333](#); monitoring of fail safe circuits [H01H 47/002](#))}
- G01R 31/333
  - • Testing of the switching capacity of high-voltage circuit-breakers; {Testing of breaking capacity or related variables, e.g. post arc current or transient recovery voltage} (means for detecting the presence of an arc or discharge in switching devices [H01H 9/50](#), [H01H 33/26](#))}

- G01R 31/36
- Apparatus for testing electrical condition of accumulators or electric batteries, e.g. capacity or charge condition (accumulators combined with arrangements for measuring, testing or indicating condition [H01M 10/48](#); circuit arrangements for charging, or depolarising batteries or for supplying loads from batteries [H02J 7/00](#); {Coulomb meters [G01R 22/00](#); indicating the condition of the power supply in clocks or watches [G04C 10/04](#); methods for controlling fuel cells [H01M 8/04298](#)})
- NOTE**
- This group covers arrangements for measuring, testing or indicating electrical conditions or variables of accumulators or electric batteries. Accumulators combined with arrangements for measuring, testing or indicating condition, or arrangements for measuring, testing or indicating conditions or variables other than electrical, e.g. level or density of battery electrolyte, are covered by the group [H01M 10/48](#) and subgroups
- G01R 31/3606
- {Monitoring, i.e. measuring or determining some variables continuously or repeatedly over time, e.g. current, voltage, temperature, state-of-charge [SoC] or state-of-health [SoH] ([G01R 31/3627](#), [G01R 31/3644](#) take precedence)}
- G01R 31/44
- Testing lamps (discharge lamps [G01R 31/24](#); structurally associated with light source circuit arrangements for detecting lamp failure [H05B 37/03](#))
- U G01R 33/00 Arrangements or instruments for measuring magnetic variables**
- G01R 33/02
- Measuring direction or magnitude of magnetic fields or magnetic flux ([G01R 33/20](#) takes precedence ; measuring direction or magnitude of the earth's field for navigation or surveying [G01C](#); for prospecting, for measuring the magnetic field of the earth [G01V 3/00](#))
- NOTE**
- Groups [G01R 33/022](#), [G01R 33/10](#) take precedence over groups [G01R 33/025](#) to [G01R 33/09](#).
- U G01R 33/035
- using superconductive devices {(manufacture of superconducting elements [H01L 39/00](#))}
- U G01R 33/0354
- {SQUIDS}
- G01R 33/0358
- {coupling the flux to the SQUID (gradiometer coils [G01R 33/022](#); coils with superconductive winding [H01F 6/06](#))}
- G01R 33/12
- Measuring magnetic properties of articles or specimens of solids or fluids (involving magnetic resonance [G01R 33/20](#){using magnetic-optic devices [G01R 33/032](#)})
- G01R 33/1207
- {Testing individual magnetic storage devices e.g. records carriers or digital storage elements (functional testing [G06F 11/00](#), [G06F 11/28](#))}
- G01R 33/20
- involving magnetic resonance (medical aspects [A61B 5/055](#); magnetic resonance gyrometers [G01C 19/00](#){investigating materials using NMR [G01N 24/00](#); prospecting or detecting using NMR [G01V 3/00](#)})
- U G01R 33/28
- Details of apparatus provided for in groups [G01R 33/44](#) to [G01R 33/64](#)
- WARNING**
- Groups [G01R 33/281](#) - [G01R 33/288](#) are not complete pending reclassification. See also this group
- G01R 33/281
- {Means for the use of in vitro contrast agents ([G01R 33/282](#) takes precedence; involving use of a contrast agent in MR imaging [G01R 33/5601](#); in vivo contrast agents [A61K 49/0002](#))}

- G01R 33/44
- • using nuclear magnetic resonance [NMR] ([G01R 33/24](#)-, [G01R 33/62](#) take precedence)
- WARNING  
Groups **G01R33/44B** - [G01R 33/443](#) are not complete pending reclassification. See also this group
- U G01R 33/48
- • • NMR imaging systems
- U G01R 33/54
- • • • Signal processing systems, e.g. using pulse sequences, {Generation or control of pulse sequences (in general [H03K](#)); Operator Console}
- U G01R 33/56
- • • • • Image enhancement or correction, e.g. subtraction or averaging techniques, {e.g. improvement of signal-to-noise ratio and resolution (image data processing in general [G06T](#))}
- U G01R 33/565
- • • • • • Correction of image distortions, e.g. due to magnetic field inhomogeneities
- G01R 33/56563
- • • • • • • {caused by a distortion of the main magnetic field B0, e.g. temporal variation of the magnitude or spatial inhomogeneity of B0 ([G01R 33/56509](#)-, [G01R 33/56518](#)-, [G01R 33/56536](#) take precedence)}
- G01R 33/56572
- • • • • • • {caused by a distortion of a gradient magnetic field, e.g. non-linearity of a gradient magnetic field ([G01R 33/56509](#)-, [G01R 33/56518](#)-, [G01R 33/56536](#) take precedence)}
- G01R 33/5659
- • • • • • • {caused by a distortion of the RF magnetic field, e.g. spatial inhomogeneities of the RF magnetic field ([G01R 33/56509](#)-, [G01R 33/56518](#)-, [G01R 33/56536](#) take precedence)}
- WARNING  
Not complete pending reclassification, see also [G01R 33/565](#)
- G01R 33/60
- • using electron paramagnetic resonance ([G01R 33/24](#)-, [G01R 33/62](#) take precedence)
- G01R 33/64
- • using cyclotron resonance ([G01R 33/24](#) takes precedence) { {Omegatrons per se [H01J 49/38](#)}}
- U G01R 35/00
- Testing or calibrating of apparatus covered by the preceding groups**  
**{{[G01R 31/31901](#) takes precedence}}**
- G01R 35/005
- {Calibrating; Standards or reference devices, e.g. voltage or resistance standards, "golden" references ([G01R 33/0035](#)-, [G01R 35/002](#) take precedence)}

**Project: N/A (G01S)**

- U G01S 1/00
- Beacons or beacon systems transmitting signals having a characteristic or characteristics capable of being detected by non-directional receivers and defining directions, positions, or position lines fixed relatively to the beacon transmitters; Receivers co-operating therewith (position fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#))**
- U G01S 1/02
- using radio waves ([G01S 19/00](#) takes precedence)
- G01S 1/08
- • Systems for determining direction or position line {{(aerial arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#)-, combinations of different interacting units for giving a desired directional characteristic [H01Q 21/29](#)-, aerials or aerial systems providing at least two radiation patterns [H01Q 25/00](#))}}

- G01S 3/00**      **Direction-finders for determining the direction from which infrasonic, sonic, ultrasonic, or electromagnetic waves, or particle emission, not having a directional significance, are being received (position fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#); for geophysical measurement [G01C](#); telescope mountings [G02B](#))**
- U G01S 3/02      · using radio waves
  - U G01S 3/04      · · Details
  - G01S 3/06      · · · Means for increasing effective directivity, e.g. by combining signals having differently-oriented directivity characteristics, by sharpening the envelope waveform of the signal desired from a rotating or oscillating beam aerial (comparing amplitude of signals having differently-oriented directivity characteristics to determine direction [G01S 3/16](#); [G01S 3/28](#); modifications of aerials or aerial systems [H01Q](#))
  - G01S 3/12      · · · Means for determining sense of direction, e.g. by combining signals from directional aerial or goniometer search coil with those from non-directional aerial ({[G01S 3/065](#) takes precedence} determining direction by amplitude comparison of signals derived by combining directional and non-directional signals [G01S 3/24](#); [G01S 3/34](#))
  - G01S 3/14      · · Systems for determining direction or deviation from predetermined direction {(aerial arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#); combinations of different interacting aerial units for giving a desired directional characteristic [H01Q 21/29](#); aerials or aerial systems providing at least two radiation patterns [H01Q 25/00](#))}
  - G01S 3/38      · · · using adjustment of real or effective orientation of directivity characteristic of an aerial or aerial system to give a desired condition of signal derived from that aerial or aerial system, e.g. to give a maximum or minimum signal ([G01S 3/16](#); [G01S 3/28](#) take precedence)
  - G01S 3/74      · · Multi-channel systems specially adapted for direction-finding, i.e. having a single aerial system capable of giving simultaneous indications of the directions of different signals (systems in which the directions of different signals are determined sequentially and displayed simultaneously [G01S 3/04](#); [G01S 3/14](#))
  - U G01S 3/80      · using ultrasonic, sonic or infrasonic waves
  - G01S 3/801      · · Details {([G01S 3/82](#); [G01S 3/84](#); [G01S 3/86](#) take precedence)}
- G01S 5/00**      **Position-fixing by co-ordinating two or more direction or position line determinations; Position-fixing by co-ordinating two or more distance determinations {(using active systems [G01S 13/00](#); [G01S 15/00](#); [G01S 17/00](#))}**
- U G01S 5/02      · using radio waves ([G01S 19/00](#) takes precedence)
  - G01S 5/0247      · · {Determination of attitude (using inertial means [G01C 9/00](#); control of attitude [G05D 1/08](#))}
  - G01S 5/0278      · · {involving statistical or probabilistic considerations ([G01S 5/0252](#); [G01S 5/0294](#) take precedence)}
  - G01S 5/10      · · Position of receiver fixed by co-ordinating a plurality of position lines defined by path-difference measurements {e.g. omega or decca systems} ([G01S 5/12](#) takes precedence; {-beacons and receivers cooperating therewith [G01S 1/306](#); [G01S 1/308](#)})
  - U G01S 5/16      · using electromagnetic waves other than radio waves
  - G01S 5/163      · · {Determination of attitude (using inertial means [G01C 9/00](#); control of attitude [G05D 1/08](#))}
  - U G01S 5/18      · using ultrasonic, sonic, or infrasonic waves

- G01S 5/186
  - • {Determination of attitude (using inertial means [G01C 9/00](#); control of attitude [G05D 1/08](#))}
- G01S 7/00**
  - Details of systems according to groups [G01S 13/00](#), [G01S 15/00](#), [G01S 17/00](#) {(apparatus for measuring unknown time-intervals by electronic means, e.g. Vernier method [G04F 10/00](#))}**
- U G01S 7/003
  - {Transmission of data between radar, sonar or lidar systems and remote stations (in general [G08C](#))}
- G01S 7/006
  - • {using shared front-end circuitry, e.g. antennas ([G01S 13/765](#), [G01S 13/825](#) take precedence)}
- U G01S 7/02
  - of systems according to group [G01S 13/00](#)
- G01S 7/023
  - • {interference mitigation, e.g. reducing or avoiding non-intentional interference with other HF-transmitters, base station transmitters for mobile communication or other radar systems, e.g. using electro-magnetic interference [EMI] reduction techniques (means for anti-jamming [G01S 7/36](#); auxiliary means for detecting or identifying radar signals or the like [G01S 7/021](#))}
- G01S 7/024
  - • {using polarisation effects (in waveguides [H01P 1/165](#); for aerials [H01Q](#), e.g. [H01Q 15/22](#), [H01Q 15/24](#), [H01Q 19/195](#))}
- G01S 7/03
  - • Details of HF subsystems specially adapted therefor, e.g. common to transmitter and receiver (TR boxes [H01J 17/64](#); waveguides or resonators or other devices of the waveguide type [H01P](#); aerials [H01Q](#); basic electronic circuitry, e.g. generation of oscillations, modulation, demodulation, amplification, pulse technique [H03](#); impedance networks, resonators [H03H](#))
- G01S 7/034
  - • • {Duplexers (switching devices for waveguides [H01P 1/10](#); transmit-receive switching in transceivers [H04B 1/44](#))}
- U G01S 7/28
  - • Details of pulse systems
- G01S 7/2813
  - • • {Means providing a modification of the radiation pattern for cancelling noise, clutter or interfering signals, e.g. side lobe suppression, side lobe blanking, null-steering arrays (specially adapted to secondary radar systems [G01S 13/762](#); aerials or aerials systems [H01Q 21/29](#), [H01Q 25/00](#))}
- U G01S 7/285
  - • • Receivers
- U G01S 7/295
  - • • • Means for transforming co-ordinates or for evaluating data, e.g. using computers
- G01S 7/2955
  - • • • • {Means for determining the position of the radar coordinate system for evaluating the position data of the target in another coordinate system ([G01S 7/24](#) takes precedence; sighting devices adapted for indirect laying of fire [F41G 3/16](#); Inertial navigation [G01C 21/16](#))}
- G01S 7/36
  - • Means for anti-jamming (in general [H04K 3/00](#) ) {e.g. ECCM, i.e. electronic counter-counter measures (for irregular PRF see also [G01S 13/22](#), [G01S 13/528](#); for frequency agility of carrier wave see also [G01S 13/24](#); [G01S 7/2813](#) takes precedence ; random interference pulse cancellers [G01S 7/2928](#); identification of radar jamming signals [G01S 7/021](#))}
- G01S 7/38
  - • Jamming means, e.g. producing false echoes (in general [H04K 3/00](#) {reflecting surfaces comprising a plurality of reflecting particles, e.g. chaff, [H01Q 15/145](#); identification of radar signals [G01S 7/021](#))}
- U G01S 7/52
  - of systems according to group [G01S 15/00](#)
- G01S 7/52003
  - • {Techniques for enhancing spatial resolution of targets (beam formers in general [G10K 11/34](#); [G01S 7/52046](#) takes precedence)}
- U G01S 7/52017
  - • {particularly adapted to short-range imaging ([G01S 7/53](#) takes precedence)}
- U G01S 7/52023
  - • • {Details of receivers}
- U G01S 7/52025
  - • • • {for pulse systems ([G01S 7/52034](#) takes precedence)}

- G01S 7/52026 . . . . {Extracting wanted echo signals (Doppler systems [G01S 15/50](#);  
Doppler short range imaging systems [G01S 15/8979](#))}
- G01S 7/52079 . . . {Constructional features (constructional features of transducers [B06B](#);  
mounting transducers [G10K 11/00](#); constructional features of ultrasonic  
medical diagnostic devices [A61B 8/44](#))}
- G01S 7/523 . . Details of pulse systems {(short-range imaging [G01S 7/52017](#); methods or  
devices for transmitting, conducting or directing sound [G10K 11/18](#))}

**G01S 11/00** **Systems for determining distance or velocity not using reflection or reradiation (direction-finders [G01S 3/00](#); position-fixing by co-ordinating two or more distance determinations [G01S 5/00](#))**

**G01S 13/00** **Systems using the reflection or reradiation of radio waves, e.g. radar systems; Analogous systems using reflection or reradiation of waves whose nature or wavelength is irrelevant or unspecified (using acoustic waves [G01S 15/00](#); using electromagnetic waves other than radio waves [G01S 17/00](#))**

#### NOTES

1. This group covers :

- systems for detecting the presence of an object, e.g. by reflection or reradiation from the object itself, or from a transponder associated with the object, for determining the distance or relative velocity of an object, for providing a co-ordinated display of the distance and direction of an object or for obtaining an image thereof;
- systems arranged for mounting on a moving craft or vehicle and using the reflection of waves from an extended surface external to the craft, e.g. the surface of the earth, to determine the velocity and direction of motion of the craft relative to the surface.

2. This group does not cover :

- systems for determining the direction of an object by means not employing reflection or reradiation, which are covered by groups [G01S 1/00](#) or [G01S 3/00](#);
- systems for determining distance or velocity of an object by means not employing reflection or reradiation, which are covered by group [G01S 11/00](#).

- G01S 13/006 . {Theoretical aspects ([G01S 7/418](#), [G01S 13/9094](#), [G01S 13/958](#) take precedence)}
- U G01S 13/02 . Systems using reflection of radio waves, e.g. primary radar systems; Analogous systems
- U G01S 13/06 . . Systems determining position data of a target
- U G01S 13/08 . . . Systems for measuring distance only (indirect measurement [G01S 13/46](#))
- U G01S 13/10 . . . . using transmission of interrupted pulse modulated waves (determination of distance by phase measurement [G01S 13/32](#))
- G01S 13/103 . . . . {particularities of the measurement of the distance ([G01S 13/12](#), [G01S 13/14](#), [G01S 13/16](#), [G01S 13/18](#) and [G01S 13/20](#) take precedence)}
- G01S 13/106 . . . . {using transmission of pulses having some particular characteristics ([G01S 13/12](#), [G01S 13/22](#), [G01S 13/24](#), [G01S 13/26](#), [G01S 13/28](#) and [G01S 13/30](#) take precedence)}
- U G01S 13/50 . . Systems of measurement based on relative movement of target
- G01S 13/505 . . . {using Doppler effect for determining closest range to a target or corresponding time, e.g. miss-distance indicator (proximity fuze see [F42C 13/04](#); miss-distance indicators in general [F41J 5/12](#))}

- U G01S 13/52
  - • • Discriminating between fixed and moving objects or between objects moving at different speeds {{(coherent receivers [G01S 7/288](#))}}
- G01S 13/56
  - • • • for presence detection {{(presence detection using near field arrangements [G01V 3/00](#)-, e.g. [G01V 3/08](#)-, [G01V 3/12](#)-, burglar, theft or intruder alarms with electrical actuation [G08B 13/22](#) - [G08B 13/26](#))}}
- U G01S 13/74
  - Systems using reradiation of radio waves, e.g. secondary radar systems; Analogous systems
- U G01S 13/76
  - • wherein pulse-type signals are transmitted
- G01S 13/78
  - • • discriminating between different kinds of targets, e.g. IFF-radar, i.e. identification of friend or foe {{([G01S 13/75](#)-, [G01S 13/767](#) take precedence)}}
- G01S 13/86
  - Combinations of radar systems with non-radar systems, e.g. sonar, direction finder {{(Combination of sonar systems with non-sonar or non-radar systems [G01S 15/025](#)-, combination of lidar systems with systems other than lidar, radar or sonar [G01S 17/023](#))}}
- U G01S 13/87
  - Combinations of radar systems, e.g. primary radar and secondary radar
- G01S 13/874
  - • {Combination of several systems for attitude determination (in general [G01C](#)-, control of attitude [G05D 1/08](#))}
- U G01S 13/88
  - Radar or analogous systems specially adapted for specific applications (electromagnetic prospecting or detecting of objects, e.g. near-field detection, [G01V 3/00](#))
- U G01S 13/89
  - • for mapping or imaging
- G01S 13/90
  - • • using synthetic aperture techniques, {e.g. correcting range migration errors (compression in range per se [G01S 13/28](#)-, platform motion compensation for AMTI [G01S 13/5242](#))}
- U G01S 13/93
  - • for anti-collision purposes
- U G01S 13/931
  - • • {between land vehicles; between land vehicles and fixed obstacles}
- U G01S 2013/9371
  - • • • {Sensor installation details}
- G01S 2013/9389
  - • • • • {in the bumper area (ultrasonic transducer in bumper area [G01S 2015/938](#)-, bumper with obstacle sensor of electric or electronic type [B60R 19/483](#))}

## **G01S 15/00 Systems using the reflection or reradiation of acoustic waves, e.g. sonar systems**

### NOTES

#### 1. This group covers :

- systems for detecting the presence of an object, e.g. by reflection or reradiation from the object itself, or from a transponder associated with the object, for determining the distance or relative velocity of an object, for providing a co-ordinated display of the distance and direction of an object or for obtaining an image thereof;
- systems arranged for mounting on a moving craft or vehicle and using the reflection of waves from an extended surface external to the craft, e.g. the surface of the earth, to determine the velocity and direction of motion of the craft relative to the surface.

#### 2. This group does not cover :

- systems for determining the direction of an object by means not employing reflection or reradiation, which are covered by groups [G01S 1/00](#) or [G01S 3/00](#);
- systems for determining distance or velocity of an object by means not employing reflection or reradiation, which are covered by group [G01S 11/00](#)-.

- U G01S 15/02
  - using reflection of acoustic waves ([G01S 15/66](#) takes precedence)

- U G01S 15/06      • • Systems determining the position data of a target
- U G01S 15/08      • • • Systems for measuring distance only (indirect measurement [G01S 15/46](#))
- U G01S 15/10      • • • • using transmission of interrupted pulse-modulated waves (determination of distance by phase measurement [G01S 15/32](#))
- G01S 15/101      • • • • • {Particularities of the measurement of distance ([G01S 15/12](#)-, [G01S 15/14](#)-, and [G01S 15/18](#) take precedence)}
- U G01S 15/50      • • Systems of measurement, based on relative movement of the target
- U G01S 15/52      • • • Discriminating between fixed and moving objects or between objects moving at different speeds
- G01S 15/523      • • • • {for presence detection (burglar, theft or intruder alarms [G08B 13/00](#)-, e.g. [G08B 13/16](#))}
- U G01S 15/87      • Combinations of sonar systems
- G01S 15/872      • • {Combination of several systems for attitude determination (using inertial means [G01C 9/00](#)-, control of attitude [G05D 1/08](#))}
- U G01S 15/88      • Sonar systems specially adapted for specific applications (seismic or acoustic prospecting or detecting [G01V 1/00](#))
- U G01S 15/89      • • for mapping or imaging
- U G01S 15/8906    • • • {Short-range imaging systems; Acoustic microscope systems using pulse-echo techniques}
- U G01S 15/8965    • • • • {using acousto-optical or acousto-electronic conversion techniques}
- G01S 15/8968    • • • • • {using acoustical modulation of a light beam (acousto-optical light control devices [G02F 1/11](#)-, [G02F 1/33](#))}
- U G01S 15/93      • • for anti-collision purposes
- U G01S 15/931     • • • {between land vehicles; between land vehicles and fixed obstacles}
- G01S 2015/937    • • • • {sensor installation details (constructional features of transducers [G01S 7/521](#) and [B06B](#); casing of transducers, e.g. housing, cover or filler details, [G10K 9/22](#)-, mounting of transducers, i.e. fixture, fitting or holder details, [G10K 11/004](#))}
- G01S 2015/938    • • • • • {in the bumper area (radar in bumper area [G01S 2013/9389](#)-, bumper with obstacle sensor of electric or electronic type [B60R 19/483](#))}
- U G01S 17/00      Systems using the reflection or reradiation of electromagnetic waves other than radio waves, e.g. lidar systems (photogrammetry or videogrammetry [G01C 11/00](#))**
- NOTE
- The note after group [G01S 13/00](#) also applies to this group.
- U G01S 17/02      • Systems using the reflection of electromagnetic waves other than radio waves ([G01S 17/66](#) takes precedence)
- U G01S 17/06      • • Systems determining position data of a target
- G01S 17/08      • • • for measuring distance only (indirect measurement [G01S 17/46](#)-, active triangulation systems [G01S 17/48](#)-, passive systems using a parallax triangle [G01C 3/10](#)-, [G01C 3/22](#)-, [G01C 3/24](#)-, [G01C 3/26](#))
- U G01S 17/46      • • • Indirect determination of position data
- G01S 17/48      • • • • Active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves (passive systems using a parallax triangle [G01C 3/10](#)-, [G01C 3/22](#)-, [G01C 3/24](#)-, [G01C 3/26](#)-, active systems for automatic generation of focusing signals [G02B 7/32](#))

**Project: N/A (G01T)****G01T**

**MEASUREMENT OF NUCLEAR OR X-RADIATION (radiation analysis of materials, mass spectrometry [G01N](#); counters per se [G06M](#), [H03K](#); electric discharge tubes for analysing radiation or particles [H01J 40/00](#), [H01J 47/00](#), [H01J 49/00](#))**

**NOTES**

1. This subclass covers the measurement of X-radiation, gamma radiation, corpuscular radiation, cosmic radiation or neutron radiation.
2. Attention is drawn to the Notes following the title of class [G01](#).

**G01T 1/00**

**Measuring X-radiation, gamma radiation, corpuscular radiation, or cosmic radiation ([G01T 3/00](#), [G01T 5/00](#) take precedence)**

- U G01T 1/02
  - Dosimeters ([G01T 1/15](#) takes precedence, measuring exposure time to X-rays [H05G 1/28](#))
- G01T 1/04
  - • Chemical dosimeters ([G01T 1/06](#), [G01T 1/08](#) take precedence)
- G01T 1/08
  - • Photographic dosimeters (sensitive materials, processing thereof [G03C](#); {-photometry [G01J 1/52](#)})
- G01T 1/14
  - • Electrostatic dosimeters (construction of ionisation chambers [H01J 47/02](#); {-electrometers [G01R 5/28](#)})
- G01T 1/16
  - Measuring radiation intensity ([G01T 1/29](#) takes precedence; {-self-powered detectors [G01T 3/006](#); using an ionisation chamber filled with a liquid or solid, e.g. frozen liquid, dielectric [G01T 3/008](#)})
- G01T 1/1606
  - • {with other specified detectors not provided for in the other sub-groups of [G01T 1/16](#) (see provisionally also [G01T 1/16](#))}
- U G01T 1/161
  - • Application in the field of nuclear medicine, e.g. in vivo counting {(apparatus for radiation diagnosis [A61B 6/00](#))}
- G01T 1/1611
  - • • {using both transmission and emission sources sequentially (SPECT imaging [G01T 1/1642](#); PET imaging [G01T 1/2985](#); detecting hidden objects, e.g. weapons, explosives [G01V 5/0008](#))}
- G01T 1/1615
  - • • {using both transmission and emission sources simultaneously (SPECT imaging [G01T 1/1642](#); PET imaging [G01T 1/2985](#); detecting hidden objects, e.g. weapons, explosives [G01V 5/0008](#))}
- G01T 1/163
  - • • Whole body counters {(hand or feet contamination measurement [G01T 1/167](#); lung, brain, thyroid, kidney or the like counting [G01T 1/16](#))}
- G01T 1/1635
  - • • • {involving relative movement between detector and subject; scanning beds (profile scanning [G01T 1/166](#); positioning patients, tiltable tables for radiation diagnosis [A61B 6/04](#))}
- G01T 1/164
  - • • Scintigraphy (radioisotopes [G21G 4/00](#); tracers [G21H 5/00](#); {-measurement of spatial distribution [G01T 1/2914](#); apparatus for radiation diagnosis in different planes [A61B 6/02](#))}
- U G01T 1/166
  - • • • involving relative movement between detector and subject {(scanners in general without using scintigraphy [G01T 1/2964](#))}
- G01T 1/1663
  - • • • • {Processing methods of scan data, e.g. involving contrast enhancement, background reduction, smoothing, motion correction, dual radio-isotope scanning, computer processing (for measuring spatial distribution of radiation [G01T 1/2992](#); general purpose image data processing [G06T 1/00](#); computerized tomography [G06T 11/003](#); Ancillary equipment (colour printers [G01T 1/1666](#))}
- G01T 1/169
  - • Exploration, location of contaminated surface areas (prospecting by the use of nuclear radiation e.g. of natural or induced radioactivity [G01V 5/00](#)){in situ measurement, e.g. floor contamination monitor (directional detectors [G01T 1/2907](#))}

- G01T 1/17
  - • Circuit arrangements not adapted to a particular type of detector {(pulse-selection circuits [H03K-](#), [G01R](#))}
- G01T 1/172
  - • • with coincidence circuit arrangements ([G01T 1/178](#) takes precedence; {-combination of detectors, see [G01T 1/1603-](#), [G01T 1/30-](#), [G01T 1/361](#)})
- G01T 1/175
  - • • Power supply circuits (power supply circuits per se [H02J-](#); converters [H02M](#))
- G01T 1/18
  - • with counting-tube arrangements, e.g. with Geiger counters (tubes [H01J 47/08-](#); {-with alarm provision [G01T 7/125](#)})
- G01T 1/185
  - • with ionisation chamber arrangements (construction of ionisation chambers [H01J 47/02-](#); {-gas analysis by ionisation [G01N 27/66-](#); measuring pressure [G01L 9/00-](#); leak detection [G01M 3/00-](#); tele-measurements [G08C](#)})
- U G01T 1/20
  - • with scintillation detectors
- G01T 1/2004
  - • • {Scintilloscopes (fluoroscopes [G21K 4/00-](#); radiation diagnosis [A61B 6/00](#))}
- U G01T 1/24
  - • with semiconductor detectors (semiconductor devices per se [H01L 31/00](#))
- G01T 1/249
  - • • {specially adapted for use in SPECT or PET (SPECT imaging [G01T 1/1642-](#); PET imaging [G01T 1/2985-](#); detecting hidden objects, e.g. weapons, explosives [G01V 5/0008](#))}
- G01T 1/28
  - • with secondary-emission detectors (secondary-electron-emitting electrodes in general [H01J 1/32](#) ){-optionally combined with scintillation counters (secondary emission tubes [H01J 43/00](#))}
- G01T 1/29
  - Measurement performed on radiation beams, e.g. position or section of the beam; Measurement of spatial distribution of radiation (scintigraphy [G01T 1/164-](#); mass-spectrometers [H01J 49/025](#))
- U G01T 1/2914
  - • {Measurement of spatial distribution of radiation}
- U G01T 1/2921
  - • • {Static instruments for imaging the distribution of radioactivity in one or two dimensions; Radio-isotope cameras (using scintigraphy [G01T 1/1641](#))}
- G01T 1/2957
  - • • • {using channel multiplier arrays (channel multipliers [H01J 43/18-](#); [G01T 1/1645](#) takes precedence)}
- G01T 1/2992
  - • • {Radioisotope data or image processing not related to a particular imaging system; Off-line processing of pictures, e.g. rescanners (for measuring radiation intensity [G01T 1/1663-](#); digital computing or data processing equipment or methods specially adapted for nuclear physics or nuclear engineering [G06F 15/00-](#); general purpose image data processing [G06T 1/00-](#); computerized tomography [G06T 11/003](#))}
- G01T 1/36
  - Measuring spectral distribution of X-rays or of nuclear radiation {spectrometry (pulse selection circuits per se [H03K-](#); investigation of materials by radiation diffraction [G01N 23/20-](#); spectrometer tubes [H01J 49/00](#))}
- G01T 1/361
  - • {with a combination of detectors of different types, e.g. anti-Compton spectrometers (intensity measurement with a combination of detectors [G01T 1/1603-](#); with coincidence circuit [G01T 1/172-](#); se provisionally also [G01T 1/36](#))}
- NOTE
- [G01T 1/361](#) takes precedence over [G01T 1/362](#)
- G01T 1/362
  - • {with scintillation detectors (see provisionally also [G01T 1/36-](#), [G01T 1/20](#))}
- G01T 3/00**
  - Measuring neutron radiation ([G01T 5/00](#) takes precedence; {-tubes therefor [H01J 47/12-](#); circuits with such tubes [G01T 1/18-](#); measuring short time intervals [G04F 10/00-](#); measuring pulse characteristics [G01R 29/02-](#); neutron choppers [G21K 1/04-](#); polarimeters [G01T 1/32](#)})**

- G01T 3/006
- {using self-powered detectors (for neutrons as well as for Y- or X-rays) , e.g. using Compton-effect (Compton diodes) or photo-emission or a (n,B) nuclear reaction (photovoltaic semiconductors [H01L 31/00](#); photo-tubes [H01J 40/00](#); thermionic generators [H01J 45/00](#); radioisotopic generators [G21H 1/00](#), e.g. [G21H 1/02](#), [G21H 1/04](#))}
- U G01T 5/00**      **Recording of movements or tracks of particles (spark chambers [H01J 47/00](#)); Processing or analysis of such tracks**
- G01T 5/002
- {using a combination of several movement of track recording devices (detectors associated with recording chambers and only serving to trigger these chambers, see the appropriate groups of the chamber e.g. [G01T 5/04](#) - [G01T 5/08](#); see provisionally also [G01T 5/00](#) and other sub-groups)}
- G01T 5/08
- Scintillation chambers (discharge tubes [H01J 40/00](#), [H01J 47/00](#); semiconductor devices [H01L](#))
- U G01T 7/00**      **Details of radiation-measuring instruments**
- G01T 7/02
- Collecting means for receiving or storing samples to be investigated {and possibly directly transporting the samples to the measuring arrangement; particularly for investigating radioactive fluids (sampling, preparing specimens for investigation in general [G01N 1/00](#), [G01N 1/02](#); shielded cells or rooms structurally combined with manipulative devices [G21F](#); measuring of chromatographically separated samples [G01N 30/00](#) to [G01N 30/96](#)}
- U G01T 7/12**
- Provision for actuation of an alarm
- G01T 7/125
- {Alarm- or controlling circuits using ionisation chambers, proportional counters or Geiger-Mueller tubes, also functioning as UV detectors (measuring radiation intensity with counting tubes [G01T 1/18](#); measuring radiation intensity with ionisation chambers [G01T 1/185](#); fire alarms actuated by presence of radiation of particles, e.g. of infra-red radiation, of ions [G08B 17/11](#); flame monitoring in combustion devices [F23Q 7/00](#), [F23N](#); discharge tubes per se [H01J 47/00](#))}

**Project: N/A (G01V)**

G01V

**GEOPHYSICS; GRAVITATIONAL MEASUREMENTS; DETECTING MASSES OR OBJECTS (detecting or locating foreign bodies for diagnostic, surgical or person-identification purposes [A61B](#); means for indicating the location of accidentally buried, e.g. snow-buried persons [A63B 29/02](#); investigating or analysing earth materials by determining their chemical or physical properties [G01N](#); measuring electric or magnetic variables in general, other than direction or magnitude of the earth's field [G01R](#); electronic or nuclear magnetic resonance arrangements [G01R 33/20](#); radar, sonar or analogous methods in general, detecting masses or objects involving these methods [G01S](#))**

NOTES

1. In this subclass, the geophysical methods apply both to the earth and to other celestial objects, e.g. planets.
2. Attention is drawn to the Notes following the title of class [G01](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G01V 3/11](#) covered by [G01V 3/101](#), [G01V 3/104](#)

- U G01V 1/00 Seismology; Seismic or acoustic prospecting or detecting**
- NOTE  
Groups [G01V 1/44](#) to [G01V 1/52](#) take precedence over groups [G01V 1/001](#) to [G01V 1/393](#)[G01V 1/42](#)
- WARNING  
Group [G01V 1/159](#) does not correspond to former or current IPC groups. Concordance ECLA:IPC for this group is as follows: - [G01V 1/159](#) : [G01V 1/02](#)
- G01V 1/003 • {Seismic data acquisition in general, e.g. survey design ([G01V 1/3808](#)-, [G01V 1/42](#) takes precedence)}
- G01V 1/006 • • {generating single signals by using more than one generator, e.g. beam steering or focussing arrays ([G01V 1/13](#)-, [G01V 1/3861](#) takes precedence)}
- U G01V 1/02 • Generating seismic energy ({[G01V 1/003](#) takes precedence }; blasting in general [F42](#); nuclear explosives [G21J](#))
- G01V 1/143 • • using mechanical driving means {e.g. motor driven shaft} ([G01V 1/104](#)-, [G01V 1/133](#) take precedence)
- G01V 1/159 • • {using piezoelectric or magnetostrictive driving means (generating mechanical vibrations by using piezoelectric or magnetostrictive effect in general, [B06B 1/06](#)-, [B06B 1/08](#))}
- U G01V 1/16 • Receiving elements for seismic signals (electromechanical transducers [H04R](#)); Arrangements or adaptations of receiving elements
- U G01V 1/20 • • Arrangements of receiving elements, e.g. geophone pattern
- G01V 1/201 • • • {Constructional details of seismic cables, e.g. streamers (integrated optoseismic systems [G01V 1/226](#)-, line connectors in general [H01R](#), transducer mountings in general [G10K 11/004](#))}
- G01V 1/24 • Recording seismic data (transforming one recording into another [G01V 1/32](#)-, recording measured values in general [G01D](#))
- U G01V 1/28 • Processing seismic data, e.g. analysis, for interpretation, for correction ([G01V 1/48](#) takes precedence)
- G01V 1/288 • • {Event detection in seismic signals, e.g. microseismics} (earthquakes [G01V 1/008](#)-, [G01V 1/36](#) takes precedence)}
- G01V 1/38 • specially adapted for water-covered areas ([G01V 1/28](#)-, {[G01V 1/42](#)} take precedence)
- G01V 3/00 Electric or magnetic prospecting or detecting (by optical means [G01V 8/00](#)); Measuring magnetic field characteristics of the earth, e.g. declination, deviation (for navigation, for surveying [G01C](#); { {measuring direction or magnitude of magnetic fields or magnetic flux in general [G01R 33/02](#)})**
- G01V 3/08 • operating with magnetic or electric fields produced or modified by objects or geological structures or by detecting devices (with electromagnetic waves [G01V 3/12](#)-, measuring the magnetic field characteristics of the earth [G01V 3/40](#))
- U G01V 3/10 • • using induction coils
- G01V 3/101 • • • {by measuring the impedance of the search coil; by measuring features of a resonant circuit comprising the search coil (measuring impedance or characteristics derived therefrom [G01R 27/00](#)-, e.g. quality factor [G01R 27/26](#))}

- U G01V 5/00** **Prospecting or detecting by the use of nuclear radiation, e.g. of natural or induced radioactivity (determining the properties of materials [G01N](#); measuring nuclear radiation [G01T](#))**
- WARNING  
Pending reclassification, the subgroups of this group are not complete; see also this group
- G01V 5/0008 · {Detecting hidden objects, e.g. weapons, explosives (sorting of materials or articles according to radioactive properties [B07C 5/342](#); investigating or analysing materials by the use of wave or particle radiation [G01N 23/00](#))}
- U G01V 5/0016** · {Active interrogation, i.e. using an external radiation source, e.g. using pulsed, continuous or cosmic rays}
- G01V 5/0041 · · {Multiple energy techniques using one type of radiation, e.g. X-rays of different energies (multi-beam applications, e.g. X-rays and neutrons [G01V 5/0033](#); spectroscopic applications [G01V 5/0016](#))}
- G01V 5/0075 · {Passive interrogation (for hand, feet or portals [G01T 1/167](#); for contaminated surface areas [G01T 1/169](#))}
- U G01V 5/04** · specially adapted for well-logging
- U G01V 5/08** · · using primary nuclear radiation sources or X-rays {(e.g. for inducing radioactivity; investigating or analysing materials by the use of wave or particle radiation, e.g. X-rays, neutrons [G01N 23/00](#))}
- G01V 5/10 · · · using neutron sources {(neutron generating tubes [H05H 5/00](#); neutron sources using isotopes [G21G 4/00](#))}
- G01V 5/12 · · · using gamma or X-ray sources {(gamma sources using isotopes [G21G 4/00](#); X-ray tubes [H01J 35/00](#))}
- U G01V 7/00** **Measuring gravitational fields or waves; Gravimetric prospecting or detecting**
- G01V 7/005 · {using a resonating body or device, e.g. string ([G01V 7/08](#) to [G01V 7/12](#) take precedence; measuring resonant frequency of mechanical vibrations [G01H 13/00](#); measuring frequency per se [G01R 23/00](#))}
- G01V 8/00** **Prospecting or detecting by optical means (measurement of characteristics of light [G01J](#); optical scanning systems [G02B 26/10](#); discharge tubes detecting the presence of radiation [H01J 40/00](#), [H01J 47/00](#); semiconductor devices sensitive to light [H01L 31/00](#))**
- NOTE  
This group covers the use of {millimetre waves,} infra-red, visible or ultra-violet light.
- G01V 8/10 · Detecting, e.g. by using light barriers (by reflection from the object [G01S 17/00](#); counting of objects carried by a conveyer [G06M 7/00](#); signalling or calling arrangements [G08B](#); detecting movement of traffic to be counted or controlled [G08G 1/01](#); proximity switches [H03K 17/945](#), [H03K 17/965](#))
- U G01V 9/00** **Prospecting or detecting by methods not provided for in groups [G01V 1/00](#) to [G01V 8/00](#)**
- G01V 9/007 · {by detecting gases or particles representative of underground layers at or near the surface (analysing earth materials [G01N 33/24](#); analysing gases per se [G01N](#))}
- U G01V 11/00** **prospecting or detecting by methods combining techniques covered by two or more of main groups [G01V 1/00](#) to [G01V 9/00](#)**

G01V 11/002 · {Details, e.g. power supply systems for logging instruments, transmitting or recording data, specially adapted for well logging, also if the prospecting method is irrelevant (means for transmitting well survey signals [E21B 47/12](#); signal transmission systems in general [G08C](#); transmission in general [H04B](#))}

G01V 11/005 · {Devices for positioning logging sondes with respect to the borehole wall (centralising devices for drilling rods or pipes [E21B 17/10](#); setting or locking tools in boreholes [E21B 23/00](#); Locating objects in boreholes [E21B 47/09](#))}

**G01V 15/00** **Tags attached to, or associated with, an object, in order to enable detection of the object (record carriers for use with machines [G06K 19/00](#); signs, labels [G09F](#))**

## Project: N/A (G01W)

### U G01W 1/00

#### Meteorology

G01W 1/08 · Adaptations of balloons, missiles, or aircraft for meteorological purposes; Radiosondes (transmission of measurements [G01D](#); transmitting circuits [H04B](#); {balloons in general [B64B](#); aeroplanes in general [B64D](#); missiles in general [F42B 15/00](#))}

## Project: N/A (G02B)

### G02B

**OPTICAL ELEMENTS, SYSTEMS, OR APPARATUS ([G02F](#) takes precedence; measuring-instruments, see the relevant subclass of [G01](#), e.g. optical rangefinders [G01C](#); testing of optical elements, systems, or apparatus [G01M 11/00](#); spectacles [G02C](#); sound lenses [G10K 11/30](#); electron and ion "optics" [H01J](#); X-ray "optics" [H01J](#), [H05G 1/00](#); optical elements structurally combined with electric discharge tubes [H01J 5/16](#), [H01J 29/89](#), [H01J 37/22](#); microwave "optics" [H01Q](#); combination of optical elements with television receivers [H04N 5/72](#); heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#); {optical apparatus [42H](#)})**

#### NOTE

In this subclass, the following terms are used with the meanings indicated :

- "simple lens or prism" means a single lens or prism;
- "compound lens or prism" means an optical member, the constituents of which either are close together without air-space or (except in group ) are "in broken contact", i.e. with the air-space between the constituents having no essential optical influence;
- "objective" means a lens or an optical system designed to produce a real image of a real object;
- "eyepiece" means a lens or an optical system designed to produce a virtual image for viewing by the eye or by another optical system;
- "front" or "rear" is determined by looking from the more distant conjugate.

#### WARNING

The following IPC groups are not used in the CPC classification system. Subject matter covered by these groups is classified in the CPC groups:

[G02B 11/00](#) - [G02B 11/34](#) covered by [G02B 9/00](#) and subgroups and [G02B 13/00](#) and subgroups

### G02B 1/00

**Optical elements characterised by the material of which they are made (compositions of optical glasses [C03C 3/00](#); cements for glass [C03C 27/00](#))**

#### U G02B 1/002

· {made of materials engineered to provide properties not available in nature, e.g. metamaterials}

#### G02B 1/005

· {made of photonic crystals or photonic band gap materials (photonic band-gap structures or photonic lattices in integrated optics [G02B 6/1225](#); photonic band-gap structures or photonic lattices in optical fibres [G02B 6/02295](#))}

- G02B 3/00**      **Simple or compound lenses (artificial eyes [A61F 2/14](#); spectacle lenses or contact lenses for the eyes [G02C](#); watch or clock glasses [G04B 39/00](#))**
- G02B 3/0006      · {Arrays ([G02B 3/02](#), [G02B 5/188](#) take precedence)}
  - U G02B 3/0037      · · {characterized by the distribution or form of lenses}
  - U G02B 3/0062      · · · {Stacked lens arrays, i.e. refractive surfaces arranged in at least two planes, without structurally separate optical elements in-between}
  - G02B 3/0068      · · · · {arranged in a single integral body or plate, e.g. laminates or hybrid structures with other optical elements ([G02B 5/1885](#), [G02B 17/002](#), [G02B 27/2214](#) take precedence)}
- G02B 5/00**      **Optical elements other than lenses (light guides [G02B 6/00](#); optical logic elements [G02F 3/00](#))**
- G02B 5/008      · {Surface plasmon devices (diffractive gratings with a pitch less than or comparable to the wavelength [G02B 5/1809](#); surface plasmons in integrated optics [G02B 6/1226](#); optical analysis of materials by means of surface plasmons [G01N 21/553](#))}
  - U G02B 5/08      · Mirrors {(vehicle mirrors involving special optical features [B60R 1/08](#))}
  - G02B 5/0808      · · {having a single reflecting layer ([G02B 5/0883](#), [G02B 5/0891](#) take precedence)}
  - G02B 5/0816      · · {Multilayer mirrors, i.e. having two or more reflecting layers ([G02B 5/0883](#), [G02B 5/0891](#) take precedence)}
  - G02B 5/0891      · · {Ultraviolet [UV] mirrors (apparatus for microlithography exposure [G03F 7/70](#); X-ray multilayer structures [G21K 1/06](#))}
  - G02B 5/18      · Diffraction gratings {(holographic optical elements [G02B 5/32](#), [G03H](#); integrally combined with optical fibres [G02B 6/02057](#); for coupling light guides [G02B 6/34](#); integrally combined with optical integrated light guides [G02B 6/12](#); grating systems [G02B 27/44](#))}
  - G02B 5/1828      · · {having means for producing variable diffraction (controlling the direction of light by means of one or more diffracting elements [G02B 26/0808](#); acousto-optical elements [G02F 1/11](#), [G02F 1/33](#); electro- or magneto-optical diffraction [G02F 1/292](#), [G02F 1/2955](#))}
  - G02B 5/1861      · · {Reflection gratings characterised by their structure, e.g. step profile, contours of substrate or grooves, pitch variations, materials ([G02B 5/1809](#), [G02B 5/1828](#), [G02B 5/1833](#), [G02B 5/1838](#) and [G02B 5/1847](#) take precedence)}
  - G02B 5/1866      · · {Transmission gratings characterised by their structure, e.g. step profile, contours of substrate or grooves, pitch variations, materials ([G02B 5/1809](#), [G02B 5/1828](#), [G02B 5/1833](#), [G02B 5/1838](#) and [G02B 5/1847](#) take precedence)}
  - G02B 5/1876      · · {Diffractive Fresnel lenses; Zone plates; Kinoforms ([G02B 5/1842](#), [G02B 5/1847](#) take precedence; optical systems having diffractive correction means [G02B 27/0037](#); Fresnel lenses operating by refraction [G02B 3/08](#))}
  - G02B 5/20      · Filters (polarising elements [G02B 5/30](#); {-manufacturing optical filters by photographic processes [G03C 7/12](#), by lithographic processes [G03F 7/0007](#))}
  - G02B 5/203      · · {having holographic or diffractive elements (diffraction gratings per se [G02B 5/18](#); holographic elements per se [G02B 5/32](#); generating the spectrum using diffraction elements [G01J 3/18](#))}
  - U G02B 5/28      · · Interference filters
  - G02B 5/284      · · · {of etalon type comprising a resonant cavity other than a thin solid film, e.g. gas, air, solid plates (etalons for fibre optic multiplexing [G02B 6/29358](#); etalons for spectral measurement [G01J 3/26](#))}
  - U G02B 5/30      · Polarising elements (light-modulating devices [G02F 1/00](#))

- G02B 5/3016
- {involving passive liquid crystal elements (optical properties of liquid crystals [G02F 1/0063](#); polarising elements associated with active liquid crystal devices [G02F 1/133528](#))}
- G02B 5/3025
- {Polarisers, i.e. arrangements capable of producing a definite output polarisation state from an unpolarised input state ([G02B 5/3008](#), [G02B 5/3016](#) take precedence)}
- G02B 5/3083
- {Birefringent or phase retarding elements ([G02B 5/3008](#), [G02B 5/3016](#) take precedence; systems for polarisation control [G02B 27/286](#); manufacturing phase modulating patterns by lithographic processes [G03F 7/001](#))}
- G02B 5/32
- {Birefringent or phase retarding elements ([G02B 5/3008](#), [G02B 5/3016](#) take precedence; systems for polarisation control [G02B 27/286](#); manufacturing phase modulating patterns by lithographic processes [G03F 7/001](#))}
- U G02B 6/00** **Light guides**
- G02B 6/0001
- {specially adapted for lighting devices or systems (lighting or signalling on vehicles using light guides [B60Q 1/00](#); lighting devices for vehicle interior using light guides [B60Q 3/002](#); lighting devices mounted on the vehicle rear part using light guides [F21S 48/2225](#); lighting devices for vehicle dashboards [B60Q 3/04](#); measuring arrangements having light conducting pointers [G01D 13/265](#); illumination of liquid crystal displays [G02F 1/1336](#); illuminated signs [G09F 13/00](#))}
- U G02B 6/02
- Optical fibre with cladding {with or without a coating}(mechanical structures for providing tensile strength and external protection [G02B 6/44](#))
- U G02B 6/02057
- {comprising gratings}
- G02B 6/02061
- • {Grating external to the fibre and in contact with the fibre, e.g. evanescently coupled, gratings applied to the fibre end (mechanically induced in the fibre [G02B 6/02071](#), surface relief on the fibre [G02B 6/02066](#))}
- U G02B 6/02076
- • • {Refractive index modulation gratings, e.g. Bragg gratings}
- G02B 6/0208
- • • {characterised by their structure, wavelength response ([G02B 6/02114](#), [G02B 6/02171](#), [G02B 6/02195](#) take precedence; multiple layer cores or claddings [G02B 6/036](#), protective coverings [G02B 6/4429](#))}
- G02B 6/02114
- • • {characterised by enhanced photosensitivity characteristics of the fibre, e.g. hydrogen loading, heat treatment (treatment of glass fibres by ion diffusion, implantation, radiation, [C03C 25/60](#), [C03C 25/62](#))}
- G02B 6/02395
- {Glass optical fibre with a protective coating, e.g. two layer polymer coating deposited directly on a silica cladding surface during fibre manufacture ([G02B 6/02052](#), [G02B 6/02057](#), [G02B 6/105](#), [G02B 6/024](#), [G02B 6/032](#), [G02B 6/14](#) take precedence; optical cables, i.e. comprising protective structures external to the protective coating such as a jacket or plural coated optical fibres [G02B 6/44](#); coating on fibre gratings [G02B 6/02104](#); coating of glass to obtain optical fibres [C03C 25/104](#); multilayer core or cladding [G02B 6/036](#); reinforcing splice joints [G02B 6/2558](#))}
- G02B 6/028
- with core or cladding having graded refractive index {([G02B 6/02033](#), [G02B 6/02295](#) take precedence)}
- G02B 6/0281
- • {Graded index region forming part of the central core segment, e.g. alpha profile, triangular, trapezoidal core ([G02B 6/0288](#), [G02B 6/0286](#) take precedence)}
- G02B 6/0283
- • • {Graded index region external to the central core segment, e.g. sloping layer or triangular or trapezoidal layer ([G02B 6/0288](#), [G02B 6/0286](#) take precedence)}
- G02B 6/036
- core or cladding comprising multiple layers {(multicore optical fibres [G02B 6/02042](#); microstructured properties [G02B 6/02295](#); omniguide fibres [G02B 6/023](#))}

- G02B 6/10
  - of the optical waveguide type ([G02B 6/02](#)-, [G02B 6/24](#) take precedence; devices or arrangements for the control of light by electric, magnetic, electro-magnetic or acoustic means [G02F 1/00](#)-, transferring the modulation of modulated light [G02F 2/00](#)-, optical logic elements [G02F 3/00](#)-, optical analogue/digital converters [G02F 7/00](#)-, stores using opto-electronic devices [G11C 11/42](#)-, {using electro-optical elements [G11C 13/047](#)} ; electric waveguides [H01P](#); transmission of information by optical means [H04B 10/00](#) ; multiplex systems [H04J 14/00](#))
- G02B 6/12
  - • of the integrated circuit kind (production or processing of single crystals [C30B](#)-, electric integrated circuits [H01L 27/00](#){ {coupling fibres and integrated optical circuits [G02B 6/30](#)})
- U G02B 6/12007
  - • • {forming wavelength selective elements, e.g. multiplexer, demultiplexer}
- U G02B 6/12009
  - • • • {comprising arrayed waveguide grating [AWG] devices, i.e. with a phased array of waveguides}
- G02B 6/12019
  - • • • • {characterised by the optical interconnection to or from the AWG devices, e.g. integration or coupling with lasers or photodiodes (coupling integrated waveguide to fibre [G02B 6/30](#)-, to optoelectronic element [G02B 6/42](#)-, monolithic integration of integrated waveguides with other optical elements [G02B 6/12004](#))}
- G02B 6/12033
  - • • • • {characterised by means for configuring the device, e.g. moveable element for wavelength tuning (switching [G02B 6/35](#)-, thermo-optic devices [G02F 1/0147](#))}
- U G02B 6/13
  - • • Integrated optical circuits characterised by the manufacturing method
- U G02B 6/134
  - • • • by substitution by dopant atoms
- G02B 6/1342
  - • • • • {using diffusion (diffusion in single crystals [C30B 31/00](#)-, diffusion in glass [C03C 23/00](#))}
- G02B 6/1347
  - • • • • {using ion implantation (ion implantation in glass [C03C 23/0055](#)-, ion implantation in general [C23C](#))}
- U G02B 6/24
  - Coupling light guides (for electric waveguides [H01P 1/00](#))
- G02B 6/26
  - • Optical coupling means ([G02B 6/36](#)-, [G02B 6/42](#) take precedence)
- G02B 6/264
  - • • {with optical elements between opposed fibre ends which perform a function other than beam splitting (having lens focusing means [G02B 6/32](#)-, utilising prism or grating [G02B 6/34](#))}
- G02B 6/268
  - • • {for modal dispersion control, e.g. concatenation of light guides having different modal dispersion properties (graded index multimode fibres [G02B 6/0288](#)-, multimodal transmission systems [H04B 10/2581](#))}
- G02B 6/27
  - • • with polarisation selective and adjusting means ({for wavelength selection [G02B 6/29302](#)-, of the integrated waveguide kind [G02B 6/126](#)} ; polarisation; polarisation systems in general [G02B 27/28](#)-, optical polarisation multiplex systems [H04J 14/06](#))
- U G02B 6/2726
  - • • • {in or on light guides, e.g. polarisation means assembled in a light guide}
- G02B 6/274
  - • • • • {based on light guide birefringence, e.g. due to coupling between light guides ([G02B 6/105](#)-, [G02B 6/024](#) take precedence; mechanically induced birefringence [G02F 1/0134](#))}
- U G02B 6/28
  - • • having data bus means, i.e. plural waveguides interconnected and providing an inherently bidirectional system by mixing and splitting signals
- U G02B 6/2804
  - • • • {forming multipart couplers without wavelength selective elements, e.g. "T" couplers, star couplers}
- G02B 6/2861
  - • • • • {using fibre optic delay lines and optical elements associated with them, e.g. for use in signal processing, e.g. filtering (delay lines in general [H03H](#)-, [H01P 9/00](#)-, optical computing devices [G06E](#))}

- G02B 6/293
  - . . . . with wavelength selective means (~~{G02B 6/02052-, G02B 6/02057 take precedence }~~ ; for optical elements in use, see the relevant subgroups of this subclass; optical wavelength-division multiplexing systems [H04J 14/02-](#); {-in or associated with an integrated waveguide arrangement [G02B 6/12007-](#); mode multiplexing [G02B 6/14](#)})
- U G02B 6/29304
  - . . . . . {operating by diffraction, e.g. grating ([G02B 6/29301](#) takes precedence; spectrometers using gratings [G01J 3/18](#))}
- G02B 6/29316
  - . . . . . {Light guides comprising a diffractive element, e.g. grating in or on the light guide such that diffracted light is confined in the light guide (~~G02B 6/02057-, G02B 6/29332-, G02B 6/29356 take precedence~~)}
- G02B 6/29325
  - . . . . . . {of the slab or planar or plate like form, i.e. confinement in a single transverse dimension only (integrated circuit planar waveguide arrangements [G02B 6/12007-](#); specially adapted for lighting [G02B 6/0011](#))}
- U G02B 6/29331
  - . . . . . {operating by evanescent wave coupling}
- G02B 6/29335
  - . . . . . . {Evanescent coupling to a resonator cavity, i.e. between a waveguide mode and a resonant mode of the cavity (wavelength selective means based on resonator cavity coupled non-evanescently ~~G02B 6/29356-, G02B 6/29358~~)}
- U G02B 6/29346
  - . . . . . {operating by wave or beam interference (interferometers for measuring [G01B 9/02](#))}
- G02B 6/29358
  - . . . . . . {Multiple beam interferometer external to a light guide, e.g. Fabry-Pérot, etalon, VIPA plate, OTDL plate, continuous interferometer, parallel plate resonator (~~G02B 6/29347-, G02B 6/29349-, G02B 6/2935-, G02B 6/29361 take precedence~~; resonator evanescently coupled to light guide [G02B 6/29335](#))}
- G02B 6/35
  - . . . having switching means (optical switching in general [G02B 26/08-](#); by changing the optical properties of the medium [G02F 1/00](#))
- G02B 6/3536
  - . . . . {involving evanescent coupling variation, e.g. by a moving element such as a membrane which changes the effective refractive index (mode converters [G02B 6/14-](#); adjustable lateral coupling between waveguides [G02B 6/283-](#); electro- optical refractive index variations [G02F 1/0118](#))}
- G02B 6/3538
  - . . . . {based on displacement or deformation of a liquid (controlling the intensity of light by displacement or deformation of a fluid in general [G02B 26/004-](#); fluid-filled lens of variable focal length [G02B 3/14](#))}
- U G02B 6/354
  - . . . . {Switching arrangements, i.e. number of input/output ports and interconnection types}
- G02B 6/356
  - . . . . . {in an optical cross-connect device, e.g. routing and switching aspects of interconnecting different paths propagating different wavelengths to (re)configure the various input and output links (switching polarized beams [G02B 6/3594-](#); power equalizers [G02B 6/356](#) and [G02B 6/3594-](#); path selecting means [H04Q 11/0001](#))}
- U G02B 6/3564
  - . . . . {Mechanical details of the actuation mechanism associated with the moving element or mounting mechanism details}
- U G02B 6/3568
  - . . . . . {characterised by the actuating force}
- G02B 6/3572
  - . . . . . . {Magnetic force (magnetic forces controlling reflecting elements in general [G02B 26/085-](#); magneto-optic devices [G02F 1/09](#))}
- G02B 6/3576
  - . . . . . . {Temperature or heat actuation (thermal forces controlling reflecting elements in general [G02B 26/0866-](#); thermo-optic devices [G02F 1/0147](#))}
- G02B 6/3578
  - . . . . . . {Piezoelectric force (piezoelectric forces controlling reflecting elements in general [G02B 26/0858-](#); piezo-optic devices [G02F 1/0131](#))}

- G02B 6/3598
  - . . . {Switching means directly located between an optoelectronic element and waveguides, including direct displacement of either the element or the waveguide, e.g. optical pulse generation (based on changing the optical properties of the medium [G02F 1/00](#); optical pulse generation in optical transmitters [H04B 10/152](#); optical pulse generation by controlling laser operation [H01S 3/00](#))}
- G02B 6/36
  - . . Mechanical coupling means (~~{[G02B 6/06](#), [G02B 6/30](#), [G02B 6/35](#), [G02B 6/38](#)~~ , ~~[G02B 6/255](#), [G02B 6/42](#)~~ take precedence)
- G02B 6/3616
  - . . . {Holders, macro size fixtures for mechanically holding or positioning fibres, e.g. on an optical bench (supporting carriers of a micro-bench type [G02B 6/3648](#); micromanipulators [B25J 7/00](#); cassettes, bobbins [G02B 6/4439](#))}
- G02B 6/3624
  - . . . . {Fibre head, e.g. fibre probe termination (optical details of light guide terminations [G02B 6/241](#); reshaping of light guides [G02B 6/2552](#); optical details of coupling light into or out of fibre end [G02B 6/262](#))}
- G02B 6/3628
  - . . . {for mounting fibres to supporting carriers (~~[G02B 6/3608](#), [G02B 6/3616](#)~~ take precedence)}
- U G02B 6/3684
  - . . . . {characterised by the manufacturing process of surface profiling of the supporting carrier (manufacturing micro-systems per se [B81C 1/00015](#))}
- G02B 6/3696
  - . . . . . {by moulding, e.g. injection moulding, casting, embossing, stamping, stenciling, printing, or with metallic mould insert manufacturing using LIGA or MIGA techniques (shaping the mould surface by machining [B29C 33/38](#); moulding techniques [B29C 39/00](#), [B29C 43/00](#), [B29C 45/00](#), [B29C 47/00](#), [B29C 59/00](#); stamping, printing or embossing techniques [B81C 1/00444](#); surface micro-machining using LIGA [B81C 2201/032](#))}
- U G02B 6/38
  - . . . having fibre to fibre mating means
- G02B 6/3801
  - . . . . {Permanent connections, i.e. wherein fibres are kept aligned by mechanical means (splices by bonding [G02B 6/255](#); fusion splices [G02B 6/2551](#))}
- U G02B 6/3807
  - . . . . {Dismountable connectors, i.e. comprising plugs}
- U G02B 6/381
  - . . . . . {of the ferrule type, e.g. fibre ends embedded in ferrules, connecting a pair of fibres}
- G02B 6/3817
  - . . . . . . {containing optical and electrical conductors (cables including electrical and optical conductors [H01B 11/22](#); [G02B 6/3816](#) takes precedence)}
- U G02B 6/3826
  - . . . . . . {characterised by form or shape}
- G02B 6/383
  - . . . . . . . {Hermaphroditic connectors, i.e. two identical plugs mating with one another, each plug having both male and female diametrically opposed engaging parts; electric hermaphroditic coupling [H01R 24/84](#), [H01R 13/28](#)}
- G02B 6/3831
  - . . . . . . . {comprising a keying element on the plug or adapter, e.g. to forbid wrong connection (keying element on the ferrule [G02B 6/3851](#); keying element for electrical coupling [H01R 13/64](#))}
- U G02B 6/3833
  - . . . . . . {Details of mounting fibres in ferrules; Assembly methods; Manufacture}
- G02B 6/385
  - . . . . . . . {Accessories for testing or observation of connectors (means for centering or aligning the light guide within the ferrule with auxiliary facilities for movably aligning or adjusting the fibre within its ferrule, measuring position, eccentricity [G02B 6/3843](#); mechanical features associated with the optical testing of optical fibres [G01M 11/088](#))}
- U G02B 6/3855
  - . . . . . . . {characterised by the method of anchoring or fixing the fibre within the ferrule ([G02B 6/3854](#) takes precedence)}
- U G02B 6/3858
  - . . . . . . . {Clamping, i.e. with only elastic deformation}

- G02B 6/3859 . . . . . {Ferrules characterised by use of shape memory material [SMM], e.g. heat recoverable polymers, Ti-Ni compounds (chemical aspects of SMM see the relevant places under [C08](#) and [C22](#); SMM used for shaping by moulding [B29C 61/00](#); SMM for electrical coupling [H01R 4/01](#), [H01R 4/72](#), [H01R 12/856](#), [H02G 15/1806](#)}
- U G02B 6/3869 . . . . . {Mounting ferrules to connector body, i.e. plugs}
- G02B 6/3871 . . . . . {Ferrule rotatable with respect to plug body, e.g. for setting rotational position} (adjusting fibre within the ferrule, [G02B 6/3843](#)); Fixation of ferrules after rotation}
- U G02B 6/3873 . . . . . {Connectors using guide surfaces for aligning ferrule ends, e.g. tubes, sleeves, V-grooves, rods, pins, balls}
- G02B 6/3885 . . . . . {Multicore or multichannel optical connectors, i.e. one single ferrule containing more than one fibre, e.g. ribbon type (optical ribbon cable [G02B 6/4403](#), [G02B 6/448](#))}
- G02B 6/389 . . . . . {characterised by the method of fastening connecting plugs and sockets, e.g. screw- or nut-lock, snap-in, bayonet type}
- WARNING  
Not complete. See also groups [H01R 13/625](#), [H01R 13/621](#), [H01R 13/627](#)
- G02B 6/3895 . . . . . {identification of connection, e.g. right plug to the right socket or full engagement of the mating parts (keying element on the plug or adapter [G02B 6/3831](#); keying element on the ferrule [G02B 6/3851](#); keying element for electrical connection [H01R 13/64](#))}
- G02B 6/3898 . . . . . {Tools, e.g. handheld; Tuning wrenches; Jigs used with connectors, e.g. for extracting, removing or inserting in a panel, for engaging or coupling connectors, for assembling or disassembling components within the connector, for applying clips to hold two connectors together or for crimping (tools for cleaning, [G02B 6/3866](#); tools in general [B25B](#))}
- U G02B 6/42 . . . . . Coupling light guides with opto-electronic elements
- NOTE  
In this group, the following expression is used with the meaning indicated:
- "opto-electronic elements" includes light emitting elements, e.g. lasers or LED's, as well as light receiving elements, e.g. photodiodes or phototransistors
- U G02B 6/4201 . . . . . {Packages, e.g. shape, construction, internal or external details}
- G02B 6/4204 . . . . . {the coupling comprising intermediate optical elements, e.g. lenses, holograms (encapsulated active devices [H01S 5/02208](#), [H01L 33/52](#))}
- G02B 6/4206 . . . . . {Optical features ([G02B 6/4207](#), [G02B 6/421](#) take precedence)}
- U G02B 6/4207 . . . . . {with optical elements reducing the sensitivity to optical feedback (anti-reflection devices specially adapted for lasers, see [H01S 3/0064](#))}
- G02B 6/4208 . . . . . {using non-reciprocal elements or birefringent plates, i.e. quasi-isolators (optical isolators per se [G02F 1/093](#), [G02F 1/0955](#))}
- U G02B 6/4219 . . . . . {Mechanical fixtures for holding or positioning the elements relative to each other in the couplings; Alignment methods for the elements, e.g. measuring or observing methods especially used therefor}
- G02B 6/422 . . . . . {Active alignment, i.e. moving the elements in response to the detected degree of coupling or position of the elements ([G02B 6/4233](#), [G02B 6/4234](#) take precedence)}
- U G02B 6/4249 . . . . . {comprising arrays of active devices and fibres}

- G02B 6/425 . . . . {Optical features (semiconductor laser arrays [H01S 5/40](#); hybrid LED arrays [H01L 25/0753](#); monolithic LED arrays [H01L 27/153](#))}
- G02B 6/4266 . . . . {Thermal aspects, temperature control or temperature monitoring (thermal aspect of electrical circuits [H05K 7/20](#), [H05K 5/0213](#), temperature control in general [G05D 23/19](#))}
- G02B 6/4268 . . . . {Cooling (of semiconductor devices [H01L 23/24](#); of electric apparatus [H05K 7/20](#); of instruments [G12B 15/00](#))}
- U G02B 6/4274 . . . . {Electrical aspects ([G02B 6/4263](#) and [G02B 6/4265](#) take precedence)}
- G02B 6/4277 . . . . {Protection against electromagnetic interference [EMI], e.g. shielding means (shielding of electric apparatus [H05K 9/00](#), of instruments [G12B 17/00](#))}
- G02B 6/4287 . . . . {Optical modules with tapping or launching means through the surface of the waveguide ([G02B 6/2852](#), [G02B 6/4286](#) take precedence)}
- G02B 6/43 . . . . Arrangements comprising a plurality of opto-electronic elements and associated optical interconnections (light-emissive or light-sensitive semiconductor devices [H01L 27/00](#), [H01L 31/00](#), [H01L 33/00](#)); {Transmitting or receiving optical signals between chips, wafers or boards; Optical backplane assemblies}
- U G02B 6/44 . . . . Mechanical structures for providing tensile strength and external protection for fibres, e.g. optical transmission cables (cables incorporating electric conductors and optical fibres {where features relating to the optical fibres are not of interest} [H01B 11/22](#))
- U G02B 6/4401 . . . {Optical cables}
- G02B 6/4402 . . . {with one single optical waveguide ([G02B 6/4429](#), [G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/4403 . . . {with ribbon structure ([G02B 6/4429](#), [G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/4405 . . . {with longitudinally spaced waveguide clamping ([G02B 6/4429](#), [G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/4407 . . . {with internal fluted support member ([G02B 6/4429](#), [G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/441 . . . {built up from sub-bundles ([G02B 6/4429](#), [G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/4415 . . . {Cables for special applications ([G02B 6/4429](#), [G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/4429 . . . {Strengthening and protecting features ([G02B 6/4492](#), [G02B 6/4494](#), [G02B 6/4496](#) take precedence)}
- U G02B 6/4479 . . . {Fabrication methods}
- G02B 6/4483 . . . . {Injection or filling devices (hydrogen absorbing materials [G02B 6/4492](#); water blocking or hydrophobic materials [G02B 6/4494](#))}
- G02B 6/4492 . . . {provided with hydrogen absorbing materials ([G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/4494 . . . {provided with water blocking or hydrophobic materials ([G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- G02B 6/4496 . . . {Freeze-prevention means ([G02B 6/4439](#), [G02B 6/4479](#) take precedence)}
- U **G02B 7/00** **Mountings, adjusting means, or light-tight connections, for optical elements**
- G02B 7/003 . . . {Alignment of optical elements ([G02B 7/001](#), [G02B 7/002](#) take precedence; for mirrors [G02B 7/1822](#))}
- U G02B 7/18 . . . for prisms; for mirrors

- G02B 7/182
- for mirrors ([G02B 7/181](#) takes precedence; mounting of MEMS mirrors, e.g. DMDs, [G02B 26/0833](#)); optical devices or arrangements using movable or deformable optical elements for controlling the intensity, colour, phase, polarisation or direction of light [G02B 26/00](#); {-mirror arrangements in vehicles [B60R 1/02](#)})
- G02B 7/185
- • with means for adjusting the shape of the mirror surface (mirrors with curved faces [G02B 5/10](#) {not in use, see [G02B 26/06](#), [G02B 26/0825](#)})
- G02B 7/188
- • • Membrane mirrors {(not in use, see [G02B 26/06](#), [G02B 26/0825](#)})
- U G02B 7/28
- Systems for automatic generation of focusing signals (measuring distance per se [G01C](#), [G01S](#); using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. [G03B](#), [G03F](#), {[H04N](#)})
- U G02B 7/30
- using parallax triangle with a base line
- G02B 7/32
- • using active means, e.g. light emitter {(including both an active and a passive focus detecting device [G02B 7/285](#); using ultrasound [G02B 7/40](#)})
- G02B 7/36
- using image sharpness techniques {, e.g. image processing techniques for generating autofocus signals (in cameras having a solid state image sensor [H04N 5/23212](#); image data processing per se [G06T](#))}
- U G02B 9/00**
- Optical objectives characterised both by the number of the components and their arrangements according to their sign, i.e. + or - ([G02B 15/00](#) takes precedence)**
- U G02B 9/34
- having four components only
- G02B 9/36
- • arranged + -- +
- NOTE  
In sub-groups [G02B 9/38](#), [G02B 9/44](#) to [G02B 9/56](#) the first mentioned applicable sub-group takes precedence over later-mentioned sub-groups.
- G02B 13/00**
- Optical objectives specially designed for the purposes specified below (with variable magnification {in general} [G02B 15/00](#))**
- NOTE  
Unless specified in the title of the subgroups, this group and its subgroups do not cover objectives comprising reflecting surfaces, which are covered by [G02B 17/06](#), [G02B 17/08](#) and their subgroups
- G02B 13/14
- for use with infra-red or ultra-violet radiation ([G02B 13/008](#), } [G02B 13/16](#) take precedence)
- G02B 17/00**
- Systems with reflecting surfaces, with or without refracting elements (microscopes [G02B 21/00](#); telescopes, periscopes [G02B 23/00](#); for beam splitting or combining [G02B 27/10](#); for optical projection [G02B 27/18](#))**
- G02B 17/004
- {Systems comprising a plurality of reflections between two or more surfaces, e.g. cells, resonators (multipass arrangements for optical cuvettes [G01N 21/031](#); laser resonators [H01S 3/05](#))}
- G02B 17/006
- {Systems in which light light is reflected on a plurality of parallel surfaces, e.g. louvre mirrors, total internal reflection [TIR] lenses (Fresnel mirrors [G02B 5/09](#), Fresnel lenses [G02B 3/08](#))}
- U G02B 17/02
- Catoptric systems, e.g. image erecting and reversing system
- G02B 17/026
- • {having static image erecting or reversing properties only ([G02B 17/045](#) takes precedence; optical derotators [G02B 27/642](#); optical devices for controlling the direction of light using movable or deformable optical elements [G02B 26/08](#))}
- U G02B 17/04
- using prisms only

- G02B 17/045
  - • • {having static image erecting or reversing properties only (optical derotators [G02B 27/642](#); optical devices for controlling the direction of light using movable or deformable optical elements [G02B 26/08](#))}
- U G02B 17/06
  - • using mirrors only {i.e. having only one curved mirror (used in non-imaging applications [G02B 19/00](#))}
- G02B 17/0605
  - • • {using two curved mirrors ([G02B 17/0668](#), [G02B 17/0694](#) take precedence)}
- G02B 17/0626
  - • • {using three curved mirrors ([G02B 17/0668](#), [G02B 17/0694](#) take precedence)}
- G02B 17/0647
  - • • {using more than three curved mirrors ([G02B 17/0668](#), [G02B 17/0694](#) take precedence)}
- U G02B 17/08
  - Catadioptric systems {(used in non-imaging applications [G02B 19/00](#))}
- G02B 17/0804
  - • {using two curved mirrors ([G02B 17/0864](#), [G02B 17/0896](#) takes precedence)}
- G02B 17/082
  - • {using three curved mirrors ([G02B 17/0864](#), [G02B 17/0896](#) take precedence)}
- G02B 17/0836
  - • {using more than three curved mirrors ([G02B 17/0864](#), [G02B 17/0896](#) take precedence)}
- U G02B 19/00**      **Condensers, {e.g. light collectors or similar non-imaging optics}{for microscopes [G02B 21/08](#)}**  
WARNING  
 This group and subgroups are not complete pending reclassification, see [G02B 17/0668](#) and subgroups
- U G02B 19/0033
  - {characterised by the use}
- G02B 19/0038
  - • {for use with ambient light ([G02B 19/009](#), [G02B 19/0095](#) take precedence)}
- G02B 19/0047
  - • {for use with a light source ([G02B 19/009](#), [G02B 19/0095](#) take precedence; details of lighting devices in general [F21V](#); non-semiconductor lasers having optical devices external to the laser cavity [H01S 3/005](#))}
- G02B 19/0052
  - • • {the light source comprising a laser diode (coupling into light guides using intermediate optical elements [G02B 6/4204](#); semiconductor lasers having optical devices external to the laser cavity [H01S 5/005](#))}
- G02B 19/0076
  - • {for use with a detector ([G02B 19/009](#), [G02B 19/0095](#) take precedence)}
- G02B 19/0085
  - • {for use with both a detector and a source (e.g. in a transceiver, [G02B 19/009](#), [G02B 19/0095](#) take precedence)}
- G02B 21/00**      **Microscopes (eyepieces [G02B 25/00](#); polarising systems [G02B 27/28](#); measuring microscopes [G01B 9/04](#); microtomes [G01N 1/06](#); scanning-probe techniques or apparatus [G01Q](#))**
- U G02B 21/0004
  - {specially adapted for specific applications}
- U G02B 21/002
  - • {Scanning microscopes (scanning near field optical microscopes [G01Q 60/18](#))}
- U G02B 21/0024
  - • • {Confocal scanning microscopes (CSOMs) or confocal "macroscopes"; Accessories which are not restricted to use with CSOMs, e.g. sample holders}
- NOTE  
 Objective revolvers or the like are classified in other groups of [G02B 21/00](#)
- G02B 21/0032
  - • • {Optical details of illumination, e.g. light-sources, pinholes, beam splitters, slits, fibers ([G02B 21/0036](#) to [G02B 21/008](#); means for illumination of specimens in general [G02B 21/06](#))}
- U G02B 21/06
  - Means for illuminating specimens

- U G02B 21/08
  - • Condensers
- G02B 21/10
  - • • affording dark-field illumination ([G02B 21/14](#) {and [G02B 21/125](#)} take precedence)
- G02B 21/34
  - Microscope slides, e.g. mounting specimens on microscope slides (preparing specimens for investigation [G01N 1/28](#); means for supporting the objects or the materials to be analysed in electron microscopes [H01J 37/20](#))
- U G02B 21/36
  - arranged for photographic purposes or projection purposes ([G02B 21/18](#) takes precedence){or digital imaging or video purposes including associated control and data processing arrangements (image data processing per se [G06T](#))}
- G02B 21/365
  - • {Control or image processing arrangements for digital or video microscopes ([G02B 21/361](#)-, [G02B 21/362](#) take precedence)}
- G02B 23/00**

**Telescopes, e.g. binoculars; Periscopes; Instruments for viewing the inside of hollow bodies (diagnostic instruments [A61B](#)); Viewfinders (objectives [G02B 9/00](#)-, [G02B 13/00](#)-, [G02B 15/00](#)-, [G02B 17/00](#)-, eyepieces [G02B 25/00](#)); Optical aiming or sighting devices (non-optical aspects of weapon aiming or sighting devices [F41G](#))**
- U G02B 23/02
  - involving prisms or mirrors ([G02B 23/14](#) takes precedence)
- G02B 23/08
  - • Periscopes {(arrangements on floating structures of underwater viewing devices [B63C 11/49](#)-, arrangement of visual watch equipment on submarines [B63G 8/38](#))}
- G02B 23/10
  - • reflecting into the field of view additional indications, e.g. from collimator (collimators in general [G02B 27/30](#)-, graticules [G02B 27/34](#))
- G02B 23/12
  - with means for image conversion or intensification (objectives for image conversion or intensification [G02B 13/16](#)-, electrical image converters with optical input and optical output [H01J 31/50](#))
- G02B 23/16
  - Housings; Caps; Mountings; Supports, e.g. with counterweight (cases or receptacles [A45C](#) { }; for submarine periscopes [G02B 23/08](#))}
- G02B 23/18
  - • for binocular arrangements {(focusing binocular pairs [G02B 7/06](#)-, adjusting pupillary distance of binocular pairs [G02B 7/12](#))}
- G02B 23/22
  - • Underwater equipment {(for submarine periscopes [G02B 23/08](#)-, arrangements on floating structures of underwater viewing devices [B63C 11/49](#)-, arrangement of visual watch equipment on submarines [B63G 8/38](#))}
- NOTE

This group covers housings, mountings, supports or the like for underwater equipment other than periscopes
- U G02B 23/24
  - Instruments {or systems} for viewing the inside of hollow bodies, e.g. fibrescopes
- U G02B 23/2476
  - • {Non-optical details, e.g. housings, mountings, supports}
- G02B 23/2484
  - • • {Arrangements in relation to a camera or imaging device (processing or control of video signals generated by an endoscope [H04N 5/232](#)-, [H04N 5/235](#))}
- U G02B 25/00**

**Eyepieces; Magnifying glasses (simple lenses [G02B 3/00](#))**
- U G02B 25/002
  - {Magnifying glasses}
- G02B 25/007
  - • {comprising other optical elements than lenses ([G02B 25/004](#)-, [G02B 25/005](#) take precedence)}

- G02B 26/00**      **Optical devices or arrangements using movable or deformable optical elements for controlling the intensity, colour, phase, polarisation or direction of light, e.g. switching, gating, modulating (specially adapted to measuring characteristics of light [G01J](#); using devices or arrangements the optical operation of which is modified by changing the optical properties of the medium of the devices or the arrangements [G02F 1/00](#); control of light in general [G05D 25/00](#); control of light sources [H01S 3/10](#), [H05B 37/00](#) to [H05B 43/00](#); mechanically operable parts of lighting devices for the control of light [F21V](#))**
- G02B 26/001      · {based on interference in an adjustable optical cavity (interference filters [G02B 5/28](#); devices or arrangements using multiple reflections in spectrometry or monochromators [G01J 3/26](#))}
- U G02B 26/02      · for controlling the intensity of light {([G02B 26/004](#) takes precedence)}
- G02B 26/026      · · {based on the rotation of particles under the influence of an external field, e.g. gyricons, twisting ball displays (based on orientable dipolar particles [G02F 1/172](#); based on electrophoresis [G02F 1/167](#))}
- G02B 26/04      · · by periodically varying the intensity of light, e.g. using choppers (shutters, diaphragms for cameras [G03B 9/00](#); devices for eliminating or reducing the effect of flicker in projection systems [G03B 21/40](#))
- G02B 26/06      · for controlling the phase of light ([G02B 26/08](#) takes precedence {-, measuring optical phase difference [G01J 9/00](#))}
- U G02B 26/08      · for controlling the direction of light (in light guides [G02B 6/35](#))
- G02B 26/10      · · Scanning systems (for special applications, see the relevant places, e.g. [G03B 27/32](#), {[G03F 7/20](#)}, [G03G 15/04](#), [G09G 3/00](#), [H04N](#))
- G02B 26/106      · · · {having diffraction gratings as scanning elements, e.g. holographic scanners (holographic optical elements [G02B 5/32](#), holography [G03H](#))}
- U G02B 26/12      · · · using multifaceted mirrors
- G02B 26/124      · · · · {Details of the optical system between the light source and the polygonal mirror ([G02B 26/123](#), [G02B 26/127](#) take precedence)}
- G02B 27/00**      **Other optical systems; Other optical apparatus (means for bringing about special optical effects in shop-windows, show-cases [A47F](#), e.g. [A47F 11/06](#); optical toys [A63H 33/22](#); designs or pictures characterised by special light effects [B44F 1/00](#))**
- U G02B 27/0025      · {for optical correction, e.g. distorsion, aberration}
- G02B 27/0037      · · {with diffracting elements ([G02B 27/0056](#) takes precedence; holographic optical elements [G02B 5/32](#); zone systems [G02B 5/1876](#))}
- G02B 27/02      · Viewing or reading apparatus (stereoscopic systems per se [G02B 27/22](#); of the projection type [G03B](#); slide-changing apparatus [G03B](#))
- G02B 27/022      · · {Viewing apparatus ([G02B 27/04](#), [G02B 27/06](#), [G02B 27/08](#) take precedence)}
- G02B 27/023      · · · {for viewing X-ray images using image converters, e.g. radiosopes (X-ray screens [G21K 4/00](#); X-ray image conversion tubes [H01J 31/50](#); circuit arrangements for X-ray apparatus incorporating image intensifiers [H05G 1/64](#))}
- G02B 27/024      · · · {comprising a light source, e.g. for viewing photographic slides, X-ray transparencies ([G02B 27/023](#), and photographic, cine and overhead projectors [G03B 21/00](#) and subgroups)}
- G02B 27/027      · · · {comprising magnifying means ([G02B 27/023](#), [G02B 27/025](#), [G02B 27/04](#), [G02B 27/06](#) and [G02B 27/08](#) take precedence)}

- G02B 27/09
- Beam shaping, e.g. changing the cross-sectional area, not otherwise provided for {{(adapting the beam shape of a laser diode [G02B 19/0052](#); adapting the beam shape of an LED [G02B 19/0061](#); coupling into light guides using intermediate optical elements [G02B 6/4204](#); beam shaping specially adapted for lasers [H01S 3/005](#))}}
- G02B 27/0916
- • {Adapting the beam shape of a semiconductor light source such as a laser diode or an LED, e.g. for efficiently coupling into optical fibers (coupling into light guides using intermediate optical elements [G02B 6/4204](#); details of lighting devices in general [F21V](#); semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission [H01L 33/00](#))}
- WARNING
- This group and subgroups are no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B 19/00](#) and subgroups
- U G02B 27/0938
- • {Using specific optical elements}
- G02B 27/0944
- • • {Diffractive optical elements, e.g. gratings, holograms (gratings per se [G02B 5/18](#); holograms used as optical elements per se [G02B 5/32](#))}
- G02B 27/10
- Beam splitting or combining systems (polarising systems [G02B 27/28](#); mixing and splitting light signals using optical waveguides [G02B 6/28](#); {beam shaping, e.g. changing the cross-sectional area, by dividing or superposing multiple light beams [G02B 27/0905](#))}
- G02B 27/1006
- • {for splitting or combining different wavelengths ([G02B 27/1086](#), [G02B 27/141](#) take precedence)}
- G02B 27/18
- for optical projection, e.g. combination of mirror and condenser and objective {{(not in use, see the relevant CPC classes according to projector type, e.g. photographic, cine and overhead projectors [G03B 21/00](#) and subgroups, photographic projection printing [G03B 27/32](#), photolithographic projectors [G03F 7/20](#), projection television [H04N 5/74](#), colour projection television [H04N 9/31](#))}}
- G02B 27/22
- for producing stereoscopic or other three dimensional effects (in microscopes [G02B 21/22](#); viewing apparatus [G02B 27/02](#); stereoscopic television [H04N 13/00](#))}
- G02B 27/2228
- • {Stereoscopes or similar systems based on providing first and second images situated at first and second locations, said images corresponding to parallaxically displaced views of the same object, and presenting the first and second images to an observer's left and right eyes respectively ([G02B 27/2207](#), [G02B 27/2264](#), [G02B 27/26](#) take precedence)}
- U G02B 27/42
- Diffraction optics {, i.e. systems including a diffractive element being designed for providing a diffractive effect}{[G02B 27/60](#) takes precedence}
- U G02B 27/4205
- • {having a diffractive optical element [DOE] contributing to image formation, e.g. whereby modulation transfer function MTF or optical aberrations are relevant}
- G02B 27/4211
- • • {correcting chromatic aberrations ([G02B 27/0056](#), [G02B 27/4222](#), [G02B 27/4227](#) take precedence)}
- G02B 27/4233
- • {having a diffractive element [DOE] contributing to a non-imaging application (diffusers having a diffractive element [G02B 5/0252](#); filters having a diffractive element [G02B 5/203](#); systems for controlling the direction of light having diffractive elements [G02B 26/0808](#); scanning systems having diffractive elements [G02B 26/106](#); beam shaping systems using diffractive optical elements [G02B 27/0944](#); beam splitting or combining systems operating by diffraction [G02B 27/1086](#))}

- G02B 27/44
- Grating systems; Zone plate systems ([G02B 27/46](#) takes precedence; {-beam splitting or combining systems operating by diffraction only [G02B 27/1086](#)}; spectrometry [G01J](#))

WARNING

This group is no longer used for the classification of new documents as from May 1, 2012. The backlog is being continuously classified to [G02B 27/42](#) and subgroups

- U G02B 27/64
- Imaging systems using optical elements for stabilisation of the lateral and angular position of the image (focusing systems [G02B 7/04](#))
- G02B 27/646
- {-compensating for small deviations, e.g. due to vibration or shake (movement of one or more optical elements for control of motion blur in cameras, projectors or printers [G03B 2205/0007](#); image stabilisation in cameras peculiar to the presence or use of an electronic image sensor [H04N 5/23248](#))}

**Project: N/A (G02C)**

- U G02C 7/00
- G02C 7/02
- G02C 7/06
- Optical parts (characterised by the material [G02B 1/00](#))**
- Lenses; Lens systems; {-Methods of designing lenses}
  - bifocal; multifocal; {-progressive ([G02C 7/041](#) takes precedence)}

**Project: N/A (G02F)**

G02F

**DEVICES OR ARRANGEMENTS, THE OPTICAL OPERATION OF WHICH IS MODIFIED BY CHANGING THE OPTICAL PROPERTIES OF THE MEDIUM OF THE DEVICES OR ARRANGEMENTS FOR THE CONTROL OF THE INTENSITY, COLOUR, PHASE, POLARISATION OR DIRECTION OF LIGHT, e.g. SWITCHING, GATING, MODULATING OR DEMODULATING; TECHNIQUES OR PROCEDURES FOR THE OPERATION THEREOF; FREQUENCY-CHANGING; NON-LINEAR OPTICS; OPTICAL LOGIC ELEMENTS; OPTICAL ANALOGUE/DIGITAL CONVERTERS (optical transfer means between sensing member and indicating or recording part in connection with measuring [G01D 5/26](#); devices in which mathematical operations are carried out with optical elements [G06E 3/00](#), {[G06E 3/001](#)}; electrical signal transmission systems using optical means to convert the input signal [G08C 19/36](#); information-recording by electric or magnetic means and reproducing by sensing optical properties [G11B 11/00](#); static stores using optical elements [G11C 13/04](#); transmission systems employing electromagnetic waves other than radio waves, e.g. light, infra-red radiation, [H04B 10/00](#); optical multiplex systems [H04J 14/00](#); pictorial communication, e.g. television [H04N](#))**

WARNING

The following IPC group is not used in the CPC scheme.

Subject matter covered by these groups is classified in the following CPC groups:

- [G02F 1/13357](#) covered by [G02F 1/1336](#) and subgroups

**G02F 1/00**

Devices or arrangements for the control of the intensity, colour, phase, polarisation or direction of light arriving from an independent light source, e.g. switching, gating, or modulating; Non-linear optics (thermometers using change of colour or translucency [G01K 11/12](#); using changes in fluorescence [G01K 11/32](#); light guide devices [G02B 6/00](#); optical devices or arrangements using movable or deformable elements for controlling light independent of the light source [G02B 26/00](#); control of light in general [G05D 25/00](#); visible signalling systems [G08B 5/00](#); indicating arrangements for variable information by selection or combination of individual elements [G09F 9/00](#); control arrangements or circuits for visual indicators other than cathode-ray tubes [G09G 3/00](#); control of light sources [H01S 3/10](#), [H05B 33/08](#), [H05B 35/00](#) to [H05B 43/00](#); {-photochromic filters [G02B 5/23](#); optical logic elements [G02F 3/00](#)})

**NOTE**

This group covers only :

- devices or arrangements, e.g. cells, the optical operation of which is modified by changing the optical properties of the medium of the devices or arrangements by the influence or control of physical parameters, e.g. electric fields, electric current, magnetic fields, sound or mechanical vibrations, stress or thermal effects;
- devices or arrangements in which the electric or magnetic field component of the light beams influences the optical properties of the medium, i.e. non-linear optics;
- control of light by electromagnetic waves, e.g. radio waves, or by electrons or other elementary particles.

U G02F 1/0009

• {Materials therefor}

**NOTE**

[G02F 1/0009](#) and subgroups contain mostly non-patent literature

U G02F 1/0018

• - {Electro-optical materials}

G02F 1/0027

• . . {with ferro-electric properties (domain inversion in ferro-electric materials [G02F 1/3558](#); ferro-electric materials in general [H01G 7/02](#))}

G02F 1/009

• . {Thermal properties (thermometers using change of colour or translucency [G01K 11/12](#); radiation pyrometry [G01J 5/00](#))}

G02F 1/01

• for the control of the intensity, phase, polarisation or colour ([G02F 1/29](#), [G02F 1/35](#) take precedence; polarising elements per se [G02B 5/30](#); static storage per se [G11C](#); image tube screens acting as light valves by shutter operation [H01J 29/12](#); such screens acting by discoloration [H01J 29/14](#); {-projection arrangements for television image reproduction, e.g. using eidophor [H04N 5/74](#); recording by light [G11B 7/00](#) to [G11B 11/00](#)})

G02F 1/0102

• . {Constructional details ([G02F 1/1306](#), [G02F 1/133](#) take precedence)}

G02F 1/0105

• . . {Illumination devices (for liquid crystal cells [G02F1/13357](#); for display devices for electronic time pieces [G04G 9/0041](#))}

G02F 1/0107

• . . {Gaskets, spacers, sealing of the cell; Filling and closing of the cell (for liquid crystal cells [G02F 1/1339](#), [G02F 1/1341](#); for electrochromic or electrolytic cells [G02F 1/161](#))}

G02F 1/011

• . {in optical waveguides ([G02F 1/0134](#), [G02F 1/01708](#), [G02F 1/025](#), [G02F 1/035](#), [G02F 1/0508](#), [G02F 1/0553](#), [G02F 1/065](#), [G02F 1/073](#), [G02F 1/095](#), [G02F 1/125](#), [G02F 1/1326](#), [G02F 1/225](#) take precedence; optical waveguides in general [G02B 6/00](#))}

G02F 1/0121

• . {Operation of the device; Circuit arrangements not otherwise provided for ([G02F 1/0327](#), [G02F 1/0516](#), [G02F 1/076](#), [G02F 1/092](#), [G02F 1/113](#), [G02F 1/13306](#), [G02F 1/163](#) take precedence)}

- G02F 1/0126
  - • {by another light beam, i.e. opto-optical modulation ([G02F 1/01716](#)-, [G02F 1/0338](#)-, [G02F 1/0533](#)-, [G02F 1/0541](#)-, [G02F 1/0558](#)-, [G02F 1/135](#)-, [G02F 1/293](#) take precedence)}
- G02F 1/0147
  - • {based on thermo-optic effects ([G02F 1/132](#) takes precedence; tenebrescent compositions [C09K 9/00](#); radiation pyrometry [G01J 5/00](#); thermometers using change of colour or translucency [G01K 11/12](#))}
- U G02F 1/015
  - • based on semiconductor elements with at least one potential jump barrier, e.g. PN, PIN junction ([G02F 1/03](#) takes precedence)
- G02F 1/025
  - • • in an optical waveguide structure ([G02F 1/017](#)-, {[G02F 1/2257](#)} take precedence)
- U G02F 1/03
  - • based on ceramics or electro-optical crystals, e.g. exhibiting Pockels effect or Kerr effect ([G02F 1/061](#) takes precedence)
- G02F 1/0333
  - • • {addressed by a beam of charged particles e.g. directed to an adjacent layer exhibiting secondary emission or bombardment-induced conductivity effect ([G02F 1/05](#) takes precedence; electrography, electrophotography [G03G](#)-, screens for cathode ray tubes acting as light valves [H01J 29/12](#))}
- G02F 1/0344
  - • • {controlled by a high-frequency electromagnetic wave component in an electric waveguide ([G02F 1/0356](#)-, [G02F 1/05](#)-, [G02F 1/2255](#)-, [G02F 1/3134](#) take precedence)}
- G02F 1/05
  - • • with ferro-electric properties ([G02F 1/035](#)-, [G02F 1/055](#) take precedence; {-domain inversion in ferro-electric materials [G02F 1/3558](#)-, ferro-electric digital stores [G11C 11/22](#))}
- G02F 1/0525
  - • • • {addressed by a beam of charged particles, e.g. directed to an adjacent layer exhibiting secondary emission or bombardment-induced conductivity effect (electrography, electrophotography [G03G](#)-, screens for cathode-ray tubes acting as light valves [H01J 29/12](#))}
- G02F 1/0541
  - • • • {using photo-refractive effects (holography [G03H](#)-, electro-optical digital static stores using an interference pattern [G11C 13/044](#))}
- G02F 1/061
  - • based on electro-optical organic material ([G02F 1/07](#)-, {[G02F 1/13](#)} take precedence)
- G02F 1/11
  - • based on acousto-optical elements, e.g. using variable diffraction by sound or like mechanical waves ({elasto-optic effect without wave propagation [G02F 1/0131](#)-, } acousto-optical deflection [G02F 1/33](#))}
- U G02F 1/13
  - • based on liquid crystals, e.g. single liquid crystal display cells (liquid crystal materials [C09K 19/00](#))
- U G02F 1/1306
  - • • {Details (not used, see sub-groups)}
- G02F 1/1309
  - • • • {Repairing; Testing (testing of optical apparatus [G01M 11/00](#)-, electronic testing of displays or display drivers, e.g. of LCDs, [G09G 3/006](#))}
- G02F 1/132
  - • • {Thermal activation of liquid crystals exhibiting a thermo-optic effect (thermometers using change of colour or translucency of liquid crystals [G01K 11/165](#)-, thermally addressed liquid crystal elements in a matrix [G09G 3/3603](#))}
- G02F 1/133
  - • • Constructional arrangements; Operation of liquid crystal cells; Circuit arrangements (arrangements or circuits for control of liquid crystal elements in a {segment display or a} matrix, not structurally associated with these elements,{ {respectively [G09G 3/18](#) and } [G09G 3/36](#))}
- G02F 1/13306
  - • • • {Circuit arrangements or driving methods for the control of single liquid crystal cells ([G02F 1/132](#)-, [G02F 1/133382](#) take precedence)}
- G02F 1/1333
  - • • • Constructional arrangements; {Manufacturing methods} ([G02F 1/135](#)-, [G02F 1/136](#) take precedence)
- G02F 1/133345
  - • • • • {Insulating layers ([G02F 1/1335](#)-, [G02F 1/1337](#)-, [G02F 1/135](#)-, [G02F 1/136](#) take precedence)}

- G02F 1/133348 . . . . . {Charged-particles, e.g. electron-beam, addressed liquid crystals cells (screen for cathode ray tubes acting as light valves [H01J 29/12](#); electrography, electrophotography [G03G](#))}
- G02F 1/13338 . . . . . {Input devices, e.g. touch-panels (specially adapted as input devices to computers [G06F 3/033](#); touch-panels per se [G06K 11/06](#); keyboard switches per se [H01H 13/70](#))}
- U G02F 1/1335 . . . . . Structural association of optical devices, e.g. polarisers, reflectors or illuminating devices, with the cell
- U G02F 1/1336 . . . . . {Illuminating devices (in general [F21V](#); associated with display devices for electronic watches [G04G 9/0041](#))}
- WARNING  
Groups [G02F 1/1336](#) - [G02F 1/133621](#) dos not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [G02F 1/1336](#) - [G02F 1/133621](#) : [G02F 1/13357](#)
- G02F 1/133621 . . . . . {providing coloured light ([G02F 1/133617](#), [G02F 1/133533](#) take precedence)}
- U G02F 1/1337 . . . . . Surface-induced orientation of the liquid crystal molecules, e.g. by alignment layers
- G02F 1/13378 . . . . . {by treatment of the surface, e.g. embossing, rubbing, light irradiation ([G02F 1/133711](#), [G02F 1/133734](#), [G02F 1/133753](#) take precedence)}
- G02F 1/1341 . . . . . Filling or closing of the cell {([G02F 1/133365](#), [G02F 1/1334](#) take precedence)}
- U G02F 1/1345 . . . . . Conductors connecting electrodes to cell terminals
- G02F 1/13452 . . . . . {Conductors connecting driver circuitry and terminals of panels ([H01L 21/00](#) takes precedence; electrical details inside the cell [G02F 1/133](#);)}
- U G02F 1/136 . . . . . Liquid crystal cells structurally associated with a semi-conducting layer or substrate, e.g. cells forming part of an integrated circuit ([G02F 1/135](#) takes precedence)
- G02F 1/1362 . . . . . Active matrix addressed cells {([G02F 1/134336](#), [G02F 1/134363](#) take precedence)}
- U G02F 1/137 . . . . . characterised by a particular electro- or magneto-optical effect, e.g. field-induced phase transition, orientation effect, guest-host interaction, dynamic scattering
- G02F 1/13725 . . . . . {based on guest-host interaction ([G02F 1/13762](#), [G02F 1/13737](#), take precedence)}
- G02F 2001/13756 . . . . . {the liquid crystal selectively assuming a light-scattering state ([G02F 1/1334](#), [G02F 1/13718](#) take precedence)}
- G02F 1/13762 . . . . . {containing luminescent or electroluminescent additives (luminescent materials in general [C09K 11/00](#); compositions of liquid crystals comprising additives [C09K 19/52](#) to [C09K 19/603](#); electroluminescent light sources [H05B 33/00](#))}
- U G02F 1/139 . . . . . based on orientation effects in which the liquid crystal remains transparent
- G02F 1/1393 . . . . . {the birefringence of the liquid crystal being electrically controlled, e.g. ECB-, DAP-, HAN-, PI-LC cells ([G02F 1/1396](#), [G02F 1/141](#) take precedence)}
- U G02F 1/15 . . . . . based on electrochromic elements {(electrochromic materials [C09K 9/00](#))}

- U G02F 1/1523
- • • {based on solid inorganic materials, e.g. transition metal compounds, e.g. in combination with a liquid or solid electrolyte ([G02F 1/1506](#) takes precedence)}
- G02F 1/1525
- • • • {characterised by a particular ion transporting layer, e.g. electrolyte ([H01M 6/18](#)-, [H01M 10/08](#) take precedence)}
- G02F 1/17
- • based on variable absorption elements ([G02F 1/015](#) to [G02F 1/167](#) take precedence; {~~tenebrescent compositions~~ [C09K 9/00](#)})
- G02F 1/174
- • • {based on absorption band-shift, e.g. Stark - or Franz-Keldysh effect ([G02F 1/015](#)-, [G02F 1/178](#) take precedence)}
- G02F 1/29
- for the control of the position or the direction of light beams, i.e. deflection ({optical coupling means [G02B 6/26](#)-, optical-mechanical scanning in general [G02B 26/10](#)); static stores with electric or magnetic read-in and optical read-out [G11C](#); lasers provided with means to change the location from which, or the direction in which, laser radiation is emitted [H01S 3/101](#))
- G02F 1/35
- Non-linear optics (optical bistable devices [G02F 3/02](#)-, lasers using stimulated Brillouin or Raman effect [H01S 3/30](#))
- G02F 1/3511
- • {Self-focusing or self-trapping of light; Light-induced birefringence; Induced optical Kerr-effect (photorefractive effects of electro-optic crystals [G02F 1/0338](#)-, [G02F 1/0541](#)-, of ceramics [G02F 1/0558](#)-, opto-optical modulation [G02F 1/0126](#)-, opto-optical deflection [G02F 1/293](#))}
- G02F 1/3515
- • {All-optical modulation, gating, switching, e.g. control of a light beam by another light beam ([G02F 1/353](#)-, [G02F 1/37](#)-, [G02F 1/39](#) take precedence)}
- G02F 1/353
- • {Frequency conversion, i.e. wherein a light beam with frequency components different from those of the incident light beams is generated (second harmonic generation [G02F 1/37](#)-, optical parametric generation or amplification [G02F 1/39](#)-, transferring the modulation of modulated light [G02F 2/004](#)-, optical pumping of a laser by another laser [H01S 3/094](#)-, nonlinear optical devices inside a laser cavity [H01S 3/108](#))}
- G02F 1/365
- • in an optical waveguide structure ([G02F 1/377](#)-, {[G02F 1/395](#)} take precedence)
- G02F 2/00**
- Demodulating light; Transferring the modulation of modulated light; Frequency-changing of light ([G02F 1/35](#) takes precedence; photoelectric detecting or measuring devices [G01J](#), [H01J 40/00](#)-, [H01L 31/00](#)-, demodulating laser arrangements {e.g. switching, gating} [H01S 3/10](#)-, demodulation or transference of modulation of modulated electro-magnetic waves in general [H03D 9/00](#))**
- G02F 3/00**
- Optical logic elements ({optical computing [G06E](#)}; electric pulse generators using opto-electronic devices as active elements [H03K 3/42](#)-, logic circuits using opto-electronic devices [H03K 19/14](#)); Optical bistable devices**
- G02F 7/00**
- Optical analogue/digital converters**
- NOTE
- This group covers only converters based in substantial manner on elements which are provided for in group [G02F 1/00](#)-.
- G02F 2413/00**
- Indexing scheme related to [G02F 1/13363](#)-, i.e. to birefringent elements, e.g. for optical compensation, characterised by the number, position, orientation or value of the compensation plates**

**Project: N/A (G03B)****G03B**

**APPARATUS OR ARRANGEMENTS FOR TAKING PHOTOGRAPHS OR FOR PROJECTING OR VIEWING THEM; APPARATUS OR ARRANGEMENTS EMPLOYING ANALOGOUS TECHNIQUES USING WAVES OTHER THAN OPTICAL WAVES; ACCESSORIES THEREFOR (optical parts of such apparatus [G02B](#); systems for automatic generation of focusing signals for optical elements per se [G02B 7/28](#); photosensitive materials or processes for photographic purposes [G03C](#); apparatus for processing exposed photographic materials [G03D](#))**

**NOTES**

1. This subclass covers, as far as processes are concerned, only processes characterised by the use or manipulation of apparatus classifiable per se in this subclass.
2. This subclass covers:
  - apparatus or methods for taking photographs using light sensitive film for image capture, apparatus, or methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, or their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;
  - aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus or methods for taking photographs using light sensitive film, i.e. insofar not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, or their related controls insofar they are not peculiar to the presence of the EIS, e.g. exposure, focus, (opto-) mechanical motion blur (anti-shake);
  - aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus or methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, or their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystone correction;
  - (opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;
  - optical viewfinders;
  - remote control of cameras and projectors insofar not peculiar to the EIS or ESLM;
  - optical aspects of camera modules using electronic image sensors or related constructional details;
  - constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM.
3. This subclass does not cover:
  - concerning cameras or projectors:
    - arrangements or methods for image capture peculiar to the presence or use of an EIS or image projection peculiar to the presence or use of an ESLM, and their related controls insofar they are peculiar to the presence or use of the EIS or ESLM, which are covered by [H04N](#);
    - processing of electrical image signals from the EIS or provided to the ESLM, which is covered by [H04N](#);
    - electronic viewfinders, e.g. control of image pickup devices based on information indicated by the electronic viewfinder displaying an image signal generated by the EIS, which are covered by [H04N](#);

- electrical or mechanical aspects of camera modules using electronic image sensors and related constructional details as in webcams or mobile phones, which are covered by [H04M](#), [H04N](#);
  - details of projectors peculiar to the use of an ESLM, e.g. dichroic or polarizing arrangements specially adapted for the ESLM, which are covered by [H04N](#);
  - remote control of cameras or projectors peculiar to the EIS or the ESLM, e.g. affecting their operation, or based on a generated electrical image signal, which is covered by [H04N](#);
  - adaptations peculiar to the use of an EIS or ESLM or the display, the transmission, recording or other use of electrical image data and related circuitry, e.g. mounting of EIS or ESLM, integrated cleaning system for the EIS, dust mapping, cooling of the EIS. which are covered by [H04N](#);
  - video cameras, TV cameras, e.g. in studios, CCTV cameras, surveillance cameras and camcorders; constructional and mechanical details related to such cameras, e.g. housings, even when not peculiar to the presence of an EIS, which are covered by [H04N 5/225](#);
  - systems or apparatus wherein the inventive contribution lies in features covered above, concerning cameras when interacting with those to be covered by [G03B](#), e.g. switch-over between electronic motion-blur correction of electronic viewfinder during focussing and optical motion-blur correction of the lens during exposure, electronic-motion blur correction of the electronic image signal based on output signals of additional sensor, or interaction between mechanical shutter and electronic control of the charge accumulation period of the EIS, which are covered by [H04N](#).
  - EIS-sensor read-out, which is covered by [H04N 5/335](#);
  - processing or use of electrical image signals from the EIS for the generation of camera control signals. e.g. focusing, exposure control, electronic blur correction, display in electronic viewfinder, which are covered by [H04N 5/232](#), [H04N 5/235](#).
  - optical parts for apparatus or arrangements for taking photographs or for projecting or viewing them, which are covered by [G02B](#);
  - photosensitive materials for photographic purposes, which are covered by [G03C](#);
  - apparatus for processing exposed photographic materials; accessories therefor, which are covered by [G03D](#).
  - optical elements or arrangements associated with solid state imager structures, which are covered by [H01L 27/146](#);
4. In this subclass the following expression is used with the meaning indicated: subject to the application of Notes 1 and 2 above, "photography" is the process of recording pictures by means of capturing light on a light-sensitive medium, e.g. silver halide based chemical or an electronic image sensor. Light patterns reflected or emitted from objects expose such a light sensitive medium during a timed exposure, usually through a photographic lens in a device known as a camera.
5. In this subclass, as in subclass [H04N](#), the following terms are used with the meaning indicated:
- "camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;
  - "projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an

electric image signal into an optical signal using an electronic spatial light modulator;

- "electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;
- "additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;
- "electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.]

**U G03B 17/00**

**Details of cameras or camera bodies; Accessories therefor (lens hoods or caps [G03B 11/04](#))**

G03B 17/56

- Accessories (camera cases [A45C 11/38](#); {-lens caps [G03B 11/041](#); stands or trestles as support for apparatus or articles placed thereon [F16M 11/00](#); means for attachment of apparatus allowing quick-release [F16M 11/041](#); means for supporting on, or holding steady relative to a person [F16M 13/04](#); tripods [F16M 11/24](#); tripods with telescopic legs [F16M 11/32](#); monopod or tripod having a central telescopic column [F16M 11/28](#); heads or undercarriages for supporting an object and allowing movement thereof [F16M 11/043](#) to [F16M 11/14](#) or [F16M 11/2007](#) to [F16M 11/24](#)})

**WARNING**

Groups [G03B 17/561](#) to [G03B 17/568](#) are not complete pending reclassification; see also [G03B 17/56](#)

**G03B 21/00**

**Projectors or projection-type viewers; Accessories therefor (devices for changing pictures [G03B 23/00](#); Zoetropes [G03B 25/00](#); photographic printing apparatus [G03B 27/00](#); arrangements for obtaining special effects on stages or in circuses or in arenas [F21W 2111/06](#); optical projection comparators [G01B 9/08](#); projection microscopes [G02B 21/36](#); {laser projectors using scanning devices [H04N 9/3129](#); interactive projectors, e.g. whiteboards, with input means to control the projection [G06F 3/00](#); optical distortion correction, e.g. keystone [G03B 21/14](#); projection devices comprising an electronic spatial light modulator and peculiar thereto [H04N 5/74](#) or [H04N 9/31](#)})**

**WARNING**

Groups [G03B 21/001](#) to [G03B 21/008](#) are incomplete pending reclassification of documents from group [G03B 21/00](#).

Until reclassification is complete, groups [G03B 21/00](#) and [G03B 21/001](#) to [G03B 21/008](#) should be considered in order to perform a complete search.

**Project: N/A (G03C)**

**G03C 1/00**

**Photosensitive materials (photosensitive materials for multicolour processes [G03C 7/00](#); for diffusion transfer processes [G03C 8/00](#); photosensitive glass [C03C 4/04](#))**

**U G03C 1/005**

- Silver halide emulsions; Preparation thereof; Physical treatment thereof; Incorporation of additives therein (catalytic amounts of silver halide in dry silver systems {or thermographic systems using noble metal compounds} [G03C 1/494](#))

G03C 1/06

- • with non-macromolecular additives ([G03C 1/047](#) takes precedence; {-combination of dyes [G03C 1/29](#)})

**U G03C 1/08**

- • • Sensitivity-increasing substances

- G03C 1/09 . . . . Noble metals or mercury; Salts or compounds thereof; Sulfur, selenium or tellurium, or compounds thereof, e.g. for chemical sensitising ([G03C 1/34](#), [G03C 1/35](#) take precedence)
- G03C 1/10 . . . . Organic substances (~~[G03C 1/061](#)~~, [G03C 1/067](#) take precedence)
- U G03C 1/494 . Silver salt compositions other than silver halide emulsions; Photothermographic systems {Thermographic systems using noble metal compounds}
- U G03C 1/498 . . Photothermographic systems, e.g. dry silver
- U G03C 1/49836 . . . {Additives}
- U G03C 1/49845 . . . . {Active additives, e.g. toners, stabilisers, sensitisers}
- G03C 1/49854 . . . . . {Dyes or precursors of dyes (for diffusion-transfer [G03C 8/10](#), [G03C 8/4013](#))}
- G03C 1/675 . Compositions containing polyhalogenated compounds as photosensitive substances (for photopolymerisable or photocrosslinkable compositions [G03F 7/028](#), covered by [G03C 1/72](#))
- U G03C 1/76 . Photosensitive materials characterised by the base or auxiliary layers
- G03C 1/815 . . characterised by means for filtering or absorbing ultraviolet light, e.g. optical bleaching (for photoprinting [G03C 5/10](#); for intensifying X-ray images [G03C 5/17](#))
- G03C 5/00** **Photographic processes or agents therefor; Regeneration of such processing agents (multicolour processes or agents therefor [G03C 7/00](#); diffusion-transfer processes or agents therefor [G03C 8/00](#); stereo-photographic processes [G03C 9/00](#); photomechanical processes [G03F](#))**
- U G03C 5/26 . Processes using silver-salt-containing photosensitive materials or agents therefor (physical development [G03C 5/58](#))
- G03C 5/29 . . Development processes or agents therefor (~~[G03C 5/38](#)~~, [G03C 5/50](#) take precedence)
- G03C 5/50 . . Reversal development; Contact processes (~~[G03C 5/315](#)~~, [G03C 8/00](#) take precedence)
- U G03C 7/00** **Multicolour photographic processes or agents therefor; Regeneration of such processing agents; Photosensitive materials for multicolour processes (diffusion transfer processes [G03C 8/00](#))**
- U G03C 7/30 . Colour processes using colour-coupling substances; Materials therefor; Preparing or processing such materials
- G03C 7/305 . . Substances liberating photographically active agents, e.g. development-inhibiting releasing couplers ([G03C 7/388](#) takes precedence; {-in combination with other additives or included in a specific colour photographic material [G03C 7/3003](#); in combination with other couplers [G03C 7/3225](#)})
- G03C 7/32 . . Colour coupling substances (~~[G03C 7/305](#)~~, [G03C 7/388](#) take precedence; {-in combination with other additives or included in a specific colour photographic material [G03C 7/3003](#); two-equivalent couplers [G03C 7/30517](#)})
- G03C 7/34 . . . Couplers containing phenols (~~[G03C 7/327](#)~~, [G03C 7/333](#) take precedence)
- G03C 7/36 . . . Couplers containing compounds with active methylene groups (~~[G03C 7/327](#)~~, [G03C 7/333](#) take precedence)
- U G03C 7/392 . . Additives ([G03C 7/30](#) to [G03C 7/32](#) take precedence)
- U G03C 7/39208 . . . {Organic compounds (macromolecular additives [G03C 7/396](#))}
- G03C 7/39292 . . . . {Dyes (~~[G03C 1/12](#)~~, [G03C 1/83](#) take precedence)}
- U G03C 8/00** **Diffusion transfer processes or agents therefor; Photosensitive materials for such processes**
- U G03C 8/32 . Development processes or agents therefor ([G03C 8/18](#) takes precedence)

G03C 8/34

- Containers for the agents ([G03C 8/48](#), [G03B 17/50](#) take precedence)

**Project: N/A (G03F)****U G03F 1/00**

**Originals for photomechanical production of textured or patterned surfaces, e.g., masks, photo-masks, reticles; Mask blanks or pellicles therefor; Containers specially adapted therefor; Preparation thereof**

NOTE

In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place

WARNING

Groups [G03F 1/0007-G03F 1/16](#) are no longer used for the classification of documents as of January 1, 2012. The backfile of these groups is being reclassified into groups [G03F 1/20-G03F 1/92](#) as follows: [G03F 1/0007-G03F 1/0092](#) and [G03F 1/08-G03F 1/16](#) into groups [G03F 1/20-G03F 1/86](#); [G03F 1/02](#) into [G03F 1/88](#); [G03F 1/04](#) into [G03F 1/90](#); [G03F 1/06](#) into [G03F 1/92](#). Until reclassification is complete, groups [G03F 1/0007-G03F 1/16](#) and [G03F 1/20-G03F 1/92](#) should be considered in order to perform a complete search.

G03F 1/08

- Originals having inorganic imaging layers, e.g. chrome masks ([G03F 1/12](#) takes precedence; {-X-Ray absorbers [G03F 1/148](#)})

U G03F 1/14

- Originals characterised by structural details, e.g. supports, cover layers, pellicle rings

G03F 1/144

- {-Auxiliary patterns; Corrected patterns, e.g. proximity correction, grey level masks ([G03F 1/0046](#), [G03F 1/146](#), [G03F 9/00](#) take precedence)}

**U G03F 3/00**

**Colour separation; Correction of tonal value (photographic copying apparatus in general [G03B](#))**

U G03F 3/10

- Checking the colour or tonal value of separation negatives or positives

G03F 3/108

- {-using a non-impact printing method, e.g. ink jet, using duplicating or marking methods covered by [B41M 5/00](#), e.g. by ablation or by thermographic means}

**G03F 7/00**

**Photomechanical, e.g. photolithographic, production of textured or patterned surfaces, e.g. printing surfaces; Materials therefor, e.g. comprising photoresists; Apparatus specially adapted therefor (using photoresist structures for special production processes, see the relevant places, e.g. [B44C](#), [H01L](#), e.g. [H01L 21/00](#), [H05K](#))**

G03F 7/004

- Photosensitive materials ([G03F 7/12](#), [G03F 7/14](#) take precedence)

G03F 7/038

- {-Macromolecular compounds which are rendered insoluble or differentially wettable ([G03F 7/075](#) takes precedence; macromolecular azides [G03F 7/012](#); macromolecular diazonium compounds [G03F 7/021](#))

U G03F 7/09

- {-characterised by structural details, e.g. supports, auxiliary layers (supports for printing plates in general [B41N](#))

G03F 7/11

- {-having cover layers or intermediate layers, e.g. subbing layers {([G03F 7/091](#) to [G03F 7/093](#), [B41N 3/03](#) take precedence)}

G03F 7/16

- Coating processes; Apparatus therefor (applying coatings to base materials in general [B05](#); applying photosensitive compositions to base for photographic purposes [G03C 1/74](#))

U G03F 7/26

- Processing photosensitive materials; Apparatus therefor ([G03F 7/12](#) to [G03F 7/24](#) take precedence)

- G03F 7/36
- • Imagewise removal not covered by groups [G03F 7/30](#) to [G03F 7/34](#)-, e.g. using gas streams, using plasma
- U G03F 7/70
- {Exposure apparatus for microlithography}
- U G03F 7/70058
- • {Mask illumination systems}
- G03F 7/70191
- • • {Optical correction elements, filters or phase plates for controlling intensity, wavelength, polarization, phase or the like}
- NOTE
- Wavelength or polarisation control is further classified in groups [G03F 7/70566](#)-, [G03F 7/70575](#)
- U G03F 7/70216
- • {Systems for imaging mask onto workpiece}
- G03F 7/70308
- • • {Optical correction elements, filters and phase plates for manipulating e.g. intensity, wavelength, polarization, phase, image shift (filters per se [G02B 5/20](#))}
- NOTE
- Wavelength or polarisation control is further classified in groups [G03F 7/70566](#)-, [G03F 7/70575](#)
- G03F 7/70316
- • • {Details of optical elements, e.g. of Bragg reflectors or diffractive optical elements}
- NOTES
1. Particular optical materials are further classified in group [G03F 7/70958](#);
  2. Multilayer reflectors for X-ray or EUV lithography are further classified in group [G21K 1/062](#)
- U G03F 7/70375
- • {Imaging systems not otherwise provided for, e.g. multiphoton lithography; Imaging systems comprising means for converting one type of radiation into another type of radiation, systems comprising mask with photo-cathode}
- U G03F 7/70383
- • • {Direct write, i.e. pattern is written directly without the use of a mask by one or multiple beams ("maskless" lithography using a programmable mask [G03F 7/70291](#))}
- G03F 7/70391
- • • • {Addressable array sources specially adapted to produce patterns, e.g. addressable LED arrays (array sources for exposure apparatus comprising a mask [G03F 7/7005](#)-, illumination setting using programmable means in exposure apparatus comprising a mask [G03F 7/70116](#))}
- U G03F 7/70425
- • {Imaging strategies, e.g. for increasing throughput, printing product fields larger than the image field, compensating lithography- or non-lithography errors, e.g. proximity correction, mix-and-match, stitching, double patterning}
- G03F 7/70433
- • • {Layout for increasing efficiency, for compensating imaging errors, e.g. layout of exposure fields,; Use of mask features for increasing efficiency, for compensating imaging errors (circuit design per se [G06F 17/5068](#)-, designing or making of mask [G03F 1/14](#))}
- U G03F 7/70483
- • {Information management, control, testing, and wafer monitoring, e.g. pattern monitoring (detection arrangements [G03F 7/7085](#))}
- G03F 7/70591
- • • {Testing optical components (testing of optical mirrors [G01M 11/005](#)-, testing of lenses [G01M 11/02](#)-, stray light transmission [G03F 7/70941](#))}
- U G03F 7/70616
- • • {Wafer pattern monitoring, i.e. measuring printed patterns or the aerial image at the wafer plane (optical metrology tools per se [G01B 11/02](#) and [G01B 9/04](#))}
- G03F 7/7065
- • • • {Defect inspection (defect inspection apparatus per se [G06T 7/0004](#)-, [G01N 21/956](#))}

- U G03F 7/70691      · · {Handling of masks or wafers}
- G03F 7/70775      · · · {Position control (interferometers per se [G01B 9/02](#); encoders per se [G01D 5/00](#); alignment of mask with workpiece [G03F 9/70](#))}
- U G03F 7/708      · · {Construction of apparatus, e.g. environment, hygiene aspects or materials}
- U G03F 7/70808     · · · {Construction details, e.g. housing, load-lock, seals, windows for passing light in- and out of apparatus (load-lock chambers for workpiece processors in general [H01L 21/67201](#))}
- G03F 7/70825      · · · · {Mounting of individual elements, e.g. mounts, holders or supports (mounts or supports for projection- and illumination system and stages on base-plate or ground [G03F 7/70833](#); workpiece and mask holders [G03F 7/707](#))}
- G03F 9/00      Registration or positioning of originals, masks, frames, photographic sheets or textured or patterned surfaces, e.g. automatically ([G03F 7/22](#) takes precedence; preparation of photographic masks [G03F 1/00](#); within photographic printing apparatus for making copies [G03B 27/00](#))**
- G03F 9/70      · {for microlithography (measuring printed patterns for monitoring overlay [G03F 7/70633](#) or focus [G03F 7/70641](#); projection system adjustment [G03F 7/70258](#); position control [G03F 7/70775](#))}
- G03F 9/7073      · · {Alignment marks and their environment (marks specific to masks [G03F 1/42](#); marks specific to molds or stamps [G03F 7/0002](#); overlay marks [G03F 7/70633](#); marks applied to semiconductor devices [H01L 23/544](#))}

**Project: N/A (G03G)****G03G**

**ELECTROGRAPHY; ELECTROPHOTOGRAPHY; MAGNETOGRAPHY (information storage based on relative movement between record carrier and transducer [G11B](#); static stores with means for writing-in or reading-out information [G11C](#); recording of television signals [H04N 5/76](#))**

**NOTES**

1. This subclass covers:
  - the production of permanent directly-visible pictures in conformity with an original picture or document, using an intermediate imagewise distribution of an electric or magnetic quantity, such as a charge pattern, an electric conductivity pattern, or a magnetic pattern;
  - the production of permanent directly-visible pictures using an intermediate imagewise distribution of an electric or magnetic quantity, when the origin and the way of generating said intermediate distribution are not relevant.
2. This subclass does not cover:
  - use of electric signals for the transmission of the picture information from the original to the reproduction, i.e. pictorial communication, which is covered by subclass [H04N](#);
  - production of pictures by heat patterns exclusively, not using an electrostatic or magnetic pattern, which is covered by group [B41M 5/00](#);
  - production of prints by transferring ink from a printing form to a printing surface, without physical contact and using the force of an electrostatic field, which is covered by subclass [B41M](#);
  - selective printing mechanisms characterised by the selective supply of electric current, or the selective application of magnetism or radiation, to a printing material or impression-transfer material, which are covered by groups [B41J 2/385](#), [B41J 2/435](#).

**G03G 5/00**

**Recording members for original recording by exposure, e.g. to light, to heat, to electrons; Manufacture thereof; Selection of materials therefor (recording surfaces for measuring apparatus [G01D 15/34](#); photosensitive materials for photographic purposes [G03C](#))**

- U G03G 5/02 · Charge-receiving layers ([G03G 5/153](#) takes precedence)
- U G03G 5/04 · · Photoconductive layers; Charge-generation layers or charge-transporting layers; Additives therefor; Binders therefor
- U G03G 5/05 · · · Organic bonding materials; Methods for coating a substrate with a photoconductive layer; Inert supplements for use in photoconductive layers
- G03G 5/0528 · · · · {Macromolecular bonding materials}
- NOTE  
In groups [G03G 5/0528](#) to [G03G 5/0596](#), in the absence of an indication to the contrary, a polymer is classified in the last appropriate place
- G03G 5/06 · · · characterised by the photoconductive material being organic
- NOTE  
In groups [G03G 5/06](#) to [G03G 5/0698](#), in the absence of an indication to the contrary, an invention is classified in the last appropriate place
- U G03G 5/10 · Bases for charge-receiving or other layers
- G03G 5/101 · · {Paper bases ([G03G 5/102](#), [G03G 5/104](#), [G03G 5/105](#) take precedence)}
- U G03G 5/14 · Inert intermediate or cover layers for charge-receiving layers ([G03G 5/04](#) takes precedence)
- U G03G 5/147 · · Cover layers
- U G03G 5/14708 · · · {comprising organic material}
- G03G 5/14713 · · · · {Macromolecular material}
- NOTE  
In groups [G03G 5/14713](#) to [G03G 5/14795](#), in the absence of an indication to the contrary, a polymer is classified in the last appropriate place
- U G03G 9/00 Developers**
- U G03G 9/08 · with toner particles
- G03G 9/0827 · · {characterised by their shape, e.g. degree of sphericity}
- NOTE  
In groups [G03G 9/083](#) to [G03G 9/135](#), in the absence of an indication to the contrary, classification is made in the last appropriate place
- G03G 9/16 · Developers not provided for in groups [G03G 9/06](#) to [G03G 9/135](#), e.g. solutions, aerosols
- G03G 13/00 Electrographic processes using a charge pattern ([G03G 15/00](#), [G03G 16/00](#), [G03G 17/00](#) take precedence)**
- NOTE  
Group [G03G 15/00](#) also deals with processes in so far as they are characterised by the use or manipulation of apparatus classifiable per se in group [G03G 15/00](#) and therefor takes precedence
- G03G 13/01 · for multicoloured copies {(colour correction on photography [G03B 27/725](#); picture communication systems [H04N 1/46](#))}
- U G03G 13/04 · Exposing, i.e. imagewise exposure by optically projecting the original image on a photoconductive recording material
- G03G 13/045 · · Charging or discharging distinct portions of the charge pattern on the recording material, e.g. discharging non-image areas, contrast enhancement ([G03G 13/34](#), [G03G 15/36](#), [G03G 21/06](#) take precedence)

- G03G 13/22
- Processes involving a combination of more than one step according to groups [G03G 13/02](#) to [G03G 13/20](#) ([G03G 13/01](#) takes precedence)
- G03G 15/00**
- Apparatus for electrographic processes using a charge pattern ([G03G 16/00](#), [G03G 17/00](#) take precedence; {xerographic printers for data processors per se [G06K 15/14](#)})**
- G03G 15/01
- For producing multicoloured copies {(colour correction in photography [G03C](#); colour correction in printing plate production)}
- U G03G 15/02
- for laying down a uniform charge, e.g. for sensitising; Corona discharge devices ([G03G 15/14](#) takes precedence)
- G03G 15/0258
- {provided with means for the maintenance of the charging apparatus, e.g. cleaning devices, ozone removing devices [G03G 15/0225](#), [G03G 15/0291](#) takes precedence}
- U G03G 15/04
- for exposing, i.e. imagewise exposure by optically projecting the original image on a photoconductive recording material
- NOTE**
- The original image is obtained by direct optical projection or received from other sources, e.g. by computer modified or generated image data, by scanning, e.g. digital copiers
- U G03G 15/04036
- {Details of illuminating systems, e.g. lamps, reflectors (lamp housings for copying cameras, reflex exposure lighting [G03B 27/542](#))}
- G03G 15/04045
- {for exposing image information provided otherwise than by directly projecting the original image onto the photoconductive recording material, e.g. digital copiers ([G03G 15/041](#), [G03G 15/043](#) take precedence)}
- WARNING**
- Groups [G03G 15/04054](#) to [G03G 15/04081](#) are not complete pending reorganisation. See also [G03G 15/04](#), [G03G 15/04036](#), [G03G 15/043](#), [G03G 15/0435](#) and [G03G 15/326](#)
- G03G 15/045
- with means for charging or discharging distinct portions of the charge pattern on the recording material, e.g. for contrast enhancement or discharging non-image areas ([G03G 15/36](#), [G03G 21/06](#) take precedence)
- U G03G 15/06
- for developing
- U G03G 15/08
- using a solid developer, e.g. powder developer
- U G03G 15/0896
- {Arrangements or disposition of the complete developer unit or parts thereof not provided for by groups [G03G 15/08](#) to [G03G 15/0894](#)}
- G03G 15/0898
- {for preventing toner scattering during operation, e.g. seals (sealing the donor member [G03G 15/0817](#); sealing the magnetic brush [G03G 15/0942](#)}
- G03G 15/22
- involving the combination of more than one step according to groups [G03G 13/02](#) to [G03G 13/20](#) ([G03G 15/01](#) takes precedence)
- G03G 15/32
- in which the charge pattern is formed dotwise, {e.g. by a thermal head} ([G03G 15/04](#), [G03G 15/05](#), [G03G 15/34](#) take precedence)
- G03G 16/00**
- Electrographic processes using deformation of thermoplastic layers (layers for surface-deformation imaging [G03G 5/022](#)); Apparatus therefor {(shaping of plastic objects with thermoplastic memory effect [B29C 61/00](#); digital stores using thermoplastic elements [G11C 11/46](#); television signal recording using deformable thermoplastic recording medium [H04N 5/82](#))}**

- U G03G 17/00** **Electrographic processes using patterns other than charge patterns, e.g. an electric conductivity pattern; Processes involving a migration, e.g. photoelectrophoresis, photoelectrosology; Processes involving a selective transfer, e.g. electrophoto-adhesive processes; Apparatus essentially involving a single such process**
- G03G 17/005 · {Radiation field photography, e.g. Kirlian photography, colour-discharge photography (recording electrical waveforms in general [G01R 13/04](#), e.g. [G01R 13/12](#) to [G01R 13/14](#))}
- G03G 19/00** **Processes using magnetic patterns; Apparatus therefor, {i.e. magnetography}**
- NOTE
- This group comprises also processes and apparatus wherein magnetography and electrography are combined; magnetographic printing apparatus for data processing machines [G06K 15/14](#); recording members therefor [G03G 5/00](#); magnetic recording members for television [G11B](#); recording of sound [G11B](#); recording of electric measurements [G01R 13/00](#); recording apparatus for measurements in general [G01D](#)
- G03G 21/00** **Arrangements not provided for by groups [G03G 13/00](#) to [G03G 19/00](#), e.g. cleaning, elimination of residual charge**
- U G03G 21/16** · Mechanical means for facilitating the maintenance of the apparatus, e.g. modular arrangements
- G03G 21/1661 · · {means for handling parts of the apparatus in the apparatus ([G03G 21/1604](#), [G03G 21/1642](#) take precedence)}
- G03G 2221/00** **Processes not provided for by group [G03G 2215/00](#), e.g. cleaning or residual charge elimination**

**Project: N/A (G03H)**

- G03H** **HOLOGRAPHIC PROCESSES OR APPARATUS (holograms, e.g. point holograms, used as ordinary optical elements [G02B 5/32](#); producing stereoscopic or other three-dimensional effects [G02B 27/22](#); diffraction-grating systems [G02B 27/44](#); systems using moiré fringes [G02B 27/60](#); optical logic elements [G02F 3/00](#); stereo-photography [G03B 35/00](#); photosensitive materials or processes for photographic purposes [G03C](#); {stereo-photographic or similar processes [G03C 9/00](#)}; apparatus for processing exposed photographic materials [G03D](#); analogue computers performing mathematical operations with the aid of optical elements [G06E 3/00](#); authentication by radiation, of concealed information carried by holograms or diffraction gratings [G06K 19/16](#); holographic storage [G11B 7/0065](#), [G11C 13/04](#); {-stereoscopic or other three dimensional effects in television systems [H04N 13/00](#)})**
- NOTE
- This subclass covers means for producing a record of the phase and amplitude information of a wave-front, which information can be used to reconstruct the original wave-front, or means to reconstruct the original wave-front from a record containing the phase and amplitude information of the wave-front.
- U G03H 1/00** **Holographic processes or apparatus using light, infra-red or ultra-violet waves for obtaining holograms or for obtaining an image from them; Details peculiar thereto**
- G03H 1/02 · Details {-of features involved during the holographic process; Replication of holograms without interference recording}

- U G03H 1/04      • Processes or apparatus for producing holograms ([G03H 1/26](#) takes precedence)
- G03H 1/08      • • Synthesising holograms, {i.e. holograms synthesized from objects or objects from holograms}(using electric digital computers [G06F](#); [G06T](#))
- G03H 1/20      • • Copying holograms by holographic {i.e. optical} means
- G03H 1/26      • Processes or apparatus specially adapted to produce multiple {-sub-} holograms or to obtain images from them, e.g. multicolour technique
- G03H 3/00**      **Holographic processes or apparatus using ultrasonic, sonic or infrasonic waves for obtaining holograms; Processes or apparatus for obtaining an optical image from them ([G03H 1/22](#) takes precedence; {-acoustic non-destructive testing using holographic methods [G01N 29/0663](#); seismology using acoustic vibrations [G01V 1/00](#); non-holographic methods for visualizing acoustic waves [G10K 15/00](#)})**
- G03H 5/00**      **Holographic processes or apparatus using particles or using waves other than those covered by groups [G03H 1/00](#) or [G03H 3/00](#) for obtaining holograms; Processes or apparatus for obtaining an optical image from them ([G03H 1/22](#) takes precedence; construction of electron microscopes [H01J 37/26](#); {-investigating or analysing materials by the use of microwaves [G01N 22/00](#), by the use of particles wave or X-rays [G01N 23/00](#), [G21K 7/00](#)})**

**Project: N/A (G04B)**

- U G04B 1/00      **Driving mechanisms {(driving mechanisms for Turkish time [G04B 19/22](#); driving mechanisms in the hands [G04B 45/043](#); driving mechanisms for phonographic apparatus [G11B 19/00](#); springs, driving weight engines [F03G](#); driving mechanisms for cinematography [G03B 1/00](#); driving mechanisms; driving mechanisms for time fuses for missiles [F42C](#); driving mechanisms for toys [A63H 29/00](#))}**
- U G04B 1/10      • with mainspring {(synchronous motors with power reserve [G04C 15/0054](#); springs in general [F16F](#))}
- G04B 1/105      • • {having a form other than a helix}([G04B 1/12](#) and [G04B 1/14](#) take precedence)}
- U G04B 1/18      • • Constructions for connecting the ends of the mainsprings with the barrel or the arbor {(mainsprings and bridles therefor [G04B 1/14](#); clamping the hairspring on the regulator [G04B 18/026](#); clamping the hairspring on the arbor [G04B 17/32](#))}
- G04B 1/20      • • • Protecting arrangements against rupture or overwinding of the mainspring located in the barrel or attached to the barrel (in connection with keys or the like [G04B 3/06](#), [G04B 3/10](#); in connection with automatic winding devices [G04B 5/24](#); {-protecting arrangements in which the spring and the spring cylinder are connected by friction [G04B 1/185](#); protecting arrangements [G04B 9/02](#); calibers with arrangements affording protection of the clockwork against damage as a consequence of a rupture of the mainspring [G04B 33/16](#); electric winding arrangements with protection against overwinding of mechanical clockworks [G04C 1/10](#); driving mechanisms for gramophones [G11B 19/22](#), [G11B 19/28](#))}

- U G04B 3/00** Normal winding of clockworks by hand or mechanically; Winding up several mainsprings or driving weights simultaneously {(automatic winding up [G04B 5/00](#); combined normal and automatic winding up [G04B 7/00](#); Click devices [G04B 11/00](#); winding up the striking mechanism by the clockwork and vice versa [G04B 21/14](#); mechanical devices for setting the time-indication by using the winding means [G04B 27/02](#), [G04B 27/083](#); calibers of which the mainsprings are easily removable [G04B 33/14](#); winding mechanical clocks electrically [G04C 1/00](#); tools for setting springs [G04D 1/04](#); driving mechanisms for gramophones [G11B 19/00](#); driving mechanisms for cinematographs [G03B 1/00](#)}
- U G04B 3/08** · by parts of the cases {(setting the time-indicating means by parts of the case [G04B 27/00](#))}
- G04B 3/10** · · Protecting means preventing overwinding (arranged in, or attached to, the barrel [G04B 1/20](#); in connection with keys [G04B 3/06](#); in connection with automatic winding devices [G04B 5/24](#); {-protection [G04B 9/02](#); of electrical winding up arrangements for mechanical clocks [G04C 1/10](#))}
- U G04B 13/00** **Gearwork** {(Gearwork for driving the hands [G04B 19/02](#); calibers [G04B 33/00](#); dispositions and components for transmission in general [F16H](#))}
- G04B 13/02** · Wheels; Pinions; Spindles; Pivots (bearings [G04B 31/00](#){chain wheels, spindles for chain wheels, also chains and driving weights [G04B 1/08](#))}
- WARNING  
Groups [G04B 13/021](#)-[G04B 13/028](#) are not complete pending reorganisation, see also [G04B 13/026](#)
- U G04B 19/00** **Indicating the time by visual means** {(indicating the time optically by electric means [G04C 17/00](#), e.g.} by electric lamps [G04C 17/02](#); display arrangements in general [G09F](#))}
- G04B 19/06** · Dials ({moving discs [G04B 19/20](#); illuminated dials or hands [G04B 19/30](#);} for time-pieces without clockwork [G04B 49/04](#); {-machines and arrangements for the manufacture of dials or hands [G04D 3/0048](#))}
- G04B 21/00** **Indicating the time by acoustic means** (at preselected times [G04B 23/00](#); by electro-acoustic means [G04C 21/04](#); {-indicating the time by means other than acoustically, or by combined means [G04B 25/00](#); indicating the time by visual means [G04B 19/00](#), [G04C 17/00](#); acoustic signalling arrangements [G08B 3/00](#))}
- G04B 25/00** **Indicating the time by other means or by combined means** (electric or electromechanical indicating [G04C](#); {-illumination of dials or hands [G04B 19/30](#); indicating the time by acoustic means [G04B 21/00](#); arrangements producing acoustic signals at preselected times [G04B 23/00](#); continuously indicating the time optically by electric means [G04C 19/00](#); producing acoustic time signals by electrical means [G04C 21/00](#); devices for cooking eggs [A47J 29/00](#))}
- G04B 45/00** Time pieces of which the indicating means or cases provoke special effects, e.g. aesthetic effects (ornamental shaping of dials [G04B 19/10](#)) {(lubrication of clockwork bearings [G04B 31/008](#); special effects and pictures in general [B44F](#))}

**Project: N/A (G04C)**

- G04C 1/00** Winding mechanical clocks electrically (winding mechanically [G04B 3/00](#){electrical winding of spring driven arrangements for grammophones [G11B 19/20](#))}

- U G04C 3/00 Electromechanical clocks or watches independent of other time-pieces and in which the movement is maintained by electric means {{Synchronisation [G04C 11/00](#)}}**
- G04C 3/14
- incorporating a stepping motor ([G04C 3/02](#) to [G04C 3/12](#) take precedence {generating timing pulses [G04F 5/00](#), [G04G 3/00](#); setting [G04G 5/00](#); synchronisation [G04G 7/00](#); generating commutating pulses in masterclocks [G04C 13/0463](#), [G04C 13/02](#); slave clocks actuated intermittently by electromechanical step advancing mechanisms [G04C 13/10](#); control circuits for stepping motors in general [H02P 8/00](#)})

**Project: N/A (G04F)****G04F**

**TIME-INTERVAL MEASURING (measuring pulse characteristics [G01R](#), e.g. [G01R 29/02](#); in radar or like systems [G01S](#); masers [H01S 1/00](#); generation of oscillations [H03B](#); generation or counting of pulses, frequency dividing, analogue/digital conversion [H03K](#) {time fuzes [F42C 9/00](#)})**

NOTE

This subclass covers:

- apparatus for measuring-off predetermined time intervals;
- apparatus for producing such intervals as timing standards, e.g. metronomes;
- apparatus for measuring unknown intervals, e.g. precision systems for short time interval measurement.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G04F 10/08](#) covered by [G04F 5/16](#)

- U G04F 5/00 Apparatus for producing preselected time intervals for use as timing standards (generating clock signals for electric digital computers [G06F 1/04](#); regulating frequency in general [H03C](#), [H03L](#))**
- U G04F 5/04
- using oscillators with electromechanical resonators {producing electric oscillations or timing pulses}
- U G04F 5/06
- using piezoelectric resonators
- G04F 5/063
- • {Constructional details} (details of resonators in general [H03H 9/02](#))}

**Project: N/A (G06)****G06**

**COMPUTING; CALCULATING; COUNTING (score computers for games [A63B 71/06](#), [A63D 15/20](#), [A63F 1/18](#); combinations of writing implements with computing devices [B43K 29/08](#))**

NOTE

Attention is drawn to the notes (particularly the definition of the term "variable") on page [G3] of the Int.Cl. In this class:

- The term "data" is understood to be synonymous with "information", and the term "information" is therefore not used in [G06C](#);
- The terms "calculating" and "computing" are both understood to include, inter alia, operations on numerical values and on data expressed in numerical form; of these words "computing" is used throughout the class. "Computation" is derived from this interpretation of "computing". In the French language the word "calcul" will serve for either word;
- In those subclasses which include simulators:
  - a simulator in [G06](#) is concerned with the mathematics of computing the existing or anticipated conditions within the real device or system;

- Control functions derived from simulators are not in [G06](#) but are generally in [G05](#), although they may be in the subclass for the device controlled;
  - measurement of an individual variable to serve as an input to a simulator is in [G01](#) { 21E; 42; 119}
  - a simulator is regarded as a teaching or training device proper to [G09](#) if the simulator gives perceptible sensations having a likeness to the sensations the student would experience in reality in response to actions taken by him. Simulators which demonstrate, by means involving computing, the functioning of apparatus or of a system are in [G06](#), if no provision exists elsewhere. Components of simulators, if identical with real devices or machines, are classified in the relevant subclass for these devices or machines and not in [G06](#) or [G09](#);
  - a simulator may use the same time scale as the real device or operate on an expanded or compressed time scale;
  - models of real devices to reduced or expanded scales are not regarded as simulators
- The term "record carrier" is understood to mean a body, such as a cylinder, disc, card, tape or wire, capable of permanently holding information, which can be read-off by a sensing element movable relative to the recorded information.

**Project: N/A (G06E)**

**G06E**

**OPTICAL COMPUTING DEVICES; { COMPUTING DEVICES USING OTHER RADIATIONS WITH SIMILAR PROPERTIES}(optical logic elements per se [G02F 3/00](#); digital storage using optical elements [G11C 13/04](#))**

NOTES

1. This subclass covers all devices in which at least one computing function is performed by optical means.
2. If other aspects, for example mechanical, fluid pressure or electrical computing, are of interest, classification is also made in the relevant subclass for such aspects.

**Project: N/A (G06F)**

**G06F**

**ELECTRICAL DIGITAL DATA PROCESSING (computers in which a part of the computation is effected hydraulically or pneumatically [G06D](#); optically [G06E](#); self-contained input or output peripheral equipment [G06K](#); impedance networks using digital techniques [H03H](#))**

NOTE

In this subclass, the following terms or expressions are used with the meaning indicated:

- "handling" includes processing or transporting of data;
- "data processing equipment" means an association of an electric digital data processor classifiable under group [G06F 7/00](#), with one or more arrangements classifiable under groups [G06F 1/00](#) to [G06F 5/00](#) and [G06F 9/00](#) to [G06F 13/00](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[G06F 3/18](#) covered by [G06F 3/00](#), [G06K 11/00](#)

[G06F 7/04](#) covered by [G06F 7/02](#)

[G06F 9/302](#) - [G06F 9/318](#) covered by [G06F 9/30](#)

- [G06F 9/40](#) covered by [G06F 9/4425](#) and subgroups

- [G06F 9/42](#) covered by [G06F 9/4426](#) and subgroups

- [G06F 9/45](#) covered by [G06F 8/41](#) and subgroups

- G06F 1/00** Details of data-processing equipment not covered by groups [G06F 3/00](#) to [G06F 13/00](#), {e.g. cooling, packaging or power supply specially adapted for computer application (security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#))}
- G06F 1/02 • Digital function generators {(evaluating functions by calculating only [G06F 7/544](#), [G06F 7/60](#); generating sawtooth or staircase waveforms [H03K 4/00](#))}
- G06F 1/022 • • {Waveform generators, i.e. devices for generating periodical functions of time, e.g. direct digital synthesizers} ([G06F 1/025](#), [G06F 1/03](#) take precedence)}
- U G06F 1/03 • • working, at least partly, by table look-up ([G06F 1/025](#) takes precedence)
- NOTE  
In order to be classified in this group, the table must contain function values of the desired or an intermediate function, not merely coefficients.
- G06F 1/0307 • • {Logarithmic or exponential functions ([G06F 1/0314](#), [G06F 1/035](#) take precedence)}
- G06F 1/0321 • • {Waveform generators, i.e. devices for generating periodical functions of time, e.g. direct digital synthesizers ([G06F 1/0314](#), [G06F 1/035](#) take precedence)}
- U G06F 1/16
- G06F 1/1601 • • {Constructional details or arrangements (instrument details [G12B](#))}
- G06F 1/1607 • • {Constructional details related to the housing of computer displays, e.g. of CRT monitors, of flat displays (constructional details related to flat displays integrated in a portable computer, e.g. laptop, handheld computer [G06F 1/1637](#); constructional details related to television receivers [H04N 5/64](#))}
- G06F 1/1607 • • {Arrangements to support accessories mechanically attached to the display housing ([G06F 1/1603](#), [G06F 1/1605](#) take precedence)}
- G06F 1/1613 • • {for portable computers (cooling arrangements therefor [G06F 1/203](#); constructional details or arrangements for pocket calculators, electronic agendas or books [G06F 15/0216](#); constructional details of portable telephone sets: with several bodies [H04M 1/0202](#))}
- U G06F 1/1633 • • {Constructional details or arrangements of portable computers not specific to the type of enclosures covered by groups [G06F 1/1615](#) to [G06F 1/1626](#)}
- U G06F 1/1637 • • • {Details related to the display arrangement, including those related to the mounting of the display in the housing (constructional details related to the housing of computer displays in general [G06F 1/1601](#))}
- G06F 1/1643 • • • • {the display being associated to a digitizer, e.g. laptops that can be used as penpads (touchpads integrated in a laptop or similar computer [G06F 1/169](#); secondary touch screen [G06F 1/1692](#); details related to the relative motion of the display enclosure with respect to the body enclosure; e.g. to move between laptop and tablet PC configuration [G06F 1/1615](#))}
- G06F 1/1656 • • • • {Details related to functional adaptations of the enclosure, e.g. to provide protection against EMI, shock, water, or to host detachable peripherals like a mouse or removable expansions units like PCMCIA cards, or to provide access to internal components for maintenance or to removable storage supports like CDs or DVDs, or to mechanically mount accessories (mounting of accessories to a computer display [G06F 1/1607](#); display hoods [G06F 1/1603](#); cooling arrangements for portable computers [G06F 1/203](#))}
- U G06F 1/1684 • • • • {Constructional details or arrangements related to integrated I/O peripherals not covered by groups [G06F 1/1635](#) to [G06F 1/1675](#)}

- G06F 1/169
  - • • • {the I/O peripheral being an integrated pointing device, e.g. trackball in the palm rest area, mini-joystick integrated between keyboard keys, touch pads or touch stripes ([G06F 1/1643](#) takes precedence; constructional details of pointing devices [G06F 3/033](#); joysticks in general [G05G 9/047](#))}
- G06F 1/18
  - • Packaging or power distribution {(for electrical apparatus in general [H05K](#)-, [H02J](#))}
- G06F 1/181
  - • • {Enclosures (for electric apparatus in general [H05K 5/00](#);- for portable computers [G06F 1/1613](#))}
- G06F 1/24
  - Resetting means (micro-programme loading [G06F 9/24](#);- restoration from data faults [G06F 11/00](#))
- U G06F 1/26
  - Power supply means, e.g. regulation thereof (for memories [G11C](#); {regulation in general [G05F](#)})
- G06F 1/30
  - • Means for acting in the event of power-supply failure or interruption, e.g. power-supply fluctuations (for resetting only [G06F 1/24](#);- involving the processing of data-words [G06F 11/00](#))
- G06F 3/00**

**Input arrangements for transferring data to be processed into a form capable of being handled by the computer; Output arrangements for transferring data from processing unit to output unit, e.g. interface arrangements (typewriters [B41J](#); conversion of physical variables [F15B 5/00](#)-, [G01](#); image acquisition [G06T 1/00](#)-, [G06F 9/00](#);- coding, decoding or code conversion in general [H03M](#);- transmission of digital information [H04L](#); {in regulating or control systems [G05B](#)})**
- G06F 3/002
  - {Specific input/output arrangements not covered by [G06F 3/02](#) to [G06F 3/16](#)-, e.g. facsimile, microfilm} (facsimile per se [H04N 1/00](#);- viewers photographic printing [G03B](#);- electrography, magnetography [G03G](#);- other optical apparatus [G02B 27/00](#))}
- G06F 3/007
  - {Digital input from or digital output to memories of the shift register type, e.g. magnetic bubble memories, CCD memories (magnetic bubble memories per se [G11C 19/08](#)-, CCD memories per se [G11C 19/28](#))}
- U G06F 3/01
  - Input arrangements or combined input and output arrangements for interaction between user and computer ([G06F 3/16](#) takes precedence)
- G06F 3/011
  - • {Arrangements for interaction with the human body, e.g. for user immersion in virtual reality (for handicapped people in general [A61F 4/00](#);- robot control [B25J](#); tactile signalling [G08B](#); blind teaching [G09B 21/00](#);- for electrophonic musical instruments [G10H 1/344](#);- electronic switches characterised by the way in which the control signals are generated [H03K 17/94](#))}
- G06F 3/02
  - • Input arrangements using manually operated switches, e.g. using keyboards or dials (keyboard switches per se [H01H 13/70](#);- electronic switches characterised by the way in which the control signals are generated [H03K 17/94](#))
- U G06F 3/0202
  - • • {Constructional details or processes of manufacture of the input device}
- U G06F 3/021
  - • • • {Arrangements integrating additional peripherals in a keyboard, e.g. card or barcode reader, optical scanner}
- G06F 3/0213
  - • • • • {Arrangements providing an integrated pointing device in a keyboard, e.g. trackball, mini-joystick (for pointing devices integrated in a laptop computer [G06F 1/169](#);- joysticks [G05G 9/047](#);- constructional details of pointing devices [G06F 3/033](#))}
- U G06F 3/023
  - • • Arrangements for converting discrete items of information into a coded form, e.g. arrangements for interpreting keyboard generated codes as alphanumeric codes, operand codes or instruction codes {(coding in connection with keyboards or like devices in general [H03M 11/00](#))}

- G06F 3/027 . . . for insertion of decimal point {(display of decimal point [G06F 3/1407](#);- complete desk- top or hand- held calculators [G06F 15/02](#))}
- U G06F 3/03 . . Arrangements for converting the position or the displacement of a member into a coded form
- U G06F 3/0304 . . . {Detection arrangements using opto-electronic means (constructional details of pointing devices not related to the detection arrangement using opto-electronic means [G06F 3/033](#) and subgroups; optical digitisers [G06F 3/042](#))}
- WARNING**  
Groups [G06F 3/0304](#) and [G06F 3/0317](#) are not complete, pending a reorganisation. See also [G06F 3/042](#) and subgroups
- G06F 3/0312 . . . . {for tracking the rotation of a spherical or circular member, e.g. optical rotary encoders used in mice or trackballs using a tracking ball or in mouse scroll wheels (tracking relative movement in co-operation with a regularly or irregularly patterned surface, e.g. as in optical mice [G06F 3/0317](#);- constructional details of scroll or thumb-wheels [G06F 3/0362](#);- optical rotary encoders [G01D 5/3473](#);- thumb wheel switches [H01H 19/001](#))}
- U G06F 3/0317 . . . . {in co-operation with a patterned surface, e.g. absolute position or relative movement detection for an optical mouse or pen positioned with respect to a coded surface}
- G06F 3/0321 . . . . {by optically sensing the absolute position with respect to a regularly patterned surface forming a passive digitiser, e.g. pen optically detecting position indicative tags printed on a paper sheet (constructional details of pen-shaped pointing devices [G06F 3/03545](#)-, [G06F 3/03542](#)-, [G06F 3/037](#))}
- G06F 3/033 . . . Pointing devices displaced or positioned by the user, e.g. mice, trackballs, pens or joysticks; Accessories therefor {(constructional details of joysticks [G05G 9/047](#);- arrangement for interfacing a joystick to a computer [G06F 3/038](#))}
- G06F 3/05 . Digital input using the sampling of an analogue quantity at regular intervals of time, {input from a/d converter or output to d/a converter} (analogue- digital conversion per se [H03M 1/00](#);- sampling per se [H03K 17/00](#);- sample- and- hold arrangements per se [G11C 27/02](#))
- U G06F 3/06 . Digital input from or digital output to record carriers, {e.g. RAID, emulated record carriers, networked record carriers (recording or reproducing devices per se [G11B](#); error detection, error correction, monitoring per se regarding storage systems [G06F 11/00](#); accessing or addressing within memory systems or architectures [G06F 12/00](#); information retrieval [G06F 17/30](#))}
- G06F 3/08 . . from or to individual record carriers, e.g. punched card, {memory card, integrated circuit [IC] card, smart card (record carriers for use with machines and with at least a part designed to carry digital markings [G06K 19/00](#);- coded identity card or credit card with a coded signal [G07F 7/10](#))}
- G06F 3/12 . Digital output to print unit, {e.g. line printer, chain printer} (digital output to typewriter [G06F 3/09](#);- printing of alphanumeric characters [G06K 15/02](#))
- U **G06F 5/00** **Methods or arrangements for data conversion without changing the order or content of the data handled (by coding or decoding [H03M](#))**
- G06F 5/01 . for shifting, e.g. justifying, scaling, normalising {(digital stores in which the information is moved stepwise, e.g. shift-registers [G11C 19/00](#);- digital stores in which the information circulates [G11C 21/00](#))}
- U **G06F 7/00** **Methods or arrangements for processing data by operating upon the order or content of the data handled (logic circuits [H03K 19/00](#))**

- G06F 7/02
    - Comparing digital values ([G06F 7/06](#), {[G06F 7/22](#), } [G06F 7/38](#) take precedence; information retrieval [G06F 17/30](#); comparing pulses [H03K 5/22](#))
  - G06F 7/06
    - Arrangements for sorting, selecting, merging or comparing data on individual record carriers (sorting of postal letters [B07C](#); conveying record carriers from one station to another [G06K 13/02](#))
  - U G06F 7/38
    - Methods or arrangements for performing computations using exclusively denominational number representation, e.g. using binary, ternary, decimal representation
  - U G06F 7/48
    - • using non-contact-making devices, e.g. tube, solid state device; using unspecified devices
  - G06F 7/483
    - • • Computations with numbers represented by a non-linear combination of denominational numbers, e.g. rational numbers, logarithmic number system, floating-point numbers (conversion to or from floating-point codes [H03M 7/24](#) ){([G06F 7/4806](#), [G06F 7/4824](#), [G06F 7/49](#), [G06F 7/491](#), [G06F 7/544](#) take precedence)}
  - G06F 7/485
    - • • • Adding; Subtracting {([G06F 7/4833](#), [G06F 7/4836](#) take precedence)}
  - G06F 7/487
    - • • • Multiplying; Dividing {([G06F 7/4833](#), [G06F 7/4836](#) take precedence)}
  - U G06F 7/491
    - • • Computations with decimal numbers {radix 12 or 20. ([G06F 7/4824](#) takes precedence)}
  - G06F 7/4912
    - • • • {Adding; Subtracting ([G06F 7/492](#), [G06F 7/498](#) take precedence)}
  - G06F 7/4915
    - • • • {Multiplying; Dividing ([G06F 7/492](#), [G06F 7/498](#) take precedence)}
  - G06F 7/50
    - • • Adding; Subtracting ([G06F 7/483](#) to [G06F 7/491](#), [G06F 7/544](#) take precedence)
  - G06F 7/52
    - • • Multiplying; Dividing ([G06F 7/483](#) to [G06F 7/491](#), [G06F 7/544](#) take precedence)
  - G06F 7/544
    - • • for evaluating functions by calculation ({[G06F 7/4824](#) take precedence } ; with a look-up table [G06F 1/02](#); complex mathematical operations [G06F 17/10](#))
  - G06F 7/5443
    - • • • {Sum of products (for applications thereof, see the relevant places, e.g. [G06F 17/10](#), [H03H 17/00](#))}
  - G06F 7/57
    - • • Arithmetic logic units [ALU], i.e. arrangements or devices for performing two or more of the operations covered by groups [G06F 7/483](#) - [G06F 7/556](#) or for performing logical operations (instruction execution [G06F 9/30](#) {[G06F 7/49](#), [G06F 7/491](#) take precedence; logic gate circuits [H03K 19/00](#))}
  - G06F 7/58
    - Random or pseudo-random number generators {(random pulse generators [H03K 3/84](#); secret telegraphic communication [H04L 9/00](#); lottery apparatus [G07C 15/00](#))}
  - G06F 7/60
    - Methods or arrangements for performing computations using a digital non-denominational number representation, i.e. number representation without radix; Computing devices using combinations of denominational and non-denominational quantity representations, {e.g. using difunction pulse trains, STEELE computers, phase computers (conversion of digital data to or from non-denominational form [H03M 5/00](#), [H03M 7/00](#))}
- WARNING  
 Not complete: for computing devices using combinations of denominational and non-denominational quantity representations see also [G06F 7/62](#)
- G06F 7/605
    - • {Additive or subtractive mixing of two pulse rates into one (beat-frequency oscillators [H03B 21/00](#); input circuits of electric counters, e.g. up-down counters [H03K 21/00](#))}

- G06F 7/607
  - • {number-of-ones counters, i.e. devices for counting the number of input lines set to ONE among a plurality of input lines, also called bit counters or parallel counters (for applications thereof, see the relevant places, e.g. [G06F 7/49](#)-, [G06F 7/5013](#)-, [G06F 7/509](#)-, [H03M 1/00](#)-, [H03M 7/20](#))}
- G06F 7/64
  - • Digital differential analysers, i.e. computing devices for differentiation, integration or solving differential or integral equations, using pulses representing increments; Other incremental computing devices for solving difference equations ([G06F 7/70](#) takes precedence; differential analysers using hybrid computing techniques [G06J 1/02](#){ {DDA application in numerical control [G05B 19/18](#)})
- G06F 7/68
  - • using pulse rate multipliers or dividers {pulse rate multipliers or dividers per se} ([G06F 7/70](#) takes precedence {; frequency division in electronic watches [G04G 3/02](#)-, frequency multiplication or division in oscillators [H03B 19/00](#)-, frequency dividing counters per se [H03K 23/00](#) to [H03K 29/00](#))}
- U G06F 7/72
  - • using residue arithmetic
- G06F 7/721
  - • • {Modular inversion, reciprocal or quotient calculation ([G06F 7/724](#)-, [G06F 7/727](#)-, [G06F 7/728](#) take precedence)}
- G06F 7/722
  - • • {Modular multiplication ([G06F 7/724](#)-, [G06F 7/727](#)-, [G06F 7/728](#) take precedence)}
- G06F 7/723
  - • • {Modular exponentiation (~~[G06F 7/724](#)~~-, (~~[G06F 7/727](#)~~), ([G06F 7/724](#), [G06F 7/727](#), [G06F 7/728](#) take precedence)}
- G06F 7/724
  - • • {Finite field arithmetic (for error detection or correction in general [H03M 13/00](#)-, in computers [G06F 11/10](#))}
- G06F 7/76
  - Arrangements for rearranging, permuting or selecting data according to predetermined rules, independently of the content of the data (according to the content of the data [G06F 7/06](#)-, [G06F 7/22](#)-, parallel / series conversion or vice versa [H03M 9/00](#))
- G06F 8/00**
  - {Arrangements for software engineering (execution of stored program [G06F 9/06](#)-, testing or debugging [G06F 11/36](#)-, hardware/software co-design [G06F 17/50](#)-, software project management [G06Q 10/06](#))}**
- U G06F 8/40
  - {Transformations of program code}
- U G06F 8/41
  - • {Compilation}
- U G06F 8/45
  - • • {Exploiting coarse grain parallelism in compilation, i.e. parallelism between groups of instructions}
- G06F 8/451
  - • • • {Code distribution (considering CPU load at run-time [G06F 9/505](#)-, load rebalancing [G06F 9/5083](#))}
- G06F 9/00**
  - Arrangements for programme control, e.g. control unit (programme control for peripheral devices [G06F 13/10](#)-, in regulating or control systems [G05B](#))**
- U G06F 9/06
  - using stored programme, i.e. using internal store of processing equipment to receive and retain programme
- G06F 9/30
  - • Arrangements for executing machine-instructions, e.g. instruction decode (for executing micro-instructions [G06F 9/22](#)-, for executing subprogrammes [G06F 9/4425](#))
- U G06F 9/38
  - • • Concurrent instruction execution, e.g. pipeline, look ahead
- G06F 9/3877
  - • • • {using a slave processor, e.g. coprocessor (peripheral processor [G06F 13/12](#)-, vector processor [G06F 15/8053](#))}
- U G06F 9/44
  - • Arrangements for executing specific programmes
- G06F 9/4401
  - • • {Bootstrapping (secure booting [G06F 21/575](#)-, fault tolerant booting [G06F 11/1417](#)-, resetting means [G06F 1/24](#)-, power-on self test [G06F 11/2284](#))}

- G06F 9/445
  - • • Programme loading or initiating {(bootstrapping [G06F 9/4401](#); movement of software or configuration parameters for network-specific applications [H04L 67/34](#))}
- G06F 9/44589
  - • • • {Programme code verification, e.g. Java bytecode verification, proof-carrying code (high-level semantic checks [G06F 8/43](#); testing and debugging software [G06F 11/36](#))}
- G06F 9/455
  - • • Emulation; Software simulation {, i.e. virtualisation or emulation of application or operating system execution engines (instruction translation at instruction execution time [G06F 9/3017](#); multiprogramming in general [G06F 9/46](#); logical partitioning of resources or management or configuration of virtualized resources [G06F 9/5077](#); in-circuit emulation [G06F 11/3652](#); environments for testing or debugging software [G06F 11/3664](#))}
- U G06F 9/45533
  - • • • {Hypervisors; Virtual machine monitors}
- U G06F 9/45558
  - • • • • {Hypervisor-specific management and integration aspects}
- G06F 2009/4557
  - • • • • {Distribution of virtual machine instances; Migration and load balancing aspects (load distribution or balancing [G06F 9/505](#), [G06F 9/5083](#); Task migration [G06F 9/4856](#))}
- G06F 2009/45575
  - • • • • {Starting, stopping, suspending, resuming virtual machine instances (programme initiating [G06F 9/445](#); task life-cycle in general [G06F 9/485](#))}
- G06F 2009/45579
  - • • • • {I/O management (device drivers, storage access) (internal functioning of device drivers [G06F 13/102](#), loading of device drivers [G06F 9/4411](#))}
- G06F 2009/45591
  - • • • • {Monitoring or debugging support (monitoring and debugging in general in [G06F 11/30](#), [G06F 11/36](#))}
- U G06F 9/46
  - • Multiprogramming arrangements
- U G06F 9/48
  - • • Programme initiating; Programme switching, e.g. by interrupt
- U G06F 9/4806
  - • • • {Task transfer initiation or dispatching}
- U G06F 9/4843
  - • • • • {by program, e.g. task dispatcher, supervisor, operating system}
- U G06F 9/4881
  - • • • • {Scheduling strategies for dispatcher, e.g. round robin, multi-level priority queues}
- G06F 9/4893
  - • • • • • {taking into account power or heat criteria (power management in computers in general [G06F 1/3203](#); thermal management in computers in general [G06F 1/206](#))}
- U G06F 9/50
  - • • Allocation of resources, e.g. of the central processing unit [CPU]
- G06F 9/5094
  - • • • {where the allocation takes into account power or heat criteria (power management in computers in general [G06F 1/3203](#); thermal management in computers in general [G06F 1/206](#))}
- G06F 11/00**

**Error detection; Error correction; Monitoring (methods or arrangements for verifying the correctness of marking on a record carrier [G06K 5/00](#); in information storage based on relative movement between record carrier and transducer [G11B](#), e.g. [G11B 20/18](#); in static stores [G11C](#); coding, decoding or code conversion, for error detection or error correction, in general [H03M 13/00](#))**

NOTE

In this group the indexing codes of [G06F 1/00](#) to [G06F 15/00](#) are added
- U G06F 11/07
  - responding to the occurrence of a fault, e.g. fault tolerance
- U G06F 11/0703
  - • {Error or fault processing not based on redundancy, i.e. by taking additional measures to deal with the error or fault not making use of redundancy in operation, in hardware, or in data representation}

- U G06F 11/0706 . . . {the processing taking place on a specific hardware platform or in a specific software environment}
- G06F 11/0727 . . . . {in a storage system, e.g. in a DASD or network based storage system (circuits for error detection or correction within digital recording or reproducing units [G11B 20/18](#); drivers for digital recording or reproducing units [G06F 3/06](#); storage area networks [H04L 29/08549](#))}
- G06F 11/073 . . . . {in a memory management context, e.g. virtual memory or cache management (memory management [G06F 12/00](#); testing of static memory units [G11C 29/00](#))}
- G06F 11/0751 . . . {Error or fault detection not based on redundancy (power supply failures [G06F 1/30](#); network fault management [H04L 12/2419](#))}
- G06F 11/0766 . . . {Error or fault reporting or storing (reporting or storing of non-error data [G06F 11/30](#); [G06F 11/34](#))}
- G06F 11/079 . . . {Root cause analysis, i.e. error or fault diagnosis (in a hardware test environment [G06F 11/22](#); in a software test environment [G06F 11/36](#))}
- G06F 11/0793 . . . {Remedial or corrective actions (by retry [G06F 11/1402](#); recovery from an exception in an instruction pipeline [G06F 9/3861](#); in a network context [H04L 29/14](#))}
- U G06F 11/16 . . . Error detection or correction of the data by redundancy in hardware
- G06F 11/1608 . . . . {Error detection by comparing the output signals of redundant hardware ([G06F 11/1629](#); [G06F 11/1666](#) take precedence; error detection or correction in information storage based on relative movement between record carrier and transducer [G11B 20/18](#); checking static stores for correct operation [G11C 29/00](#); for logic circuits [H03K 19/003](#); [H03K 19/007](#); for pulse counters or frequency dividers [H03K 21/40](#))}
- U G06F 11/1658 . . . . {Data re-synchronization of a redundant component, or initial sync of replacement, additional or spare unit}
- G06F 11/1662 . . . . {the resynchronized component or unit being a persistent storage device (re-synchronization of failed mirror storage [G06F 11/2082](#); rebuild or reconstruction of parity RAID storage [G06F 11/1008](#))}
- WARNING  
Not complete pending a reclassification. See also [G06F 11/1658](#)
- U G06F 11/20 . . . . using active fault-masking, e.g. by switching out faulty elements or by switching in spare elements
- G06F 11/2017 . . . . {where memory access, memory control or I/O control functionality is redundant (redundant communication control functionality [G06F 11/2005](#); redundant storage control functionality [G06F 11/2089](#))}
- WARNING  
Not complete pending a reclassification. See also **G06F11/20L**
- G06F 11/202 . . . . {where processing functionality is redundant (redundant communication control functionality [G06F 11/2005](#); redundant storage control functionality [G06F 11/2089](#))}
- U G06F 11/22 . . . Detection or location of defective computer hardware by testing during standby operation or during idle time, e.g. start-up testing (testing of digital circuits, e.g. of separate computer components [G01R 31/317](#))
- G06F 11/24 . . . Marginal checking{ {or other specified testing methods not covered by [G06F 11/26](#); e.g. race tests}
- U G06F 11/30 . . . Monitoring
- U G06F 11/3003 . . . {Monitoring arrangements specially adapted to the computing system or computing system component being monitored}

- G06F 11/3006
  - • • {where the computing system is distributed, e.g. networked systems, clusters, multiprocessor systems (multiprogramming arrangements [G06F 9/46](#); allocation of resources [G06F 9/50](#))}
- G06F 11/301
  - • • {where the computing system is a virtual computing platform, e.g. logically partitioned systems (virtual machines [G06F 9/45533](#); logical partitioning of resources [G06F 9/5077](#))}
- G06F 11/3017
  - • • {where the computing system is implementing multitasking (multiprogramming arrangements [G06F 9/46](#); allocation of resources [G06F 9/50](#))}
- G06F 11/3034
  - • • {where the computing system component is a storage system, e.g. DASD based or network based (digital recording or reproducing [G11B 20/18](#); digital input from or digital output to record carriers [G06F 3/06](#); arrangements and networking functions for distributed storage of data in a network [H04L 29/08549](#))}
- G06F 11/3037
  - • • {where the computing system component is a memory, e.g. virtual memory, cache (accessing, addressing or allocating within memory systems or architectures [G06F 12/00](#); checking stores for correct operation [G11C 29/00](#))}
- G06F 11/3055
  - • {Monitoring arrangements for monitoring the status of the computing system or of the computing system component, e.g. monitoring if the computing system is on, off, available, not available (error or fault processing without redundancy [G06F 11/0703](#); error detection or correction by redundancy in data representation [G06F 11/08](#); error detection or correction by redundancy in operation [G06F 11/14](#); error detection or correction by redundancy in hardware [G06F 11/16](#))}
- G06F 11/3089
  - • {Monitoring arrangements determined by the means or processing involved in sensing the monitored data, e.g. interfaces, connectors, sensors, probes, agents (software debugging using additional hardware using a specific debug interface [G06F 11/3656](#); performance evaluation by tracing or monitoring [G06F 11/3466](#))}
- U G06F 11/34
  - • Recording or statistical evaluation of computer activity, e.g. of down time, of input/output operation; {Recording or statistical evaluation of user activity, e.g. usability assessment}
- U G06F 11/3409
  - • • {for performance assessment}
- G06F 11/3433
  - • • • {for load management}; (allocation of a server based on load conditions [G06F 9/505](#); load rebalancing [G06F 9/5083](#); redistributing the load in a network by a load balancer [H04L 67/1029](#))}
- U G06F 11/3466
  - • • {Performance evaluation by tracing or monitoring}
- G06F 11/3476
  - • • • {Data logging ([G06F 11/14](#), [G06F 11/2205](#) take precedence)}
- U G06F 11/36
  - Preventing errors by testing or debugging software
- G06F 11/3668
  - • {Software testing (software testing in telephone exchanges [H04M 3/242](#); testing of hardware [G06F 11/22](#))}
- U **G06F 12/00**
  - Accessing, addressing or allocating within memory systems or architectures ({digital input or output to record carriers, e.g. to disc storage units [G06F 3/06](#)}; information storage in general [G11](#))**
- G06F 12/02
  - Addressing or allocation; Relocation (programme address sequencing [G06F 9/00](#); arrangements for selecting an address in a digital store [G11C 8/00](#))

- G06F 12/06
- Addressing a physical block of locations, e.g. base addressing, module addressing, memory dedication ([G06F 12/08](#) takes precedence)
- NOTE**  
This group is limited to Module addressing or allocation; base addressing is classified in [G06F 12/0223](#).
- G06F 12/0638
- • {Combination of memories, e.g. ROM and RAM such as to permit replacement or supplementing of words in one module by words in another module (address formation of the next micro-instruction [G06F 9/26](#); masking faults in memories by using spares or by reconfiguring [G11C 29/70](#))}
- G06F 12/14
- Protection against unauthorised use of memory {or access to memory (security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#); multiprogramming arrangements [G06F 9/46](#))}
- G06F 13/00**
- Interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units (interface circuits for specific input/output devices [G06F 3/00](#); multiprocessor systems [G06F 15/16](#); transmission of digital information in general [H04L](#); selecting [H04Q](#); {multiprogramme control therefor [G06F 9/46](#)})**
- U G06F 13/10
- Programme control for peripheral devices ([G06F 13/14](#) to [G06F 13/42](#) take precedence)
- G06F 13/102
- {where the programme performs an interfacing function, e.g. device driver ([G06F 13/105](#) takes precedence; scheduling within device drivers [G06F 9/52](#); contention policies within device drivers [G06F 9/4881](#))}
- U G06F 13/38
- Information transfer, e.g. on bus ([G06F 13/14](#) takes precedence)
- G06F 13/40
- • Bus structure {(for computer networks [G06F 15/163](#); for optical bus networks [H04B 10/25](#))}
- U G06F 13/42
- • Bus transfer protocol, e.g. handshake; Synchronisation (synchronisation in transmission of digital information in general [H04L 7/00](#))
- G06F 13/4265
- • {on a point to point bus ([G06F 13/4247](#); [G06F 13/4282](#) take precedence)}
- U G06F 15/00**
- Digital computers in general (details [G06F 1/00](#) to [G06F 13/00](#)); Data processing equipment in general (neural networks for image data processing [G06T](#))**
- G06F 15/16
- Combinations of two or more digital computers each having at least an arithmetic unit, a programme unit and a register, e.g. for a simultaneous processing of several programmes {(coordinating programme control therefor [G06F 9/52](#); in regulating and control system [G05B](#))}
- U G06F 15/163
- • Interprocessor communication
- G06F 15/167
- • • using a common memory, e.g. mailbox (memory protection [G06F 12/14](#); memory access priority [G06F 13/18](#))
- G06F 15/18
- in which a programme is changed according to experience gained by the computer itself during a complete run; Learning machines (adaptive control systems [G05B 13/00](#) {not used, see [G06N 99/005](#)})
- G06F 15/76
- Architectures of general purpose stored programme computers (with programme plugboard [G06F 15/08](#); multicomputers [G06F 15/16](#); general purpose image data processing [G06T 1/00](#))
- G06F 15/80
- • comprising an array of processing units with common control, e.g. single instruction multiple data processors ([G06F 15/82](#) takes precedence; {for correlation function computation [G06F 17/15](#)})
- U G06F 17/00**
- Digital computing or data processing equipment or methods, specially adapted for specific functions**

- G06F 17/10 · Complex mathematical operations {(function generation by table look-up [G06F 1/03](#); evaluation of elementary functions by calculation [G06F 7/544](#))}
- G06F 17/14 · · Fourier, Walsh or analogous domain transformations, {e.g. Laplace, Hilbert, Karhunen-Loeve, transforms (for correlation function computation [G06F 17/156](#); spectrum analysers [G01R 23/16](#))}
- G06F 17/15 · · Correlation function computation {including computation of convolution operations (arithmetic circuits for sum of products per se, e.g. multiply-accumulators [G06F 7/5443](#); digital filters, e.g. FIR, IIR, adaptive filters [H03H 17/00](#))}
- U G06F 17/20 · Handling natural language data (speech analysis or synthesis [G10L](#))
- G06F 17/21 · · Text processing ([G06F 17/27](#), [G06F 17/28](#) take precedence; systems for composing machines [B41B 27/00](#))
- G06F 17/211 · · · {Formatting, i.e. changing of presentation of document ([G06F 17/25](#), [G06F 17/26](#) take precedence)}
- U G06F 17/22 · · · Manipulating or registering by use of codes, e.g. in sequence of text characters {(compression [H03M 7/30](#))}
- G06F 17/2247 · · · · {Tree structured documents; Markup, e.g. Standard Generalized Markup Language [SGML], Document Type Definition [DTD] (validation and parsing [G06F 17/2705](#); data retrieval [G06F 17/30](#); coding and compression [H03M 7/30](#))}
- U G06F 17/24 · · · Editing, e.g. insert/delete {([G06F 17/22](#) takes precedence)}
- G06F 17/246 · · · · {Spreadsheets (relational data bases [G06F 17/30595](#); form-filling [G06F 17/243](#))}
- U G06F 17/28 · · Processing or translating of natural language ([G06F 17/27](#) takes precedence)
- G06F 17/2863 · · · {Processing of non-latin text (Kana-to-kanji conversion [G06F 17/2223](#), vowelisation [G06F 17/273](#))}
- G06F 17/289 · · · {Use of machine translation, e.g. multi-lingual retrieval, server side translation for client devices, real-time translation (Data retrieval [G06F 17/30](#), administrative and business methods [G06Q 10/00](#), [G06Q 30/00](#))}
- U G06F 17/30 · Information retrieval; Database structures therefor; {File system structures therefor (data processing systems or methods specially adapted for administrative, commercial, financial managerial, supervisory or forecasting purposes [G06Q](#))}
- U G06F 17/30002 · · {Interfaces; Database management systems; Updating}
- WARNING  
This group is no longer used for the classification of new documents as from April 15, 2012. The backlog of this group is being continuously reclassified to subgroups of [G06F 17/30067](#) and [G06F 17/30286](#)
- G06F 17/30005 · · · {File format conversion (code conversion circuits or methods [H03M 5/00](#), [H03M 7/00](#))}
- WARNING  
This group is no longer used for the classification of new documents as from April 15, 2012. The backlog of this group is being continuously reclassified to subgroups of [G06F 17/30179](#) and [G06F 17/30569](#)

- G06F 17/30017
- • {Multimedia data retrieval; Retrieval of more than one type of audiovisual media (retrieval of image data [G06F 17/30244](#); retrieval of video data [G06F 17/30781](#); retrieval of audio data [G06F 17/3074](#); editing or indexing of data stored based on relative movement between record carrier and transducer [G11B 27/00](#))}
- WARNING  
Groups [G06F 17/3002](#) - [G06F 17/30064](#) are not complete pending reclassification. See also [G06F 17/30017](#)
- U G06F 17/30023
- • • {Querying (programmed access in sequence to addressed parts of tracks of operating discs [G11B 27/105](#))}
- G06F 17/30026
- • • • {using audio data (details of audio retrieval [G06F 17/3074](#); general determination or detection of speech characteristics [G10L 25/00](#); speech recognition [G10L 15/00](#); speaker recognition [G10L 17/00](#); electrophonic musical instruments [G10H](#))}
- G06F 17/3005
- • • {Presentation of query results (menu, index or table of content presentation of record carriers [G11B 27/32](#), [G11B 27/34](#))}
- G06F 17/30058
- • • {Retrieval by browsing and visualisation of multimedia data (trick modes [G11B 27/005](#); browsing through video recorded on operating discs [G11B 27/105](#))}
- G06F 17/30067
- • {File systems; File servers ([G06F 17/3061](#), [G06F 17/30017](#), [G06F 17/30244](#), [G06F 17/3074](#), [G06F 17/30781](#) take precedence; dedicated interfaces to storage systems [G06F 3/0601](#); error detection, correction or monitoring [G06F 11/00](#))}
- WARNING  
Groups [G06F 17/3007](#) to [G06F 17/30238](#) are not complete pending reclassification. See also this group
- U G06F 17/3007
- • • {File system administration (file or folder operations [G06F 17/30115](#))}
- G06F 17/30073
- • • • {Details of archiving (details of hierarchical storage management [HSM] systems [G06F 17/30221](#); lifecycle management in storage systems [G06F 3/0649](#); backup systems [G06F 11/1446](#))}
- G06F 17/30082
- • • • {Use of management policies (file migration policies for HSM systems [G06F 17/30221](#); backup systems [G06F 11/1446](#))}
- G06F 17/30088
- • • • {Details of file system snapshots on the file-level, e.g. snapshot creation, administration, deletion (use of snapshots for error detection or correction [G06F 11/14](#), [G06F 11/16](#))}
- U G06F 17/30115
- • • {File and folder operations}
- G06F 17/30126
- • • • {Details of user interfaces specifically adapted to file systems, e.g. browsing and visualisation, 2d or 3d GUIs (query results presentation [G06F 17/30112](#); interaction techniques for graphical user interfaces [G06F 3/048](#))}
- U G06F 17/30129
- • • {Details of further file system functionalities}
- G06F 17/30132
- • • • {Caching or prefetching or hoarding of files (caching for data retrieval from the Internet [G06F 17/30902](#); caching for peripheral storage systems, e.g. disk cache [G06F 12/0866](#); network-specific arrangements or communication protocols for caching [H04L 67/2842](#))}
- G06F 17/30135
- • • • {Details of de-fragmentation performed by the file system (management of blocks in storage devices [G06F 3/064](#); saving storage space on storage systems [G06F 3/0608](#))}
- G06F 17/30138
- • • • {Details of free space management performed by the file system (management of blocks in storage devices [G06F 3/064](#); saving storage space on storage systems [G06F 3/0608](#))}

- G06F 17/30147 . . . . {for reducing power consumption or coping with limited storage space, e.g. in mobile devices (saving storage space on storage devices [G06F 3/0608](#); power saving in storage systems [G06F 3/0625](#))}
- U G06F 17/3015 . . . . {Redundancy elimination performed by the file system (management of the data involved in backup or backup restore using de-duplication of the data [G06F 11/1453](#))}
- G06F 17/30153 . . . . {using compression, e.g. sparse files (details of compression [H03M 7/30](#); protocols for data compression [H04L 69/04](#))}
- G06F 17/30174 . . . . {Techniques for file synchronisation in file systems (change detection [G06F 17/30144](#); file management policies in general [G06F 17/30082](#); distributed file systems [G06F 17/30194](#); synchronisation of structured data [G06F 17/30575](#); protocols for data synchronisation between network nodes [H04L 67/1095](#))}
- U G06F 17/30182 . . . {File system types}
- U G06F 17/30194 . . . . {Distributed file systems}
- G06F 17/30197 . . . . {implemented using NAS architecture (distributed or networked storage systems [G06F 3/067](#); protocols for distributed storage of data in a network [H04L 67/1097](#))}
- G06F 17/30203 . . . . . {Details of providing network file services by network file servers, e.g. by using NFS, CIFS; (network file access protocols [H04L 67/1097](#))}
- G06F 17/30218 . . . . {specifically adapted to static storage, e.g. adapted to flash memory, SSD (dedicated interfaces to non-volatile semiconductor memory device [G06F 3/0679](#); dedicated interfaces to non-volatile semiconductor memory arrays [G06F 3/0688](#))}
- G06F 17/30221 . . . . {Details of hierarchical storage management [HSM] systems, e.g. file migration and policies thereof (details of archiving [G06F 17/30073](#); life cycle management [G06F 3/0649](#); hybrid storage combining heterogeneous device types [G06F 3/0685](#))}
- G06F 17/30241 . . {in geographical information databases (instruments for geographical navigation [G01C 21/00](#); three dimensional geographic models [G06T 17/05](#))}
- U G06F 17/30286 . . {in structured data stores}
- WARNING
- Not complete pending the completion of a reclassification; see also [G06F 17/30002](#), [G06F 17/30008](#) and [G06F 17/30283](#)
- U G06F 17/30289 . . . {Database design, administration or maintenance}
- G06F 17/30309 . . . . {Managing data history or versioning (querying temporal data [G06F 17/30551](#); querying versioned data [G06F 17/30548](#))}
- U G06F 17/30386 . . . {Retrieval requests}
- U G06F 17/30389 . . . . {Query formulation (Interaction techniques for graphical user interfaces [G06F 3/048](#))}
- G06F 17/30401 . . . . . {Natural language query formulation (natural language analysis, translation, semantics [G06F 17/27](#), [G06F 17/28](#))}
- U G06F 17/30424 . . . . {Query processing}
- U G06F 17/30427 . . . . . {Query translation}
- G06F 17/3043 . . . . . {Translation of natural language queries to structured queries (natural language analysis, translation, semantics [G06F 17/27](#), [G06F 17/28](#))}

- G06F 17/3074
- {Audio data retrieval (retrieval of video data [G06F 17/30781](#); retrieval of multimedia data [G06F 17/30017](#); general determination or detection of speech characteristics [G10L 25/00](#); speech recognition [G10L 15/00](#); speaker recognition [G10L 17/00](#); electrophonic musical instruments [G10H](#); editing or indexing of data stored based on relative movement between record carrier and transducer [G11B 27/00](#))}
- WARNING  
Groups [G06F 17/30743](#) - [G06F 17/30778](#) are not complete pending reclassification. See also [G06F 17/3074](#)
- G06F 17/30743
- • {using features automatically derived from the audio content, e.g. descriptors, fingerprints, signatures, MEP-cepstral coefficients, musical score, tempo (content oriented musical parameter indexing, e.g. tempo [G10H](#); determination or detection of speech characteristics [G10L 25/00](#); audio watermarking, e.g. by inserting fingerprints [G10L 19/018](#); indexing by using information signals detectable on the record carrier and recorded by the same method as the main recording [G11B 27/28](#))}
- G06F 17/30769
- • {Presentation of query results (menu, index or table of content presentation of record carriers [G11B 27/32](#), [G11B 27/34](#))}
- G06F 17/30775
- • {Browsing (generation of a list or set of audio data [G06F 17/30772](#); trick modes [G11B 27/005](#); browsing through audio recorded on operating discs [G11B 27/105](#))}
- U G06F 17/30781
- {of video data (recognising patterns [G06K 9/00](#); image analysis [G06T 7/00](#); editing or indexing information signals on a record carrier in which information is recorded and accessed based on relative movement between record carrier and transducer [G11B 27/00](#); source coding or decoding of digital video signal [H04N 19/00](#); selective content distribution, e.g. interactive television, video on demand [H04N 21/00](#))}
- G06F 17/30784
- • {using features automatically derived from the video content, e.g. descriptors, fingerprints, signatures, genre (recognising video content [G06K 9/00711](#); extraction of features or characteristics for pattern recognition of the image [G06K 9/46](#))}
- G06F 17/30787
- • • {using audio features (general determination or detection of speech characteristics [G10L 25/00](#); speech recognition [G10L 15/00](#); speaker recognition [G10L 17/00](#); contents oriented musical parameter indexing, e.g. tempo [G10H](#))}
- U G06F 17/3079
- • • {using objects detected or recognised in the video content (methods for image acquisition of a pattern to be recognized involving target detection [G06K 9/3241](#))}
- G06F 17/30793
- • • • {the detected or recognised objects being people (face recognition [G06K 9/00221](#); human body recognition [G06K 9/00369](#); speaker recognition [G10L 17/00](#))}
- G06F 17/30799
- • • • {using low-level visual features of the video content (methods for preprocessing an image in order to extract features of a pattern to be recognized [G06K 9/46](#); image processing involving image features extraction in general [G06T](#))}
- G06F 17/30805
- • • • {using shape ([G06F 17/3079](#) takes precedence; segmentation or edge detection on image data [G06T 7/0079](#); analysis of geometric attributes on image data [G06T 7/60](#))}
- G06F 17/30808
- • • • {using texture ([G06F 17/3079](#) takes precedence; texture analysis on image data [G06T 7/401](#), [G06T 7/407](#))}
- U G06F 17/30823
- • {Query formulation and processing specifically adapted for the retrieval of video data}

- G06F 17/30831 . . . {Graphical querying, e.g. query-by-region, query-by-sketch, query-by-trajectory, GUIs for designating a person/face/object as a query predicate (end-user interface involving hot spots associated with the video [H04N 21/4725](#); end-user interface for selecting a Region of Interest [H04N 21/4728](#))}
- G06F 17/30846 . . . {Browsing of video data (end-user interface for requesting or interacting with video content, e.g. video on demand interface or electronic program guide [H04N 21/472](#); indicating arrangements in the context of indexing and addressing recorded information [G11B 27/34](#))}
- U G06F 17/30943 . . {details of database functions independent of the retrieved data type}
- G06F 17/30946 . . . {indexing structures (indexing structures for specific data types [G06F 17/30067](#), [G06F 17/30619](#), [G06F 17/30321](#))}
- U G06F 17/30964 . . . {Querying}
- U G06F 17/30979 . . . . {Query processing}
- G06F 17/30985 . . . . {by using string matching techniques (sequence comparison in bioinformatics [G06F 19/22](#); string matching used for packet routing in packet switching systems [H04L 12/5689](#))}
- G06F 17/40 . Data acquisition and logging (for input to computer [G06F 3/00](#); {-displays as computer output [G06F 3/14](#); for image data processing [G06T 9/00](#); compression in general [H03M 7/30](#); for transmission [H04B 1/66](#); for pictorial communication [H04N](#); arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station [H04Q 9/00](#))}
- WARNING**
- This group is no longer used for the classification of new documents. The documents are classified in the application fields according to the references above
- U G06F 17/50 . Computer-aided design
- U G06F 17/5009 . . {using simulation}
- G06F 17/5022 . . . {Logic simulation, e.g. for logic circuit operation (fault-simulation [G06F 11/261](#); test pattern synthesising [G06F 11/263](#))}
- U G06F 19/00** **Digital computing or data processing equipment or methods, specially adapted for specific applications ([G06F 17/00](#) takes precedence; data processing systems or methods specially adapted for administrative, commercial, financial, managerial, supervisory or forecasting purposes [G06Q](#))**
- NOTE**
- This group only covers specific applications related to the fields of healthcare or life sciences, e.g. bioinformatics ( [G09F 19/10](#) ), medical informatics ( [G06F 19/30](#) ), or chemoinformatics ( [G06F 19/70](#) ).
- WARNING**
- Groups [G06F 19/30](#) - [G06F 19/709](#) do not correspond to former or future IPC groups.
- Concordance CPC : IPC for said groups is as follows: - [G06F 19/30](#) - [G06F 19/366](#) : [G06F 19/00](#)  
- [G06F 19/70](#) - [G06F 19/709](#) : [G06F 19/00](#)
- G06F 19/10 . Bioinformatics, i.e. methods or systems for genetic or protein-related data processing in computational molecular biology (in silico methods of screening virtual chemical libraries [C40B 30/02](#); in silico or mathematical methods of creating virtual chemical libraries [C40B 50/02](#))

- G06F 19/30
- {Medical informatics, i.e. computer-based analysis or dissemination of patient or disease data (bioinformatics [G06F 19/10](#)-; measuring for diagnostic purposes [A61B 5/00](#)-; recognising patterns in biomedical signals [G06K 9/00496](#)-; data processing systems or methods specially adapted for administrative or managerial aspects of healthcare or welfare [G06Q 50/22](#))}
- G06F 19/32
- • {Medical data management, e.g. systems or protocols for archival or communication of medical images, computerised patient records or computerised general medical references (information retrieval or databases per se [G06F 17/30](#)-; data security aspects [G06F 21/00](#))}
- G06F 19/321
- • • {Management of medical image data, e.g. communication or archiving systems such as picture archiving and communication systems [PACS] or related medical protocols such as digital imaging and communications in medicine protocol [DICOM]; Editing of medical image data, e.g. adding diagnosis information (image data processing in general [G06T](#), image data processing related to 3D objects [G06F 17/00](#)-; biomedical image inspection [G06T 7/0012](#))}
- U G06F 19/34
- • {Computer-assisted medical diagnosis or treatment, e.g. computerised prescription or delivery of medication or diets, computerised local control of medical devices, medical expert systems or telemedicine}
- G06F 19/3437
- • • {Medical simulation or modelling, e.g. simulating the evolution of medical disorders (computer-aided design using simulation [G06F 17/5009](#)-; biomedical image modelling [G06T 17/00](#))}
- G06F 19/345
- • • {Medical expert systems, neural networks or other automated diagnosis (computer systems utilising knowledge based models [G06N 5/00](#)-; neural networks per se [G06N 3/02](#))}
- U G06F 19/3456
- • • {Computer-assisted prescription or delivery of medication, e.g. prescription filling or compliance checking}
- G06F 19/3462
- • • • {Computer-assisted distribution of medication from dispensers, i.e. making sure that medication is correctly delivered to patients (medication containers [A61J 1/00](#)-; dispensers activated by money or the like [G07F](#))}
- G06F 19/3481
- • • {Computer-assisted prescription or delivery of treatment by physical action, e.g. surgery or physical exercise (surgical instruments, devices or methods [A61B 17/00](#)-; apparatuses for physical training [A63B](#))}
- G06F 19/70
- {Chemoinformatics, i.e. data processing methods or systems for the retrieval, analysis, visualisation, or storage of physicochemical or structural data of chemical compounds (in silico methods of screening virtual chemical libraries [C40B 30/02](#)-; in silico or mathematical methods of creating virtual chemical libraries [C40B 50/02](#)-; computer-aided design per se [G06F 17/50](#)-; bioinformatics [G06F 19/10](#)-; processing of 2D or 3D images [G06T](#))}
- WARNING**  
Subgroups [G06F 19/701](#) - [G06F 19/709](#) are not complete pending reclassification; see also group [G06F 19/70](#)-.
- G06F 19/706
- • {for drug design with the emphasis on a therapeutic agent, e.g. ligand-biological target interactions, pharmacophore generation (drug targeting using protein structure data [G06F 19/16](#)-; binding site identification [G06F 19/18](#))}
- G06F 21/00**
- Security arrangements for protecting computers, components thereof, programs or data against unauthorised activity {(address-based protection against unauthorised use of memory [G06F 12/14](#)-; record carriers for use with machines and with at least a part designed to carry digital markings [G06K 19/00](#)-; preventing unauthorised reproduction or copying of disk-type recordable media [G11B 20/00](#)-; secret or secure communication [H04L 9/00](#)-; digital watermarking on images [H04N 1/32](#)-; protection in video systems or pay television [H04N 7/16](#))}**

- U G06F 21/70      · {Protecting specific internal or peripheral components, in which the protection of a component leads to protection of the entire computer}
- G06F 21/78      · · {to assure secure storage of data (address-based protection against unauthorised use of memory [G06F 12/14](#); record carriers for use with machines and with at least a part designed to carry digital markings [G06K 19/00](#))}
- U G06F 2221/00    **Indexing scheme relating to security arrangements for protecting computers, components thereof, programs or data against unauthorised activity (not used)**
- G06F 2221/03      · Indexing scheme relating to [G06F 21/50](#), monitoring users, programs or devices to maintain the integrity of platforms
- G06F 2221/07      · Indexing scheme relating to [G06F 21/10](#), protecting distributed programs or content

**Project: N/A (G06G)**

- U G06G 7/00      **Devices in which the computing operation is performed by varying electric or magnetic quantities**
- U G06G 7/12      · Arrangements for performing computing operations, e.g. operational amplifiers (amplifiers in general [H03F](#); {adapted for telemeasuring or for indicating or recording the results of the measurement [G01D 1/10](#), [G01D 1/16](#); for fuzzy computing [G06N 7/02](#)})
- G06G 7/22      · · for evaluating trigonometric functions; for conversion of co-ordinates; for computations involving vector quantities (trigonometric computations using simultaneous equations [G06G 7/34](#) {for computations in the complex plane; [G06G 7/20](#), [G06G 7/28](#) take precedence})
- U G06G 7/48      · Analogue computers for specific processes, systems or devices, e.g. simulators
- G06G 7/57      · · for fluid flow ([G06G 7/50](#) takes precedence); {-for distribution networks}
- G06G 7/58      · · for chemical processes ([G06G 7/75](#) takes precedence); {-for physico-chemical processes; for metallurgical processes}
- G06G 7/60      · · for living beings, e.g. their nervous systems; {-for problems in the medical field}
- G06G 7/68      · · for civil engineering structures, e.g. beam, strut, girder, {-elasticity computation}
- G06G 7/70      · · for vehicles, e.g. to determine permissible loading of ships, {-centre of gravity, necessary fuel}
- G06G 7/75      · · for component analysis, e.g. of mixtures, of colours ([G06G 7/122](#) takes precedence; {-gas chromatography [G01N 30/00](#)})

**Project: N/A (G06J)**

G06J

**HYBRID COMPUTING ARRANGEMENTS (optical hybrid computing devices [G06E 3/00](#); {-fuzzy computing [G06N 7/02](#)}; neural networks for image data processing [G06T](#); analog/digital conversion, in general [H03M 1/00](#))**

NOTE

In this subclass, the following expression is used with the meaning indicated:

- "hybrid computing arrangement" is an arrangement in which part of the computation is digital and part is analogue.

**Project: N/A (G06K)**

- U G06K 1/00      **Methods or arrangements for marking the record carrier in digital fashion (interpreting [G06K 3/02](#))**

- G06K 1/12 · otherwise than by punching (printing in general [B41](#)-, e.g. [B41J](#))
- G06K 1/121 · · {by printing code marks (applying code marks to labels [B65C 9/46](#)-, marking or coding completed packages [B65B 61/26](#))}
- G06K 1/128 · · {by electric registration, e.g. electrolytic, spark erosion (recording apparatus for measuring instruments [G01D 15/06](#)-, information storage in general [G11](#))}
- U G06K 7/00** **Methods or arrangements for sensing record carriers, {e.g. for reading patterns}(G06K 9/00 takes precedence)**
- G06K 7/0013 · {by galvanic contacts, e.g. card connectors for ISO-7816 compliant smart cards or memory cards, e.g. SD card readers (connectors in general [H01R 13/00](#)-, connectors for SIM cards used in mobile phones or the like [H04B 1/3816](#))}
- U G06K 7/10 · by electromagnetic radiation, e.g. optical sensing; by corpuscular radiation
- U G06K 7/10009 · · {sensing by radiation using wavelengths larger than 0.1 mm, e.g. radio-waves or microwaves}
- NOTE**  
This group covers electromagnetic interrogation as radiated by the antenna of an interrogation device while interrogating a plurality of wireless electronic memory record carriers, e.g. non-contact smart cards, RFID tags or labels, or transponders
- G06K 7/10257 · · · {arrangements for protecting the interrogation against piracy attacks (computer security in general [G06F 21/00](#)-, jamming of communication, countermeasures [H04K 3/00](#)-, secret communication [H04K 1/00](#))}
- U G06K 7/10366 · · · {the interrogation device being adapted for miscellaneous applications}
- U G06K 7/10415 · · · · {the interrogation device being fixed in its position, such as an access control device for reading wireless access cards, or a wireless ATM (banking machines in general [G07F 19/00](#))}
- U G06K 7/10425 · · · · · {the interrogation device being arranged for interrogation of record carriers passing by the interrogation device}
- G06K 7/10435 · · · · · · {the interrogation device being positioned close to a conveyor belt or the like on which moving record carriers are passing (conveying in accordance with bodily destination marks, see [B65G 47/46](#)-, sorting of objects carrying identity markings, see [B07C 5/34](#))}
- U G06K 7/10544 · · {by scanning of the records by radiation in the optical part of the electromagnetic spectrum}
- U G06K 7/10821 · · · {further details of bar or optical code scanning devices}
- G06K 7/10861 · · · · {sensing of data fields affixed to objects or articles, e.g. coded labels (postal sorting [B07C 3/14](#)-, conveying articles [B65G 47/48](#))}
- G06K 9/00** **Methods or arrangements for reading or recognising printed or written characters or for recognising patterns, e.g. fingerprints (processing or analysis of tracks of nuclear particles [G01T 5/02](#)-, {-information retrieval [G06F 17/30](#)-, medical diagnosis [G06F 19/34](#)-, recognition of molecular sequences [G06F 19/70](#)-, radio frequency identification [G06K 7/00](#)-, recognition of barcodes and similar code images [G06K 7/10](#)-, computer systems based on specific computational models [G06N](#)-, image analysis, inspection, positioning or tracking [G06T 7/00](#)-, recognition of acoustic speech signals [G10L 15/00](#)-, acoustic speaker identification [G10L 17/00](#))}**

**NOTES**

- In this group, the following term is used with the meaning indicated:
  - "recognising" includes several functions such as extracting features, clustering, classifying or matching.
- IPC subgroups [G06K 9/20](#)-, [G06K 9/36](#)-, [G06K 9/62](#) and [G06K 9/74](#) refer to methods or arrangements that can be applied to a pattern independently of its

nature or to that are applied to specific patterns not included in the subgroups in the range [G06K 9/00006](#) to [G06K 9/00852](#). The CPC subgroups in the range [G06K 9/00006](#) to [G06K 9/00852](#) refer to the same methods or arrangements when applied or specially adapted to the specific patterns to which these subgroups relate.

3. The present group does not cover the use of recognised patterns in specific applications, e.g. the use of traced gestures recognised as commands to be input to a computer is covered by the groups under [G06F 3/00](#)

- G06K 9/00006
  - {Acquiring or recognising fingerprints or palmprints (non-computerised biometric identification [A61B 5/00](#); means for preventing unauthorised use of vehicles [B60R 25/00](#); security in computer systems [G06F 21/00](#); secure access to buildings [G07C 9/00](#); secret or secure communication [H04L 9/00](#); means for preventing unauthorised telephone calls [H04M 1/667](#))}
- U G06K 9/00013
  - • {Image acquisition (materials for developing fingerprints, means for visual identification [A61B 5/1172](#))}
- G06K 9/00026
  - • • {by combining adjacent partial images (e.g. slices) to create a composite input or reference pattern; tracking a sweeping finger movement (for specific swipe sensing hardware the groups [G06K 9/0002](#), [G06K 9/00033](#), [G06K 9/0004](#) and [G06K 9/00046](#) take precedence)}
- G06K 9/00053
  - • • {Protecting the fingerprint sensor against damage caused by the finger (protecting semiconductor devices against mechanical damage in general [H01L 23/562](#); encapsulations of semiconductor devices [H01L 23/28](#); protecting semiconductor devices against electrostatic discharges in general [H01L 23/60](#), [H01L 27/0248](#))}
- G06K 9/00127
  - {Acquiring and recognising microscopic objects, e.g. biological cells and cellular parts (apparatus for measuring microbiological properties [C12M 1/34](#); optical analysis of chemical or physical properties of particles, e.g. investigation of dimensions [G01N 15/14](#); biomedical image inspection [G06T 7/0012](#))}
- G06K 9/00134
  - • {Acquisition, e.g. centering the image field (fluorescence analysis [G01N 21/64](#); scanning microscopes [G02B 21/002](#); processing of multiple slides [G02B 21/365](#))}
- G06K 9/00201
  - {Recognising three-dimensional objects, e.g. using range or tactile information (arrangements for measuring depth [G01B 11/22](#); for measuring curvatures [G01B 11/24](#); processing image data for depth or shape recovery [G06T 7/0051](#); registration of range data [G06T 7/0024](#))}
- U G06K 9/00221
  - {Acquiring or recognising human faces, facial parts, facial sketches, facial expressions}
- U G06K 9/00228
  - • {Detection; Localisation; Normalisation}
- G06K 9/00234
  - • • {using pixel segmentation or colour matching (segmentation for general image processing [G06T 7/0079](#); colour analysis [G06T 7/408](#))}
- U G06K 9/00268
  - • {Feature extraction; Face representation}
- G06K 9/00275
  - • • {Holistic features and representations, i.e. based on the facial image taken as a whole (statistical feature extraction in general [G06K 9/6232](#); matching eigenfaces [G06K 9/00288](#))}
- U G06K 9/00288
  - • {Classification, e.g. identification}
- G06K 9/00295
  - • • {of unknown faces, i.e. recognising the same non-enrolled faces, e.g. recognising the unknown faces across different face tracks (tracking in general [G06T 7/20](#); detecting affinities between people using analysis of image collections [G06K 9/00677](#))}

- G06K 9/00335 • {Recognising movements or behaviour, e.g. recognition of gestures, dynamic facial expressions; Lip-reading (using movements or postures of body parts for inputting data to a computer [G06F 3/00](#); static facial expressions [G06K 9/00221](#); recognition of scene events [G06K 9/00624](#); analysis of movement [G06T 7/20](#); lip-reading assisted speech recognition [G10L 15/24](#))}
- G06K 9/00362 • {Recognising human body or animal bodies, e.g. vehicle occupant, pedestrian; Recognising body parts, e.g. hand (passenger detection systems [B60N 2/002](#); handprints [G06K 9/00006](#); face and facial components [G06K 9/00221](#); eyes [G06K 9/00597](#); determining position of passenger [G06T 7/004](#))}
- G06K 9/00402 • {Recognising digital ink, i.e. recognising temporal sequences of handwritten position coordinates ([G06K 9/00154](#) takes precedence; interaction arrangements using gestures traced on a digitiser [G06F 3/04883](#); acquisition of digital ink as far as essentially related to recognition [G06K 9/222](#))}
- U G06K 9/00442 • {Document analysis and understanding; Document recognition}
- G06K 9/00449 • • {Layout structured with printed lines or input boxes, e.g. business forms, tables (tables without printed lines or boxes [G06K 9/00463](#); identification of document type using identifier or marker [G06K 9/2054](#))}
- G06K 9/00496 • {Recognising patterns in signals and combinations thereof (signature verification [G06K 9/00154](#); analysing specific medical signals, e.g. bioelectric signals, blood pressure [A61B 5/00](#); processing radar and similar signals [G01S](#); analysis of chromatographic signals [G01N 30/86](#); processing seismic signals [G01V 1/28](#), [G01V 1/46](#); acoustic speech processing [G10L](#); transmission systems [H04B 1/00](#))}
- G06K 9/00503 • • {Preprocessing, e.g. filtering (electrical circuits for filtering [H03H](#); adaptive filters [H03H 21/00](#); convolution-based filters [H03H 17/00](#), [H03H 21/00](#))}
- G06K 9/00523 • • {Feature extraction (arrangements for measuring frequencies and for spectral analysis [G01R 23/16](#); algorithms for spectral analysis, digital electric mathematical transforms per se [G06F 17/14](#))}
- G06K 9/00536 • • {Classification; Matching (digital electric correlation [G06F 17/15](#); electronic classification and matching per se [G06K 9/62](#))}
- G06K 9/0057 • • {Source localisation; Inverse modelling (electroencephalography [A61B 5/0476](#); source separation [G06K 9/624](#); image reconstruction from projection, e.g. tomography [G06T 11/003](#); beam formers in general [G10K 11/34](#); radio transmission systems for beam forming [H04B 7/04](#))}
- G06K 9/00624 • {Recognising scenes, i.e. recognition of a whole field of perception; recognising scene-specific objects (image retrieval [G06F 17/30244](#); video retrieval [G06F 17/30781](#); image analysis and image segmentation, e.g. pixel labelling [G06T 7/00](#); alarm systems [G08B](#); traffic control [G08G](#); pictorial communication [H04N](#))}
- G06K 9/00711 • • {Recognising video content, e.g. extracting audiovisual features from movies, extracting representative key-frames, discriminating news vs. sport content (information retrieval in video databases [G06F 17/30781](#); recognition of movements or behaviour [G06K 9/00335](#); extracting overlay text [G06K 9/3266](#); fusion techniques [G06K 9/6288](#); speech recognition [G10L 15/00](#); indexing of audio and video or audiovisual data on record media using extracted features or characteristics [G11B 27/28](#))}
- G06K 9/00718 • • • {Higher-level, semantic clustering, classification or understanding of video scenes, e.g. detection, labelling or Markovian modelling of sport events or news items (segmenting video sequences [G06K 9/00765](#); clustering techniques per se [G06K 9/6218](#); classification techniques per se [G06K 9/6267](#))}

- G06K 9/00744
  - • • {Extracting features from the video content, e.g. video "fingerprints", or characteristics, e.g. by automatic extraction of representative shots or key frames (segmentation for general image processing [G06T 7/0079](#); use of extracted content features in video information retrieval [G06F 17/30784](#); automated annotation of image based on image contents [G06K 9/00671](#); determination of region of interest for recognition [G06K 9/3233](#); extraction of image features or characteristics [G06K 9/46](#); determining representative patterns [G06K 9/6255](#))}
- G06K 9/00751
  - • • • {Detecting suitable features for summarising video content (presentation in the form of a video summary [G06F 17/30843](#); editing video summary [G11B 27/034](#); programmed access to video content [G11B 27/105](#))}
- G06K 9/00758
  - • • {Matching video sequences (aligning the image field [G06K 9/32](#); image matching techniques [G06K 9/00201](#); [G06K 9/62](#); registration of image sequences [G06T 7/0038](#))}
- G06K 9/00765
  - • • • {Segmenting video sequences, i.e. computational techniques such as parsing or cutting the sequence, low-level clustering or determining units such as shots and scenes (segmentation of touching or overlapping patterns in the image field [G06K 9/34](#); segmentation for general image processing [G06T 7/0079](#); segmentation of an image based on motion information [G06T 7/2006](#); picture signal circuitry for scene change detection [H04N 5/147](#))}
- G06K 9/00771
  - • • {Recognising scenes under surveillance, e.g. with Markovian modelling of scene activity ([G06K 9/00785](#) takes precedence; recognition of movements or behaviour [G06K 9/00335](#); motion analysis using general image processing [G06T 7/20](#); intruder alarms using image scanning and comparing systems [G08B 13/194](#); circuitry for movement detection and estimation for pictorial communication [H04N 5/144](#); closed circuit television systems [H04N 7/18](#))}
- G06K 9/00778
  - • • • {Recognition or static or dynamic crowd images, e.g. recognition of crowd congestion (recognition of individual pedestrians [G06K 9/00369](#); recognition of whole body movements [G06K 9/00342](#); counting mechanisms [G06M](#); analysis of motion [G06T 7/20](#); individual entry or exit registers [G07C 9/00](#))}
- G06K 9/00785
  - • • {Recognising traffic patterns acquired by static cameras (measuring or analysing of parameters relative to traffic conditions [G08G 1/0104](#); analysing traffic situation by means of optical sensors [G08G 1/04](#))}
- G06K 9/00791
  - • • {Recognising scenes perceived from the perspective of a land vehicle, e.g. recognising lanes, obstacles or traffic signs on road scenes (vehicle signalling devices [B60Q 9/005](#); [B60Q 1/525](#); viewing systems for vehicles being directed to the improvement of the driver's vision [B60R 1/00](#); means for informing the driver [B60W 50/14](#); steering aid displays [B62D 15/02](#); control of position of land vehicles using camera and image processing [G05D 1/0246](#); traffic control for road vehicles, e.g. involving several vehicles or traffic rules [G08G 1/00](#))}
- U G06K 9/00832
  - • • {Recognising scenes inside a vehicle, e.g. related to occupancy, driver state, inner lighting conditions}
- G06K 9/00845
  - • • • {Recognising the driver's state or behaviour, e.g. attention, drowsiness (anti-dozing alarms [G08B 21/06](#); safety device responsive to condition of driver [B60K 28/02](#); psychotechnic devices for vehicle drivers [A61B 5/18](#))}
- G06K 9/00885
  - • • {Biometric patterns not provided for under [G06K 9/00006](#); [G06K 9/00154](#); [G06K 9/00335](#); [G06K 9/00362](#); [G06K 9/00597](#); Biometric specific functions not specific to the kind of biometric}
- U G06K 9/20
  - Image acquisition

- G06K 9/2054
    - • {Selective acquisition/locating/processing of specific regions, e.g. highlighted text, fiducial marks, predetermined fields, document type identification ([G06K 9/2018](#)-, [G06K 9/209](#) take precedence; recognising the document type with the paragraph layout [G06K 9/00442](#)-, recognising the document type with the layout of printed lines or input boxes [G06K 9/00449](#))}
  - U G06K 9/22
    - • using hand-held instruments
  - G06K 9/222
    - • • {the instrument generating sequences of position coordinates corresponding to handwriting; preprocessing or recognising digital ink (pen or stylus type devices inputting position [G06F 3/03545](#)-, light pens [G06F 3/03542](#)-, interaction arrangements using gestures traced on a digitiser [G06F 3/04883](#))}
  - U G06K 9/32
    - • Aligning or centering of the image pick-up or image-field
  - G06K 9/3216
    - • • {by locating a pattern ([G06K 9/3208](#)-, [G06K 9/3275](#) take precedence; centering within a document with a marking [G06K 9/2063](#))}
  - G06K 9/34
    - • Segmentation of touching or overlapping patterns in the image field {(segmentation by quantisation, e.g. thresholding, [G06K 9/38](#)-, edge detection for image feature extraction [G06K 9/4604](#)-, extraction of connected components or edge linking [G06K 9/4638](#)-, segmentation or edge detection for general image processing [G06T 7/0079](#))}
  - G06K 9/342
    - • • {Cutting or merging image elements, e.g. region growing, watershed, clustering-based techniques (smoothing or thinning of patterns [G06K 9/44](#)-, clustering techniques [G06K 9/6218](#)-, region-based segmentation for general image processing [G06T 7/0081](#))}
  - G06K 9/346
    - • • {Removing patterns interfering with the pattern to be recognised, such as ruled lines, underlines (extracting table structures [G06K 9/00442](#)-, document recognition [G06K 9/2054](#))}
  - U G06K 9/36
    - Image preprocessing, i.e. processing the image information without deciding about the identity of the image (image data processing or generation, in general [G06T](#))
- NOTE**  
Group [G06K 9/58](#) takes precedence over groups [G06K 9/38](#) to [G06K 9/54](#)
- G06K 9/38
    - • Quantising the analogue image signal {e.g. histogram thresholding for discrimination between background and foreground patterns (region-based segmentation of touching or overlapping patterns [G06K 9/342](#)-, image segmentation for general image processing [G06T 7/0081](#))}
  - G06K 9/40
    - • Noise filtering {(restoration for general image processing [G06T 5/001](#)-, morphologic operations for general image enhancement [G06T 5/30](#))}
  - G06K 9/44
    - • Smoothing or thinning of the pattern {(restoration for general image processing [G06T 5/001](#)-, morphologic operations for general image enhancement [G06T 5/30](#))}
  - G06K 9/46
    - • Extraction of features or characteristics of the image {(segmentation of touching or overlapping patterns [G06K 9/34](#)-, edge detection for feature extraction [G06K 9/4604](#)-, segmentation or edge detection for general image processing [G06T 7/0079](#))}
  - G06K 9/4604
    - • • {Detecting partial patterns, e.g. edges or contours, or configurations, e.g. loops, corners, strokes, intersections (extracting features by contour coding [G06K 9/48](#)-, edge-based segmentation for general image processing [G06T 7/0083](#)-, edge detection for general image processing [G06T 7/0085](#))}
  - U G06K 9/4609
    - • • • {by matching or filtering}
  - G06K 9/4614
    - • • • {filtering with Haar-like subimages, e.g. computation thereof with the integral image technique (biologically-inspired filters such as Gabor wavelets or local ICA kernels [G06K 9/4619](#)-, local approaches in face detection or representation [G06K 9/00248](#)-, [G06K 9/00281](#))}

- G06K 9/4638
  - . . . {by analysing connectivity relationships of elements of the pattern, e.g. by edge linking, by connected component or neighbouring slice analysis, by Markov Random Field [MRF] analysis (segmentation of touching or overlapping patterns involving probabilistic approaches [G06K 9/34](#); MRF and other Markovian models in general [G06K 9/6296](#); computing shortest geodesic path [G06K 9/6215](#); segmentation involving probabilistic approaches for general image processing [G06T 7/0087](#))}
- U G06K 9/4642
  - . . . {by performing operations within image blocks or by using histograms ([G06K 9/4652](#) and [G06K 9/4671](#) take precedence; matching image histograms [G06K 9/6212](#))}
- G06K 9/4647
  - . . . {summing image-intensity values; Projection and histogram analysis (intersections with "scanning" patterns [G06K 9/50](#); [G06K 9/4652](#) takes precedence)}
- G06K 9/4652
  - . . . {related to colour ([G06K 9/4671](#) takes precedence; colour-based face detection [G06K 9/00234](#); colour analysis in general [G06T 7/408](#); region-based segmentation for general image processing [G06T 7/0081](#); colour conversion and processing [H04N 1/46](#); coding colour pictures signals using a reduced set of representative colours [H04N 1/644](#))}
- G06K 9/4661
  - . . . {related to illumination properties, e.g. according to a reflectance or lighting model (depth from shading [G06T 7/0053](#); image rendering with lighting effects [G06T 15/50](#))}
- G06K 9/4671
  - . . . {Extracting features based on salient regional features, e.g. Scale Invariant Feature Transform [SIFT] keypoints (determination of region of interest for recognition [ROI] [G06K 9/3233](#); extraction of specific shape primitives, e.g. corner or loop, or of configurations thereof, [G06K 9/4604](#); biologically-inspired systems integrating saliency maps, e.g. for modelling visual attention [G06K 9/4628](#); global invariant features [G06K 9/52](#))}
- U G06K 9/60
  - . Combination of image acquisition and preprocessing functions
- G06K 9/605
  - . {the combination being locally implemented within the sensing arrangement, e.g. artificial retina (receptive fields [G06K 9/4619](#); enhancement in image sensors [H04N 3/15](#); [H04N 5/217](#); [H04N 5/232](#); [H04N 5/235](#))}
- G06K 9/62
  - . Methods or arrangements for recognition using electronic means (learning machines [G06F 15/18](#); digital correlation [G06F 17/15](#); analogue correlation [G06G 7/19](#))
- U G06K 9/6201
  - . {Matching; Proximity measures}
- G06K 9/6202
  - . . . {Comparing pixel values or logical combinations thereof, or feature values having positional relevance, e.g. template matching (specially adapted for image alignment [G06T 7/0024](#); specially adapted for position determination [G06T 7/004](#); specially adapted for the calculation of depth from stereo images [G06T 7/0051](#); specially adapted for image segmentation [G06T 7/0079](#); specially adapted for the analysis of motion [G06T 7/20](#))}
- U G06K 9/6203
  - . . . {Shifting or otherwise transforming the patterns to accommodate for positional errors}
- G06K 9/6204
  - . . . . {Matching of contours ([G06K 9/6206](#); [G06K 9/6211](#) take precedence)}
- G06K 9/6206
  - . . . . {involving a deformation of the sample or reference pattern; Elastic matching (segmentation of touching or overlapping patterns involving deformable models [G06K 9/34](#); segmentation involving deformable models for general image processing [G06T 7/0089](#))}
- U G06K 9/6217
  - . {Design or setup of recognition systems and techniques; Extraction of features in feature space; Clustering techniques; Blind source separation (regression analysis [G06F 17/18](#))}
- U G06K 9/6218
  - . . . {Clustering techniques}

- U G06K 9/622                    . . . . {Non-hierarchical partitioning techniques}
- G06K 9/6224                 . . . . . {based on graph theory, e.g. Minimum Spanning Trees [MST], graph cuts, spectral clustering techniques (segmentation of touching or overlapping patterns involving graph-based approaches [G06K 9/342](#); graph embedding [G06K 9/6252](#); segmentation involving graph-based approaches for general image processing [G06T 7/0093](#))}
- U G06K 9/6267                 . . {Classification techniques}
- U G06K 9/6268                 . . . {relating to the classification paradigm, e.g. parametric or non-parametric approaches}
- G06K 9/6277                 . . . . {based on a parametric (probabilistic) model, e.g. based on Neyman-Pearson lemma, likelihood ratio, Receiver Operating Characteristic [ROC] curve plotting a False Acceptance Rate [FAR] versus a False Reject Rate [FRR] (segmentation of touching or overlapping patterns involving probabilistic approaches [G06K 9/34](#); image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields techniques, [G06K 9/4638](#); segmentation involving probabilistic approaches for general image processing [G06T 7/0087](#))}
- G06K 9/6288                 . . {Fusion techniques, i.e. combining data from various sources, e.g. sensor fusion (bootstrap techniques, e.g. boosting [G06K 9/6256](#); data unmixing [G06K 9/624](#); image matching [G06K 9/64](#); fusion of acoustic speaker inputs [G10L 17/10](#))}
- G06K 9/6289                 . . . {of input or preprocessed data (imaging spectrometers [G01J 3/2823](#); image fusion in general and biomedical image fusion [G06T 5/50](#); processing and conversion of colour signals [H04N 1/46](#))}
- U G06K 9/6296                 . . {Graphical models, e.g. Bayesian networks (probabilistic networks per se [G06N 7/005](#))}
- G06K 9/6297                 . . . {Markov models and related models, e.g. semi-Markov models; Markov random fields; networks embedding Markov models (segmentation of touching or overlapping patterns involving probabilistic approaches [G06K 9/34](#); image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields, [G06K 9/4638](#); application of Markov models to acoustic speech recognition [G10L 15/00](#); segmentation involving probabilistic approaches for general image processing [G06T 7/0087](#))}
- G06K 9/74                    . Arrangements for recognition using optical reference masks (optical analogue correlation [G06E 3/00](#); {arrangements for optically extracting non-holistic features, e.g. optical wedge-ring detectors, [G06K 9/58](#))}
- G06K 9/741                  . . {using frequency domain filters, e.g. Fourier masks implemented on spatial light modulators (spatial light modulators per se [G02B 26/00](#), [G02F](#))}
- G06K 11/00**                 **Methods or arrangements for graph-reading or for converting the pattern of mechanical parameters, e.g. force or presence, into electrical signal (combined with character or pattern recognition [G06K 9/00](#); feelers for copying devices on machine tools [B23Q 35/00](#); arrangements for measuring areas [G01B](#); measuring force [G01L](#); adapted as input devices to computers [G06F 3/00](#); systems for transmitting the position of an object with respect to a predetermined reference system, e.g. tele-autographic system, [G08C 21/00](#))**

WARNING

This group and its subgroups are no longer used for the classification of new documents as from 1 January 2006. Documents relating to methods and arrangements for input to a computer are classified under [G06F 3/033](#) and [G06F 3/041](#)

- G06K 13/00** Conveying record carriers from one station to another, e.g. from stack to punching mechanism (transport devices in general [B65G](#); handling thin or filamentary material in general [B65H](#))
- G06K 13/18 · the record carrier being longitudinally extended, e.g. punched tape (features of interest apart from data processing [G11B](#); magnetic-tape drive [G11B 15/00](#))
- G06K 15/00** Arrangements for producing a permanent visual presentation of the output data {, e.g. computer output printers} (printing or plotting combined with another operation, e.g. with conveying, [G06K 17/00](#) {; construction of printing heads [B41J 2/00](#); special arrangements for scanning and reproduction of pictures involving their transmission, e.g. facsimile [H04N 1/00](#); for photocomposing [B41B 19/00](#)})
- U G06K 15/02 · using printers
- G06K 15/18 · · {Conditioning data for presenting it to the physical printing elements (for data conditioning specific to a type of printer see subgroups [G06K 15/028](#) to [G06K 15/14](#); print job translation or parsing [G06F 3/1244](#))}
- U G06K 15/1867 · · · {Post-processing of the composed and rasterized print image (Scanning, transmission or reproduction of documents [H04N 1/00](#))}
- U G06K 15/1872 · · · · {Image enhancement}
- G06K 15/1881 · · · · {Halftoning (halftoning of still images in general [H04N 1/405](#)-, [H04N 1/52](#))}
- U G06K 15/40 · {Details not directly involved in printing, e.g. machine management, management of the arrangement as a whole or of its constitutive parts (computer driven print job management [G06F 3/1237](#))}
- G06K 15/4055 · · {Managing power consumption, e.g. standby mode (computer driven power saving management for a printer [G06F 3/1221](#)-, power saving in a data processing device in general [G06F 1/32](#))}
- U G06K 17/00** Methods or arrangements for effecting co-operative working between equipments covered by two or more of the preceding main groups, e.g. automatic card files incorporating conveying and reading operations
- G06K 17/0016 · {Selecting or retrieving of images by means of their associated code-marks, e.g. coded microfilm or microfiche (microfilm reading [G03B 21/11](#)-, computers therefor [G06F 17/30](#)-, teaching devices [G09B 5/02](#)-, accessing record carriers [G11B 27/002](#)-, static digital stores using optical elements [G11C 13/04](#)-, intermediate storage of facsimile picture signals [H04N 1/21](#))}
- G06K 19/00** Record carriers for use with machines and with at least a part designed to carry digital markings (record carriers adapted for controlling specific machines, see the appropriate subclass for the machine, e.g. [B23Q](#), [D03C](#), [G10F](#), [H04L](#); form printing [B41](#); file cards [B42F 19/00](#)-, record carriers in general [G11](#))
- U G06K 19/02 · characterised by the selection of materials, e.g. to avoid wear during transport through the machine
- G06K 19/025 · · {the material being flexible or adapted for folding, e.g. paper or paper-like materials used in luggage labels, identification tags, forms or identification documents carrying RFIDs (methods for testing the genuineness of valuable papers, e.g. banknotes or passports [G07D 7/00](#)-, constructional features of booklets and the like [B42D](#))}
- U G06K 19/06 · characterised by the kind of the digital marking, e.g. shape, nature, code
- G06K 19/06009 · · {with optically detectable marking ([G06K 19/063](#)-, [G06K 19/08](#) take precedence)}

- U G06K 19/067
  - • Record carriers with conductive marks, printed circuits or semiconductor circuit elements, e.g. credit or identity cards {also with resonating or responding marks without active components}
- U G06K 19/07
  - • • with integrated circuit chips
- U G06K 19/0716
  - • • • {at least one of the integrated circuit chips comprising a sensor or an interface to a sensor}
- G06K 19/0718
  - • • • • {the sensor being of the biometric kind, e.g. fingerprint sensors (fingerprint sensors in general, see [G06K 9/00](#); biometric access-control systems in general, see [G07C 9/00](#))}
- G06K 19/0719
  - • • • • {at least one of the integrated circuit chips comprising an arrangement for application selection, e.g. an acceleration sensor or a set of radio buttons (application selection on smart cards using pure software control, see [G07F 7/10](#))}
- U G06K 19/073
  - • • • Special arrangements for circuits, e.g. for protecting identification code in memory (protection against unauthorised use of computer memories [G06F 12/14](#))
- U G06K 19/07309
  - • • • • {Means for preventing undesired reading or writing from or onto record carriers}
- G06K 19/07318
  - • • • • • {by hindering electromagnetic reading or writing (jamming of communication, counter-measures [H04K 3/00](#); secret communication [H04K 1/00](#))}
- U G06K 19/07345
  - • • • • • {by activating or deactivating at least a part of the circuit on the record carrier, e.g. ON/OFF switches}
- G06K 19/07354
  - • • • • • • {by biometrically sensitive means, e.g. fingerprint sensitive (fingerprint sensors in general [G06K 9/00006](#); biometrically activated access control [G07C 9/00071](#))}
- U G06K 19/077
  - • • • • Constructional details, e.g. mounting of circuits in the carrier
- U G06K 19/07749
  - • • • • • {the record carrier being capable of non-contact communication, e.g. constructional details of the antenna of a non-contact smart card}
- U G06K 19/07758
  - • • • • • • {arrangements for adhering the record carrier to further objects or living beings, functioning as an identification tag}
- G06K 19/07762
  - • • • • • • • {the adhering arrangement making the record carrier wearable, e.g. having the form of a ring, watch, glove or bracelet (record carriers for insertion in the human body for medical purposes [A61B 19/00](#); record carriers adapted for attachment to animals [A01K 11/00](#))}
- U G06K 19/08
  - • using markings of different kinds {or more than one marking of the same kind} in the same record carrier, e.g. one marking being sensed by optical and the other by magnetic means
- G06K 19/10
  - • • at least one kind of marking being used for authentication, e.g. of credit or identity cards ({identification cards not to be read by a machine [B42D 25/00](#); } verification of coded identity or credit cards in mechanisms actuated by them [G07F 7/12](#) {; printed identity or similar identification-bearing cards not for use with a machine [B42D 25/00](#))}

**Project: N/A (G06Q)****G06Q**

**DATA PROCESSING SYSTEMS OR METHODS, SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES, NOT OTHERWISE PROVIDED FOR**

NOTES

1. Groups [G06Q 10/00](#) to [G06Q 50/00](#) and [G06Q 99/00](#) only cover systems or methods that involve significant data processing operations, i.e. data processing operations that need to be carried out by a technological, e.g. computing, system or device. Group [G06Q 90/00](#) covers systems or methods that do not involve significant data processing, when both of the following conditions are fulfilled:

- the systems or methods are specially adapted for the purposes mentioned in the subclass title or the titles of groups [G06Q 10/00](#) to [G06Q 50/00](#); and
- the systems or methods cannot be classified elsewhere in the IPC, for example by applying the principles described in paragraph 96 of the Guide.

When classifying such systems or methods in group [G06Q 90/00](#), additional classification may be made in the most closely related group of this or any other subclass, if this classification gives information about the application of the systems or methods that could be of interest for searching. Such non-obligatory classification must be given as "additional information".

2. When classifying in groups [G06Q 10/00](#) to [G06Q 40/00](#), systems or methods that are specially adapted for a specific business sector must also be classified in group [G06Q 50/00](#), when the special adaptation is determined to be novel and non-obvious.

3. In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.

WARNING

[G06Q](#) has been largely refined to bring most of the former USPC 705 groups into ECLA, prior to CPC launch. Therefore, most of the new [G06Q](#) subdivisions are not complete pending reclassification. Users are invited to systematically consult also the hierarchically higher groups, up to the first valid IPC group. For example, while searching in [G06Q 50/2053](#), it is appropriate to consult also [G06Q 50/205](#) and [G06Q 50/20](#)

**U G06Q 10/00****Administration; Management**

G06Q 10/10

- Office automation, e.g. computer aided management of electronic mail or groupware (electronic mail network systems [H04L 12/58](#); electronic mail protocols [H04L 29/06](#)); Time management, e.g. calendars, reminders, meetings or time accounting {(organizing, planning, scheduling or allocating time [G06Q 10/06](#))}

G06Q 10/107

- {Computer aided management of electronic mail (electronic mail network systems [H04L 12/58](#); electronic mail protocols [H04L 29/06](#))}

**G06Q 20/00**

**Payment architectures, schemes or protocols (apparatus for performing or posting payment transactions [G07F 7/08](#), [G07F 19/00](#); electronic cash registers [G07G 1/12](#))**

**U G06Q 30/00****Commerce, e.g. shopping or e-commerce**

U G06Q 30/02

- Marketing, e.g. market research and analysis, surveying, promotions, advertising, buyer profiling, customer management or rewards; Price estimation or determination

U G06Q 30/0283

- {Price estimation or determination}

G06Q 30/0284

- · · {Time or distance, e.g. usage of parking meters or taximeters}

**NOTE**

Constructional aspects of time meters are classified in groups [G07B 13/00](#)-, [G07B 15/00](#) or [G07F 17/24](#)

**Project: N/A (G06T)****U G06T 3/00****Geometric image transformation in the plane of the image, e.g. from bit-mapped to bit-mapped creating a different image**

G06T 3/0006

- {Affine transformations ([G06T 3/4038](#)-, [G06T 3/0068](#) take precedence)}

U G06T 3/40

- Scaling the whole image or part thereof

G06T 3/4007

- · {Interpolation-based scaling, e.g. bilinear interpolation ([G06T 3/4015](#)-, [G06T 3/403](#) take precedence)}

**U G06T 5/00****Image enhancement or restoration, e.g. from bit-mapped to bit-mapped creating a similar image**

U G06T 5/001

- {Image restoration}

G06T 5/002

- · {Denoising; Smoothing (noise processing or correction adapted to be used in an image pickup device containing and electronic image sensor [H04N 5/217](#)-, [H04N 5/357](#) to [H04N 5/365](#))}

G06T 5/005

- · {Retouching; Inpainting; Scratch removal (detecting, correction, reducing or removing defects, e.g. non-responsive pixels of solid state image sensors [H04N 5/367](#)-, scratch removal for cinematographic films scanned by electronic image sensor [H04N 5/253](#))}

G06T 5/006

- {Geometric correction (detecting, correcting, reducing or removing artefacts resulting only from the lens unit, e.g. flare, shading, vignetting or "cos<sup>4</sup>" [H04N 5/3572](#)-, correction of chromatic aberrations adapted to be used in an image pickup device containing and electronic image sensor [H04N 9/045](#))}

G06T 5/007

- {Dynamic range modification (applied in cameras using an electronic image sensor [H04N 5/2355](#)-, [H04N 5/2356](#))}

G06T 5/009

- · {Global, i.e. based on properties of the image as a whole (applied in cameras using an electronic image sensor [H04N 5/23229](#)-, [H04N 5/235](#))}

G06T 5/10

- by non-spatial domain filtering {(applied in cameras using an electronic image sensor [H04N 5/23229](#)-, [H04N 5/235](#)-, [H04N 5/253](#)-, [H04N 5/367](#))}

G06T 5/20

- by the use of local operators {(applied in cameras using an electronic image sensor [H04N 5/23229](#)-, [H04N 5/235](#)-, [H04N 5/253](#)-, [H04N 5/367](#))}

G06T 5/40

- by the use of histogram techniques {(applied in cameras using an electronic image sensor [H04N 5/23229](#)-, [H04N 5/235](#))}

G06T 5/50

- by the use of more than one image, e.g. averaging, subtraction {(applied in cameras using an electronic image sensor [H04N 5/23229](#)-, [H04N 5/235](#))}

**U G06T 7/00****Image analysis, e.g. from bit-mapped to non bit-mapped**

G06T 7/0022

- {Determining parameters from multiple pictures (depth or shape from stereo images [G06T 7/0075](#)-, depth or shape from multiple images [G06T 7/0065](#)-, stereo camera calibration [G06T 7/002](#))}

U G06T 7/0024

- · {Registration of images, e.g. alignment of images (image matching for pattern recognition or image matching in general [G06K 9/6203](#))}

U G06T 7/0028

- · · {using feature-based methods}

G06T 7/0032

- · · · {involving models (model matching for pattern recognition [G06K 9/6204](#)-, [G06K 9/6878](#))}

U G06T 7/004

- {Determining position or orientation of objects}

U G06T 7/0042

- · {using feature-based methods}

- G06T 7/0046
- • • {involving models (model matching for pattern recognition [G06K 9/6204](#)-, [G06K 9/6878](#))}
- G06T 7/0079
- {Segmentation or edge detection (image analysis based on texture or colour features [G06T 7/40](#)-, motion-based segmentation [G06T 7/2006](#)-, separation of touching or overlapping patterns for pattern recognition [G06K 9/34](#)-, extraction of features or characteristics of the image for pattern recognition [G06K 9/46](#))}
- G06T 7/0081
- • {Region-based segmentation} (image analysis based on texture or colour features [G06T 7/40](#)-, separation of touching or overlapping patterns by cutting or merging for pattern recognition [G06K 9/342](#)-, quantising the analogue image signal for pattern recognition [G06K 9/38](#)-, extraction of features or characteristics of the image related to colour for pattern recognition [G06K 9/4652](#))}
- G06T 7/0087
- • {involving probabilistic approaches, e.g. Markov Random Field [MRF] modeling (Markov models or related models or networks embedding Markov models for pattern recognition [G06K 9/6297](#)-, classification techniques based on a parametric, e.g. probabilistic, model [G06K 9/6277](#)-, detecting partial patterns or configurations by analysing connectivity relationship of elements of the pattern [G06K 9/4638](#))}
- U G06T 7/20
- Analysis of motion {(movement detection in television systems [H04N 5/144](#)-, motion estimation for digital video signal compression [H04N 19/51](#)-, recognizing scenes under surveillance and traffic patterns [G06K 9/00771](#), [G06K 9/00785](#))}
- WARNING
- This group is being reorganised. Documents dealing with shape from motion are reclassified to [G06T 7/0071](#) and a sub-group [G06T 7/2006](#) is created
- U G06T 7/2033
- • {using feature-based methods, e.g. corners, segments}
- G06T 7/2046
- • • {involving models (model matching for pattern recognition [G06K 9/6204](#)-, [G06K 9/6878](#))}
- WARNING
- Not complete pending reclassification; see also group [G06T 7/20](#)
- G06T 9/00**
- Image coding, e.g. from bit-mapped to non bit-mapped ({[H04N 1/00](#)-, [H04N 19/00](#) take precedence; } compression in general [H03M](#); compression for image communication [H04N](#))**

**Project: N/A (G07B)**

- G07B 1/00**
- Machines for printing and issuing tickets (printing mechanisms per se [B41](#)-, output mechanisms of digital computers [G06C 11/00](#))**
- G07B 9/00**
- Ticket punches (perforating pliers [B26F 1/36](#)-, marking record carriers in digital fashion by punching [G06K 1/02](#))**
- G07B 13/00**
- Taximeters (measuring distance travelled [G01C](#)-, measuring time [G04](#))**
- G07B 15/00**
- Arrangements or apparatus for collecting fares, tolls or entrance fees at one or more control points (handling coins or paper currency [G07D](#)-, apparatus for vending or hiring articles or services activated by coins, credit cards, paper currency or the like [G07F 7/00](#)-, [G07F 17/00](#))**

NOTES

1. Data processing aspects of payment systems or protocols relating to toll, entrance fee or fare collection, e.g. in road pricing or congestion charging, are also classified in [G06Q 20/00](#)-.
2. { This group covers also:
  - car rental systems;

- systems for reserving and using access tickets, e.g. check-in systems }

G07B 15/02 · taking into account a variable factor such as distance or time, e.g. for passenger transport, parking systems or car rental systems (G07B 15/06 takes precedence; taximeters G07B 13/00; parking meters per se G07F 17/24; {car rental systems per se G07B 15/00})

G07B 15/04 · · comprising devices to free a barrier, turnstile, or the like {(turnstiles with registering means G07C 9/02; coin-freed aspects G07F 17/00)}

**U G07B 17/00 Franking apparatus (printing aspects B41)**

G07B 17/00185 · {Details internally of apparatus in a franking system, e.g. franking machine at customer or apparatus at post office (digital data processing G06F; coin-freed apparatus for franking per se G07F 17/26)}

U G07B 17/00459 · {Details relating to mailpieces in a franking system}

G07B 17/00508 · · {Printing or attaching on mailpieces (printing mechanisms B41J; security printing B41M 3/14; marking methods B41M 5/00; inks C09D 11/00; record carriers with at least a part designed to carry digital markings G06K 19/00)}

G07B 17/00661 · · {Sensing or measuring mailpieces (weighing G01G 19/00; methods or arrangements for reading or recognising printed or written characters or for recognising patterns G06K 9/00)}

**Project: N/A (G07C)**

**U G07C 9/00 Individual entry or exit registers**

NOTES

1. This group covers:

- controlling and registering access of persons to restricted areas or devices

2. This group does not cover:

- electric permutation locks using mechanical keys, covered by E05B 49/00;
- apparatus actuated by coded identity cards or credit cards, to free or actuate vending, hiring or money-dispensing, covered by G07F 7/08;
- access to facilities or services by means of coins or tokens, covered by G07F 17/00;
- arrangements actuated by coded cards for dispensing or receiving money and posting such transactions to existing accounts, e.g. automatic teller machines, covered by G07F 19/00

3. Attention is drawn to the following places, which may be of interest for search:

- G06K 7/00, G06K 19/00 arrangements for sensing or reading record carriers
- H03K 17/00 electronic switching
- G06K 9/00 biometric sensors, recognising biometric patterns
- A61B 5/117 biometric identification used for diagnostic purposes
- G06F 1/00 access to data processing equipment

U G07C 9/00007 · {Access-control involving the use of a pass (for electromagnetical or electrical keys and locks, see E05B 49/00)}

U G07C 9/00031 · · {in combination with an identity-check of the pass-holder (recognizing patterns, e.g. fingerprints or signatures G06K 9/00)}

G07C 9/00039 · · · {by means of a pass-word} (G07F 7/00 takes precedence)}

**Project: N/A (G07D)**

**U G07D 7/00** **Testing specially adapted to determine the identity or genuineness of paper currency or similar valuable papers, e.g. for segregating those which are unacceptable or alien to a currency {{arrangements for verifying the correctness of markings on a record carrier [G06K 5/00](#)}}**

NOTE

In this group, groups [G07D 7/16](#) to [G07D 7/20](#) take precedence over groups [G07D 7/02](#) to [G07D 7/14](#).

WARNING

Groups [G07D 7/0006](#), [G07D 7/0046](#) and [G07D 7/0093](#) are not complete pending a reclassification. See also group [G07D 7/004](#)

- G07D 7/18      · Testing the stiffness {-or other mechanical properties, e.g. wear or tear ([G07D 7/16](#) takes precedence)}
- G07D 7/20      · Testing patterns thereon {-e.g. recognition of patterns, image processing, comparing to a reference in a memory}

**G07D 11/00** **Devices accepting coins or {accepting or dispensing} paper currency, e.g. depositing machines (apparatus freed or actuated by coins or the like [G07F](#); apparatus freed or actuated by paper currency [G07F 7/04](#); complete banking systems [G07F 19/00](#); {-arrangements actuated by a coded-card for receiving or dispensing monies or the like and posting such transactions to existing accounts, e.g. automatic teller machines [ATMs] [G07F 19/20](#)})**

NOTES

1. This group covers constructional or functioning aspects of devices handling paper currency, including of so-called Automatic Teller Machines [ATMs]; other aspects of ATMs, e.g. posting transactions to existing accounts or aspects related to the interaction with users, are covered by group [G07F 19/20](#)
2. Informative reference:
3. - devices dispensing coins [G07D 1/00](#)

**Project: N/A (G07F)**

**G07F** **COIN-FREED OR LIKE APPARATUS (coin sorting [G07D 3/00](#); coin testing [G07D 5/00](#); {-handling coins or paper currencies apart from payment activated apparatus [G07D](#); payment architectures, schemes or protocols [G06Q 20/00](#)})**

NOTES

1. This subclass does not cover constructions or details of apparatus which includes, or is combined with, coin-actuated mechanisms but is not specially adapted or modified for use therewith. Such constructions or details are covered by the relevant subclass for the particular apparatus.
2. In this subclass, the following term are used with the meaning indicated:
  - {"coin-freed" means "payment activated"}
  - "coins" covers also tokens or the like.

**U G07F 7/00** **Mechanisms actuated by objects other than coins to free or to actuate vending, hiring, coin or paper currency dispensing or refunding apparatus {{handling coins or paper currencies apart from coin-freed or like apparatus [G07D](#); complete banking systems [G07F 19/00](#)}}**

**U G07F 7/08** · by coded identity card or credit card {or other personal identification means (without personal verification means [G07F 7/02](#))}

- G07F 7/086
- {by passive credit-cards adapted therefor, e.g. constructive particularities to avoid counterfeiting, e.g. by inclusion of a physical or chemical security-layer (for security documents [G07D 7/00](#); for the reading of record-carriers in general [G06K 7/00](#); for the design of coded credit-cards [G06K 19/10](#))}
- G07F 7/0866
- {by active credit-cards adapted therefor ([G07F 7/1008](#) takes precedence)}
- NOTES**
1. Attention is drawn to the note after group [G07F 7/1008](#).
  2. The cards referred to in this group are transferable like regular cash money. They contain a monetary value represented by a coded number in a protected memory, to be loaded by cash payment or from account
- G07F 9/00**
- Details other than those peculiar to special kinds or types of apparatus (coin inlet arrangements [G07F 1/00](#); coin testing arrangements [G07F 3/00](#); coin-actuated mechanisms, interlocks [G07F 5/00](#))**
- U G07F 17/00**
- Coin-freed apparatus for hiring articles; Coin-freed facilities or services**
- G07F 17/0014
- {for vending, access and use of specific services not covered anywhere else in [G07F 17/00](#) (meter-controlled dispensing of liquid, gas or electricity [G07F 15/00](#))}
- G07F 17/0092
- {for assembling and dispensing of pharmaceutical articles (medical dispensers for private use, [A61J 7/00](#); data processing for medical purposes [G06F 19/00](#))}
- U G07F 17/24**
- for parking meters (devices for checking parking time [G07C 1/30](#))**
- G07F 17/246
- {provided with vehicle proximity-detectors (detecting hidden masses, e.g. metal detectors, [G01V](#), e.g. [G01V 3/00](#); proximity switches per se [H03K 17/00](#); traffic control systems [G08G 1/00](#))}
- G07F 19/00**
- Complete banking systems; Coded card-freed arrangements adapted for dispensing or receiving monies or the like and posting such transactions to existing accounts, e.g. automatic teller machines (data processing equipment for bank accounting [G06Q 40/02](#); {-mechanisms in general actuated by objects other than coins [G07F 7/00](#); handling coins or paper currencies apart from payment activated apparatus [G07D](#))}**
- WARNING**
- Groups [G07F 19/20](#) - [G07F 19/211](#) do not correspond to former or future IPC groups. Concordance CPC : IPC for these groups is as follows: - [G07F 19/20](#) - [G07F 19/211](#) : [G07F 19/00](#)

**Project: N/A (G08B)**

- U G08B 1/00**
- Systems for signalling characterised solely by the form of transmission of the signal**
- G08B 1/08
- using electric transmission; {-transformation of alarm signals to electrical signals from a different medium, e.g. transmission of an electric alarm signal upon detection of an audible alarm signal}
- G08B 6/00**
- Tactile signalling systems, e.g. personal calling systems (indication of time by feeling [G04B 25/02](#); deaf-aid sets [H04R 25/00](#) ){apparatus for generating mechanical vibrations [B06B 1/045](#); motors converting reciprocating into rotary movement or vice-versa [H02K 7/06](#); motors with reciprocating, oscillating, or vibrating magnet, armature, or coil system [H02K 33/00](#); telephone hand set vibration alarms [H04M 19/047](#))}**

- G08B 7/00** Signalling systems according to more than one of groups [G08B 3/00](#) to [G08B 6/00](#) (combinations of display arrangements with audible advertising [G09F 27/00](#)); Personal calling systems according to more than one of groups [G08B 3/00](#) to [G08B 6/00](#) {(combinations of display devices with advertising [G09F](#))}
- G08B 7/06
- using electric transmission {-e.g. involving audible and visible signalling through the use of sound and light sources (walking aids for blind persons [A61H 3/06](#); facilitating escape from buildings [A62B 3/00](#))}
- G08B 13/00** Burglar, theft, or intruder alarms (vehicle theft alarms [B60R 25/10](#); cycle theft alarms [B62H 5/00](#) ){{fire or police telegraphic systems [G08B 25/00](#), [G08B 26/00](#), [H04M 11/04](#))}
- U G08B 13/02
- Mechanical actuation
- G08B 13/06
- • by tampering with fastening (alarm locks [E05B 45/00](#); alarm devices on safes [E05G 1/10](#) ){{(anti-theft means in containers [B65D 2211/00](#))}
- U G08B 13/18
- Actuation by interference with heat, light or radiation of shorter wavelength; Actuation by intruding sources of heat, light or radiation of shorter wavelength {(signalling devices using photo-electric devices in general [G09F](#))}
- U G08B 13/181
- • using active radiation detection systems
- G08B 13/183
- • • by interruption of a radiation beam or barrier (light barriers [G01V 8/10](#) ) {(industrial safety devices with photocells [F16P 3/14](#))}
- G08B 17/00** Fire alarms; Alarms responsive to explosion (temperature-responsive elements [G01K](#); {-automatic fire-extinguishing and alarm devices [A62C 35/00](#), [A62C 37/00](#); structural combination of lighting devices with smoke detectors [F21V 33/0076](#); arrangement of safety devices on stoves [F24C 7/08](#))}
- U **G08B 21/00** Alarms responsive to a single specified undesired or abnormal operating condition and not elsewhere provided for {(alarms on gas pipes [F17D 3/01](#))}
- U G08B 21/02
- Alarms for ensuring the safety of persons
- G08B 21/06
- • indicating a condition of sleep, e.g. anti-dozing alarms (safety devices for propulsion-unit control of vehicles responsive to incapacity of driver [B60K 28/06](#); {-psychotechnic analysis of vehicle drivers [A61B 5/18](#))}
- U **G08B 25/00** Alarm systems in which the location of the alarm condition is signalled to a central station, e.g. fire or police telegraphic systems {(signalling systems in general [G08C](#))}
- U G08B 25/01
- characterised by the transmission medium
- G08B 25/08
- • using communication transmission lines, {-e.g. complete alarm systems using telephone lines for transmission of the alarm}(telephone communication systems combined with alarm systems [H04M 11/04](#) ){{([G08B 13/19658](#), [G08B 21/0286](#), [G08B 25/016](#) take precedence)}
- G08B 25/12
- Manually actuated calamity alarm transmitting arrangements {-emergency non-personal manually actuated alarm, activators, e.g. details of alarm push buttons mounted on an infrastructure}

**Project: N/A (G08G)****G08G**

**TRAFFIC CONTROL SYSTEMS (guiding railway traffic, ensuring the safety of railway traffic [B61L](#); arrangement of road signs or traffic signals [E01F 9/00](#); radar or analogous systems, sonar systems, lidar systems specially adapted for traffic control [G01S 13/91](#), [G01S 15/88](#), [G01S 17/88](#); {radar or analogous systems, sonar systems, lidar systems specially adapted for anti-collision purposes [G01S 13/93](#), [G01S 15/93](#), [G01S 17/93](#)})**

NOTES

1. This subclass covers:

- identification of traffic offenders;
- indicating the position of vehicles for traffic control purposes;
- navigation systems for traffic control purposes, i.e. systems in which the navigation is not performed autonomously by or in the vehicles, but where the vehicles are guided by instructions transmitted to them;
- indication of free spaces in parking areas.

2. This subclass does not cover:

- arrangements for measuring levels and bearings for surveillance and navigation, which are covered by [G01C](#);
- radio navigation systems, e.g. for locating, measuring distances or velocity, which are covered by [G01S](#);
- details of display instrumentation, which are covered by [G09F](#), [G09G](#)

**U G08G 5/00**

**Traffic control systems for aircraft {, e.g. air-traffic control [ATC]}**

NOTES

1. This groups covers arrangements, located in the aircraft or on the ground, for controlling aircraft within a traffic environment.

2. This group does not cover arrangements for control of position, course, altitude or attitude of aircraft not specific to a traffic environment, e.g. automatic pilots, which are covered by group [G05D 1/00](#).

3. In this group the following term is used with the meaning indicated:

- "traffic" includes traffic on the ground and in the air.

4. Attention is drawn to the following places which might be interesting for search:

- mechanical aspects of equipment for fitting in or to aircraft [B64D](#)
- combined instruments indicating more than one navigational value [G01C 23/00](#)

G08G 5/02

- Automatic {approach or} landing aids, i.e. systems in which flight data of incoming planes are processed to provide landing data (landing aids fitted in or to aircraft [B64D 45/04](#); visual or acoustic landing aids [B64F 1/18](#))

**Project: N/A (G09G)****G09G 1/00**

**Control arrangements or circuits, of interest only in connection with cathode-ray tube indicators; {General aspects or details, e.g. selection emphasis on particular characters, dashed line or dotted line generation; Preprocessing of data} (cathode-ray oscilloscopes [G01R 13/20](#); {radar display arrangements [G01S 7/04](#); display of digital non-picture data in television systems [H04N 7/0255](#)})**

**U G09G 3/00**

**Control arrangements or circuits, of interest only in connection with visual indicators other than cathode-ray tubes (optical scanning systems in general [G02B 26/10](#))**

**U G09G 3/20**

- for presentation of an assembly of a number of characters, e.g. a page, by composing the assembly by combination of individual elements arranged in a matrix {no fixed position being assigned to or needed to be assigned to the individual characters or partial characters}

- U G09G 3/22 · · using controlled light sources
- U G09G 3/28 · · · using luminous gas-discharge panels, e.g. plasma panels
- U G09G 3/288 · · · · using AC panels

WARNING

This groups is incomplete pending reclassification; see also group [G09G 3/28](#)

- G09G 3/29 · · · · · using self-shift panels {-with sequential transfer of the discharges from an input position to a further display position (tubes therefor [H01J 17/49](#))}

**U G09G 5/00 Control arrangements or circuits for visual indicators common to cathode-ray tube indicators and other visual indicators (image data processing or generation, in general [G06T](#))**

- U G09G 5/36 · characterised by the display of a graphic pattern, e.g. using an all-points-addressable [APA] memory
- U G09G 5/37 · · Details of the operation on graphic patterns ([G09G 5/38](#) takes precedence)
- G09G 5/377 · · · for mixing or overlaying two or more graphic patterns ([G09G 5/02](#)-, [G09G 5/397](#) take precedence)

**Project: N/A (G10C)****U G10C 3/00 Details or accessories**

- U G10C 3/16 · Actions
- G10C 3/165 · · {-for plucking the strings, i.e. for instruments covered by group [G10C 1/06](#) (plucking mechanisms for keyboard-operated zithers [G10D 3/085](#))}

**Project: N/A (G10D)****U G10D 9/00 Details of, or accessories for, wind-actuated musical instruments**

- G10D 9/02 · Mouthpieces; Reeds; {-Ligatures}

**Project: N/A (G10H)**

**U G10H 1/00 Details of electrophonic musical instruments (keyboards applicable also to other musical instruments [G10B](#), [G10C](#); arrangements for producing a reverberation or echo sound [G10K 15/08](#))**

- U G10H 1/02 · Means for controlling the tone frequencies, e.g. attack, decay; Means for producing special musical effects, e.g. vibrato, glissando {(for instruments using voltage controlled oscillators and amplifiers or voltage controlled oscillators and filters [G10H 5/002](#))}
- G10H 1/06 · · Circuits for establishing the harmonic content of tones, {-or other arrangements for changing the tone colour}
- G10H 1/14 · · · during execution (modulation during execution [G10H 1/053](#); {-voice controlled instruments [G10H 5/005](#))}

## Project: N/A (G10K)

G10K	<p><b>SOUND-PRODUCING DEVICES</b> (sound-producing toys <a href="#">A63H 5/00</a>; musical instruments or parts thereof, see the relevant subclass, e.g. <a href="#">G10D</a>); <b>ACOUSTICS NOT OTHERWISE PROVIDED FOR</b> (systems using the reflection or reradiation of acoustic waves <a href="#">G01S 15/00</a>; generating seismic energy <a href="#">G01V 1/02</a>; signalling or calling arrangements, alarm arrangements <a href="#">G08B</a>; piezo-electric electrostrictive or magnetostrictive elements in general <a href="#">H01L 41/00</a>; transmission systems using infrasonic, sonic, or ultrasonic waves <a href="#">H04B 11/00</a>; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers <a href="#">H04R</a>)</p> <p><u>NOTES</u></p> <ol style="list-style-type: none"> <li>1. This subclass covers arrangements for generating mechanical vibrations in fluids.</li> <li>2. This subclass covers also the production of sounds which may not be audible to human beings but which are audible to animals.</li> <li>3. In this subclass, the following terms are used with the meanings indicated: <ul style="list-style-type: none"> <li>• "acoustics" and "sound" cover the technical field dealing with mechanical vibrations at all infrasonic -, sonic - and ultrasonic frequencies. However, generation or transmission of mechanical waves, in general, is covered by subclass <a href="#">B06B</a>, subject to the exception specified in Note (1) above.</li> </ul> </li> </ol>
G10K 1/00	<p><b>Devices in which sound is produced by striking a resonating body, e.g. bell, chimes, gong (combinations with clocks or watches <a href="#">G04B</a>, <a href="#">G04C</a>; carillons <a href="#">G10F 1/10</a>; {for percussion instruments <a href="#">G10D 13/00</a>})</b></p>
U G10K 7/00	<p><b>Sirens</b></p> <ul style="list-style-type: none"> <li>• in which the sound-producing member is rotated manually or by a motor (<a href="#">G10K 7/06</a> takes precedence; {musical tops <a href="#">A63H 1/28</a>})</li> </ul>
G10K 7/02	
G10K 9/00	<p><b>Devices in which sound is produced by vibrating a diaphragm or analogous element, e.g. fog horn, vehicle hooter, buzzer (loudspeakers or like acoustic electromechanical transducers <a href="#">H04R</a> {arrangement or adaptation for ships <a href="#">B63B 45/08</a>; mechanically driven vibrators <a href="#">B06B 1/10</a>})</b></p>
G10K 9/12	<ul style="list-style-type: none"> <li>• electrically operated</li> </ul> <p><u>NOTE</u></p> <p>This group does not cover the construction of, or circuits for, broadband-transducers such as loudspeakers or microphones, which are covered by subclass <a href="#">H04R</a>.</p>
G10K 11/00	<p><b>Methods or devices for transmitting, conducting or directing sound in general; Methods or devices for protecting against, or for damping, noise or other acoustic waves in general ({protective devices for the ears <a href="#">A61F 11/06</a>}; sound insulation for vehicles <a href="#">B60R 13/08</a>; sound insulation for aircraft <a href="#">B64C 1/40</a>; sound insulating materials, see the relevant places, e.g. <a href="#">C04B 26/00</a> to <a href="#">C04B 38/00</a>; reduction of noise on permanent way <a href="#">E01B 19/00</a>; absorption of air-transmitted noise from road or railway traffic <a href="#">E01F 8/00</a>; noise insulation, absorption or reflection in buildings <a href="#">E04B 1/74</a>; room acoustics <a href="#">E04B 1/99</a>; sound insulation in floors <a href="#">E04F 15/20</a>; gas-flow silencers or exhaust apparatus for machines or engines in general, for internal-combustion engines <a href="#">F01N</a>; intake silencers for internal-combustion engines <a href="#">F02M 35/00</a>; suppression of undesired vibrations <a href="#">F16F 7/00</a> to <a href="#">G10K 15/00</a>; preventing noise in valves <a href="#">F16K 47/02</a>; noise absorbers in pipes <a href="#">F16L 55/02</a>; arrangements for suppressing noise in direct-contact trickle coolers <a href="#">F28C 1/10</a>; silencers for weapons <a href="#">F41</a>)</b></p>

- G10K 11/004 · {Mounting transducers e.g. provided with mechanical moving or orienting device (mountings specially adapted to a particular sound-producing device, see the preceding groups [G10K 1/00](#) to [G10K 9/00](#)-, e.g. [G10K 1/26](#)-, [G10K 1/28](#)-, [G10K 9/22](#)-, arrangements of sonic watch equipment on submarines [B63G 8/39](#)-, buoys [B63B 22/00](#))}
- G10K 11/08 · Non-electric sound-amplifying devices, e.g. non-electric megaphones (amplifying by horns [G10K 11/02](#)-, amplifying by focusing [G10K 11/26](#))
- U G10K 11/16 · Methods or devices for protecting against, or damping of, acoustic waves, e.g. sound ([G10K 11/36](#) takes precedence)
- NOTE**  
This group does not cover protecting against, or damping of, acoustic waves adapted for particular applications, which are covered by the subclasses for these applications, provided that there is a specific provision for this aspect.
- G10K 11/161 · · {in systems with fluid flow ([G10K 11/162](#) takes precedence; gas flow silencers or exhaust apparatus for machines or engines in general or for internal combustion engine [F01N](#)-, noise absorbers in pipes or pipe systems [F16L 55/02](#)-, noise absorption in air conditioning and ventilation [F24F 13/24](#)-, silencing exhaust or propulsion jets in aircraft [B64D 33/06](#))}
- U G10K 11/162 · · Selection of materials
- G10K 11/168 · · · Plural layers of different materials, e.g. sandwiches
- NOTE**  
When classifying in this group, classification is also made in subclass [B32B](#)-, in so far as any layered product is concerned.
- G10K 11/18 · Methods or devices for transmitting, conducting, or directing sound ([G10K 11/02](#)-, [G10K 11/36](#) take precedence; medical stethoscopes [A61B 7/02](#))
- G10K 11/26 · · Sound-focusing or directing, e.g. scanning {(horns for impedance matching [G10K 11/02](#)-, megaphones [G10K 11/08](#))}
- G10K 11/34 · · · using electrical steering of transducer arrays, e.g. beam steering {(constructional aspects [B06B 1/0607](#)-, [B06B 1/085](#))}
- G10K 11/36 · Devices for manipulating acoustic surface waves (electro-acoustic amplifiers [H03F 13/00](#)-, networks comprising electro-acoustic elements [H03H 9/00](#))
- U G10K 15/00 Acoustics not otherwise provided for**
- U G10K 15/04 · Sound-producing devices ([G10K 15/02](#) takes precedence)
- G10K 15/043 · · {producing shock waves ([G10K 15/046](#)-, [G10K 15/06](#) take precedence; generating seismic energy [G01V 1/02](#))}

**Project: N/A (G10L)**

- U G10L 21/00 Processing of the speech or voice signal to produce another audible or non-audible signal, e.g. visual or tactile, in order to modify its quality or its intelligibility ([G10L 19/00](#) takes precedence)**
- G10L 21/02 · Speech enhancement, e.g. noise reduction or echo cancellation (reducing echo effects in line transmission systems [H04B 3/20](#)-, echo suppression in hands-free telephones [H04M 9/08](#))

## Project: N/A (G11B)

## G11B

**INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER** ({producing carriers of sound records for needle playback [B29C 39/00](#)}; recording measured values in a way that does not require playback through a transducer [G01D](#); photosensitive materials or processes for photographic purposes [G03C](#); electrography, electrophotography, magnetography [G03G](#); recording or playback apparatus using mechanically marked tape, e.g. punched paper tape, or using unit records, e.g. punched or magnetically marked cards, [G06K](#); transferring data from one type of record carrier to another [G06K 1/18](#); printing of data from record carriers [G06K 3/00](#); arrangements for producing a permanent visual presentation of the output data [G06K 15/00](#); arrangements or circuits for control of indicating devices using static means to present variable information [G09G](#); coding, decoding or code conversion, in general [H03M](#); circuits for coupling output of reproducer to radio receiver [H04B 1/20](#); circuits {or arrangements} specially adapted for {pictorial or} television signal recording {[H04N 1/21](#)}, [H04N 5/76](#), [H04N 9/79](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor [H04R](#))

NOTES

1. This subclass covers :

- recording or playback of information by relative movement between a record track and a transducer, the transducer directly producing, or being directly actuated by, modulation in the track being recorded or played-back, and the extent of modulation corresponding to the signal being recorded or played-back;
- apparatus and machines for recording or playback, and parts thereof such as heads;
- record carriers for use with such apparatus and machines;
- associated working of other apparatus with such apparatus and machines;
- {relative positioning or movement of transducers and record carriers before, during or after transducing operation, e.g. for accessing record carriers or parts thereof, or for track change, selection or acquisition or for track following or for accessing parts of tracks;}
- {driving or moving of heads or record carriers or both heads and record carriers for increasing, maintaining or decreasing the relative speed before, during or after transducing operation}

2. In this subclass, the following terms or expressions are used with the meanings indicated :

- "head" includes any means for converting sinusoidal or non-sinusoidal electric wave-forms into variations of the physical condition of at least the adjacent surface of the record carrier, or vice versa;
- "record carrier" means a body, such as a cylinder, disc, card, tape, or wire, capable of permanently holding information, which can be read-off by a sensing element movable relatively to the record carrier.

3. Documents concerning relative positioning or movement of transducers and record carriers are classified in groups [G11B 3/00](#) to [G11B 7/00](#) and [G11B 21/00](#) when only the transducer is controlled and in groups [G11B 15/00](#), [G11B 17/00](#) and [G11B 19/00](#) when only the record carrier is controlled. When both record carrier and head are controlled, the documents are classified in [G11B 15/1808](#), [G11B 15/1816](#), [G11B 19/00](#) and [G11B 27/002](#).

When a plurality of record carriers are controlled, the documents are classified in [G11B 15/68](#), [G11B 17/08](#), [G11B 17/22](#) and [G11B 27/002](#).

4. By "access" is meant an operation including a relative movement for positioning between record carrier and head before, during or after transducing; this operation including "seek", "select", "change", "acquire" and "follow"

functions for at least a part of a track on at least one record carrier. By "programmed access" is meant a sequence of access operations the result of the sequence being to acquire a wanted sequence of parts of tracks or a wanted sequence of tracks. Relative movement between head and record carrier also covers the movement of a coupling beam such as a light beam between the head and a stationary record carrier.

5. "Movement of the head" also covers any virtual movement or any physical movement such as obtained by switching between successive transducing parts of the head or by moving the transducing zone of the head, i.e. by "scanning". If different transducing parts of the head are switchable, the number of transducing parts should be much smaller than the number of individual storage areas of the record carrier.

6. Attention is drawn to the notes of subclass [G11C](#).

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">G11B 5/65</a>	covered by	<a href="#">G11B 5/64</a>	to
<a href="#">G11B 5/656</a>			
<a href="#">G11B 5/667</a>	covered by	<a href="#">G11B 5/66</a>	
<a href="#">G11B 5/673</a>	covered by	<a href="#">G11B 5/66</a>	
<a href="#">G11B 7/16</a>	covered by	<a href="#">G11B 7/135</a>	
<a href="#">G11B 7/18</a>	covered by	<a href="#">G11B 7/135</a>	
<a href="#">G11B 7/30</a>	covered by	<a href="#">G11B 7/00</a>	
<a href="#">G11B 9/12</a>	-	<a href="#">G11B 9/14</a>	covered by
<a href="#">G11B 9/00</a>			
<a href="#">G11B 11/24</a>	-	<a href="#">G11B 11/26</a>	covered by
<a href="#">G11B 11/00</a>			
<a href="#">G11B 13/08</a>	covered by	<a href="#">G11B</a>	

**G11B 3/00**

**Recording by mechanical cutting, deforming or pressing, e.g. of grooves or pits; Reproducing by mechanical sensing; Record carriers therefor ([G11B 11/00](#), [G11B 13/00](#)) take precedence; {recording by cutting or deforming using laser beam [G11B 7/00](#), using electron beam [G11B 9/10](#)}**

- U G11B 3/02
  - G11B 3/08
  - G11B 3/085
  - G11B 3/10
  - U G11B 3/12
  - G11B 3/121
  - G11B 3/28
- Arrangements of heads (styli [G11B 3/44](#))
  - • Raising, lowering, traversing otherwise than for transducing, arresting, or holding-up heads against record carriers {(for transducing [G11B 3/12](#), [G11B 3/34](#))}
  - • • {using automatic means} ([G11B 3/095](#) takes precedence; {if particularly adapted for record-changers see [G11B 17/16](#) and subgroups })
  - • Arranging, supporting, or driving of heads or of transducers relatively to record carriers {(guiding record carriers [G11B 17/00](#), driving record carriers [G11B 19/00](#))}
  - • • Supporting in balanced, counterbalanced or loaded operative position {during transducing}, e.g. loading in direction of traverse]
  - • • • {By using mechanical means not provided for in [G11B 3/14](#), [G11B 3/20](#), e.g. using cams}
  - • • • providing transverse bias parallel to record

**NOTE**

see provisionally also [G11B 3/14](#), [G11B 3/20](#) )

- U G11B 3/44
  - G11B 3/56
- Styli, e.g. sapphire, diamond
  - • Sharpening (grinding [B24B 3/00](#), [B24B 19/00](#))

- G11B 3/58
- Cleaning record carriers or styli, e.g. removing shavings or dust {or electrostatic charges} (brushes [A46B](#); cleaning in general [B08B](#); {carrying-off electrostatic charges in general [H05F 3/00](#)})
- U G11B 3/60
- Turntables for record carriers (forming rotor of dynamo-electric motor [H02K](#))
- NOTE  
contains no documents, see [G11B 19/2009](#)
- G11B 3/61
- • Damping of vibrations of record carriers on turntables
- NOTE  
see provisionally also [G11B 3/60](#)-, [G11B 3/589](#) and [G11B 17/02](#)-, contains no documents, see [G11B 19/2018](#)
- G11B 3/64
- Re-recording, i.e. transcribing information from one grooved record carrier on to one or more similar or dissimilar record carriers {(by varying the order of the information [G11B 27/029](#)-, [G11B 27/036](#))}  
}
- G11B 5/00**
- Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor ([G11B 11/00](#) {and [G11B 13/00](#)} take precedence)**
- NOTE  
Subgroups [G11B 5/02](#) to [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) to [G11B 5/016](#)
- G11B 5/008
- Recording on, or reproducing or erasing from, magnetic tapes, {sheets, e.g. cards,} or wires ([G11B 15/00](#) {[G11B 19/00](#)} take precedence; {bulk transferring of information magnetisation for re-recording [G11B 5/865](#)-, marking record carriers in digital fashion [G06K](#))}  
}
- G11B 5/012
- Recording on, or reproducing or erasing from, magnetic discs ([G11B 17/00](#)-, [G11B 19/00](#) take precedence)
- U G11B 5/127
- Structure or manufacture of heads, e.g. inductive
- G11B 5/187
- • Structure or manufacture of the surface of the head in physical contact with, or immediately adjacent to the recording medium; Pole pieces; Gap features ([G11B 5/265](#)-, [G11B 5/29](#)), [G11B 5/31](#) take precedence)
- G11B 5/23
- • • Gap features {([G11B 5/1871](#)-, [G11B 5/1875](#)-, [G11B 5/265](#)-, [G11B 5/29](#)-, [G11B 5/488](#) and subgroups, [G11B 5/4907](#) and subgroups, [G11B 5/4969](#) and subgroups take precedence)}
- G11B 5/245
- • • comprising means for controlling the reluctance of the magnetic circuit {in a head with single gap, for co-operation with one track; ([G11B 5/255](#) takes precedence; for plural gaps or plural tracks [G11B 5/127](#)-, [G11B 5/265](#)-, [G11B 5/29](#)-, [G11B 5/49](#) and subgroups)}
- G11B 5/265
- • Structure or manufacture of a head with more than one gap for erasing, recording or reproducing on the same track ([G11B 5/33](#) takes precedence {-in thin film structures [G11B 5/31](#)})
- G11B 5/29
- • Structure or manufacture of unitary devices formed of plural heads for more than one track {([G11B 5/33](#)-, [G11B 5/49](#) and subgroups take precedence; in thin film structure [G11B 5/31](#)})
- G11B 5/31
- • using thin films {([G11B 5/1274](#)-, [G11B 5/1278](#)-, [G11B 5/1874](#)-, [G11B 5/1875](#)-, [G11B 5/33](#)-, [G11B 5/49](#) take precedence; magnetic thin film structures [H01F 10/00](#))}  
}
- U G11B 5/3109
- • • {Details ([G11B 5/3103](#) takes precedence)}
- G11B 5/3116
- • • • {Shaping of layers, poles or gaps for improving the form of the electrical signal transduced, e.g. for shielding, contour effect, equalizing, side flux fringing, cross talk reduction between heads or between heads and information tracks ([G11B 5/3113](#)-, [G11B 5/245](#) take precedence)}

- U G11B 5/313      • . . . {Disposition of layers}
  - G11B 5/3143     • . . . . {including additional layers for improving the electromagnetic transducing properties of the basic structure, e.g. for flux coupling, guiding or shielding ([G11B 5/3116](#), [G11B 5/312](#) take precedence)}
  - G11B 5/3176     • . . {Structure of heads comprising at least in the transducing gap regions two magnetic thin films disposed respectively at both sides of the gaps ([G11B 5/2455](#), [G11B 5/265](#) take precedence; composite magnetic head structures, e.g. "Metal-In-Gap" heads are classified in [G11B 5/127](#) or [G11B 5/187](#) and subgroups)}
  - G11B 5/33       • . Structure or manufacture of flux-sensitive heads, {i.e. for reproduction only; Combination of such heads with means for recording or erasing only} {{Single head using magnetic domains for scanning [G11B 5/4946](#); multiple head for scanning [G11B 5/4907](#) and subgroups } ; general details therefor [G11B 5/133](#) to [G11B 5/255](#)}
  - G11B 5/332      • . . {using thin films ([G11B 5/372](#), [G11B 5/3903](#) take precedence)}
  - G11B 5/40       • Protective measures on heads, e.g. against excessive temperature ([G11B 5/31](#) takes precedence; protection against wear [G11B 5/255](#){ protective structure of the head: see under structures, e.g. [G11B 5/3106](#))}
  - G11B 5/455      • Arrangements for functional testing of heads {(testing of the manufacturing process [G11B 5/127](#))}; Measuring arrangements for heads (measuring electric or magnetic properties [G01R](#); {-measuring properties for shaping or assembling elements [G11B 5/127](#))}
  - G11B 5/48       • Disposition or mounting of heads {or head supports} relative to record carriers{ mounting of head within housing [G11B 5/105](#); arrangements of heads, e.g. for scanning the record carrier to increase the relative speed (driving of both record carriers and head [G11B 15/18](#); guiding record carriers [G11B 15/60](#); head selecting circuits [G11B 15/12](#))}
  - G11B 5/488      • {Disposition of heads ([G11B 5/49](#), [G11B 5/52](#) take precedence)}
  - U G11B 5/54      • . with provision for moving the head into or out of its operative position or across tracks ([G11B 5/58](#) takes precedence)
  - U G11B 5/55      • . . Track change, selection or acquisition by displacement of the head
  - G11B 5/5521     • . . . {across disc tracks (spiral track following [G11B 5/596](#))}
- NOTE  
For groups [G11B 5/5526](#) to [G11B 5/5582](#), see provisionally [G11B 5/5521](#) and [G11B 5/596](#)
- G11B 5/56       • . with provision for moving the head {support} for the purpose of adjusting the position of the head relative to the record carrier, e.g. manual adjustment for azimuth correction or track centering ([G11B 5/52](#), [G11B 5/54](#), [G11B 5/58](#) take precedence)
  - G11B 5/58       • . with provision for moving the head for the purpose of maintaining alignment of the head relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following {(spacing means incorporated in the head structure [G11B 5/187](#), [G11B 5/255](#), [G11B 5/3106](#))}
  - U G11B 5/584     • . . for track following on tapes
  - G11B 5/588      • . . . by controlling the position of the rotating heads (by controlling the speed of the record carrier [G11B 15/467](#); by controlling speed of the heads [G11B 15/473](#); {-by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement [G11B 15/1841](#))}

- G11B 5/596
- • • for track following on disks {([G11B 5/5526](#)-, [G11B 5/5552](#)-, [G11B 5/5565](#)-, [G11B 5/5582](#) take precedence)}
- NOTE  
For groups [G11B 5/59605](#) to [G11B 5/59633](#)-, see provisionally [G11B 5/5521](#) and [G11B 5/596](#)
- G11B 5/59627
- • • • {Aligning for runout, eccentricity or offset compensation ([G11B 5/5534](#)-, [G11B 5/59677](#)-, [G11B 5/59688](#) take precedence)}
- G11B 5/59633
- • • • {Servo formatting ([G11B 5/59627](#)-, [G11B 5/59677](#)-, [G11B 5/59683](#)-, [G11B 5/59688](#) take precedence)}
- G11B 5/62
- Record carriers characterised by the selection of the material (selection of magnetic materials in general [H01F 1/00](#)-, thin magnetic films [H01F 10/00](#))
- NOTE  
This group does not cover compositions, materials or processes, per se, which are covered by the relevant subclasses of section B or C.
- G11B 5/84
- Processes or apparatus specially adapted for manufacturing record carriers (processes involving a single technical art, in general, and for which provision exists elsewhere, see the relevant places, e.g. [B29](#)-, [C23](#)-, [C25D](#)-, apparatus or processes for applying homogeneous magnetic films to substrates in general [H01F 41/14](#))
- G11B 5/86
- Re-recording, i.e. transcribing information from one magnetisable record carrier on to one or more similar or dissimilar record carriers {(by varying the order of the information [G11B 27/029](#)-, [G11B 27/036](#))}
- G11B 7/00**
- Recording or reproducing by optical means, e.g. recording using a thermal beam of optical radiation {by modifying optical properties or the physical structure}, reproducing using an optical beam at lower power {by sensing optical properties}; Record carriers therefor; ([G11B 11/00](#)-, [G11B 13/00](#) take precedence)**
- U G11B 7/004
- Recording, reproducing or erasing methods; Read, write or erase circuits therefor {(magneto-optical systems [G11B 11/105](#))}
- G11B 7/0045
- • Recording ([G11B 7/006](#)-, [G11B 7/0065](#) take precedence)
- G11B 7/0055
- • Erasing ([G11B 7/006](#)-, [G11B 7/0065](#) take precedence)
- U G11B 7/08
- Disposition or mounting of heads or light sources relatively to record carriers
- G11B 7/085
- • with provision for moving the light beam into, or out of, its operative position {or across tracks, otherwise than during the transducing operation, e.g. for adjustment or preliminary positioning or track change or selection} (modulating by information signals [G11B 7/12](#)-, controlling the position or direction of light beams, i.e. deflection, [G02F 1/29](#))
- U G11B 7/09
- • with provision for moving the light beam or focus plane for the purpose of maintaining alignment of the light beam relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following
- G11B 7/0901
- • • {for track following only ([G11B 7/0925](#)-, [G11B 7/094](#)-, [G11B 7/0941](#)-, [G11B 7/0943](#)-, [G11B 7/0945](#)-, [G11B 7/0946](#)-, [G11B 7/0948](#) take precedence)}
- G11B 7/0908
- • • {for focusing only ([G11B 7/0925](#)-, [G11B 7/094](#)-, [G11B 7/0941](#)-, [G11B 7/0943](#)-, [G11B 7/0945](#)-, [G11B 7/0946](#)-, [G11B 7/0948](#) take precedence)}

- G11B 7/12
- Heads, e.g. forming of the optical beam spot or modulation of the optical beam (disposition or mounting of head elements within housing or with provision for moving of light source, optical beam or detector, irrelevant to the transducing method [G11B 7/08](#); {-modulating lasers [H01S 3/10](#); controlling the intensity, colour, phase, polarisation or direction of light beams arriving from an independent light source, e.g. switching gating or modulating [G02F 1/00](#)})
- U G11B 7/123
- • Integrated head arrangements, e.g. with source and detectors mounted on the same substrate
- U G11B 7/124
- • • the integrated head arrangements including waveguides
- G11B 7/1245
- • • • the waveguides including means for electro-optical or acousto-optical deflection {(electro- or acousto-optical deflection in general [G02F 1/29](#), [G02F 1/33](#))}
- G11B 7/125
- • Optical beam sources therefor, e.g. laser control circuitry specially adapted for optical storage devices; Modulators, e.g. means for controlling the size or intensity of optical spots or optical traces {(electro-, magneto-, or acousto-optical modulators [G02F 1/00](#); optical diaphragms [G03B 9/02](#))}
- WARNING  
For all subgroups of [G11B 7/125](#), see also provisional [G11B 7/125](#)
- G11B 7/13
- • Optical detectors therefor {(optical detectors per se [G01J](#); demodulating light, transferring the modulation of modulated light, frequency changing of light [G02F 2/00](#))}
- WARNING  
For all subgroups of [G11B 7/13](#), see provisional also [G11B 7/13](#)
- G11B 7/135
- • Means for guiding the beam from the source to the record carrier or from the record carrier to the detector
- WARNING  
For all subgroups of [G11B 7/135](#), see provisional also [G11B 7/135](#)
- G11B 7/1353
- • • Diffractive elements, e.g. holograms or gratings {(diffraction gratings per se [G02B 5/18](#); holograms per se [G02B 5/32](#); grating systems [G02B 27/44](#))}
- G11B 7/1395
- • • Beam splitters or combiners ([G11B 7/1353](#), [G11B 7/1356](#) take precedence {; beam splitting or combining per se [G02B 27/10](#))}
- WARNING  
Not complete, see also [G11B 7/1359](#) - [G11B 7/1381](#)
- U G11B 7/24
- Record carriers characterised by shape, structure or physical properties, or by the selection of the material (characterised by the arrangement of information on the carrier [G11B 7/007](#))
- U G11B 7/24018
- • Laminated disks ([G11B 7/24015](#) takes precedence)
- NOTE  
When classifying in this group, classification is also made in group [G11B 7/2403](#) if the subject matter disclosed in the context of a laminated disk is of more general application
- G11B 7/24027
- • • Layers; Shape, structure or physical properties thereof ([G11B 7/24021](#), [G11B 7/24024](#) take precedence)
- U G11B 7/241
- • characterised by the selection of the material
- G11B 7/252
- • • of layers other than recording layers
- NOTE  
In group [G11B 7/252](#), multi-aspect classification is applied, so that if subject matter is characterised by aspects covered by more than one of

its subgroups, the subject matter should be classified in each of those subgroups.

- G11B 7/26
- Apparatus or processes specially adapted for the manufacture of record carriers (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B29](#), [G03](#) {manufacture of intermediate mediums, e.g. matrixes for processing [G11B 23/0057](#)})

- G11B 7/266
- • {Sputtering or spin-coating layers (sputtering in general [C23C 14/24](#); spin-coating in general [B05D 1/005](#))}

WARNING

Not complete, see also [G11B 7/26](#)

**G11B 9/00** **Recording or reproducing using a method not covered by one of the main groups [G11B 3/00](#) to [G11B 7/00](#); Record carriers therefor ([G11B 11/00](#) takes precedence) {driving or moving of heads [G11B 21/02](#)}**

- U G11B 9/06
- using record carriers having variable electrical capacitance; Record carriers therefor ([G11B 9/02](#) takes precedence)

- G11B 9/061
- • {Record carriers characterised by their structure or form or by the selection of the material; Apparatus or processes specially adapted for the manufacture of record carriers (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B05D](#), [F16N](#), [C08L](#))}

- U G11B 9/063
- • • {characterised by the selection of the material}

- G11B 9/065
- • • • {Additional layers for lubrication, wear protection or elimination of electrostatic charges of the interface between record carrier and head ([G11B 9/066](#), [G11B 9/067](#) and [G11B 9/068](#) take precedence)}

- G11B 9/10
- using electron beam; Record carriers therefor ([G11B 9/08](#) takes precedence) {see provisional also [G11B 11/03](#)}

- U G11B 9/12
- using near-field interactions; Record carriers therefor

- G11B 9/14
- • using microscopic probe means {, i.e. recording or reproducing by means directly associated with the tip of a microscopic electrical probe as used in Scanning Tunneling Microscopy [STM] or Atomic Force Microscopy [AFM] for inducing physical or electrical perturbations in a recording medium; Record carriers or media specially adapted for such transducing of information (marking using electrical current [B41M 5/20](#); measuring roughness or irregularity of surfaces [G01B 7/34](#); details of scanning-probe microscopes [G01Q](#))}

**G11B 11/00** **Recording on or reproducing from the same record carrier wherein for these two operations the methods are covered by different main groups of groups [G11B 3/00](#) to [G11B 7/00](#) or by different subgroups of group [G11B 9/00](#); Record carriers therefor {(driving or moving of heads [G11B 3/02](#), [G11B 5/48](#), [G11B 7/08](#), [G11B 21/02](#))}**

NOTES

1. Groups [G11B 11/00](#) to [G11B 11/14](#) mainly cover:

- combined systems or apparatus comprising both recording and reproducing using different methods;
- record carriers therefor.

2. Reading only or recording only using mechanical, magnetic, optical or other methods is covered by groups [G11B 3/00](#) to [G11B 9/08](#)

- U G11B 11/002
- {using recording by perturbation of the physical or electrical structure}

- G11B 11/007
- • {with reproducing by means directly associated with the tip of a microscopic electrical probe as defined in [G11B 9/14](#) (details of heads [G11B 9/1409](#); disposition or mounting of heads [G11B 9/1418](#))}

- G11B 11/08
- using recording by electric charge or by variation of electric resistance or capacitance {([G11B 11/002](#)-, [G11B 11/10](#) take precedence)}
- U G11B 11/10
- using recording by magnetic means {or other means for magnetisation or demagnetisation of a record carrier, e.g. light induced spin magnetisation; Demagnetisation by thermal or stress means in the presence or not of an orienting magnetic field}
- U G11B 11/105
- • using a beam of light or a magnetic field for recording {by change of magnetisation} and a beam of light for reproducing, {i.e. magneto-optical,} e.g. light-induced thermo-magnetic recording, {spin magnetisation recording,} Kerr {or Faraday} effect reproducing
- U G11B 11/10502
- • • {characterised by the transducing operation to be executed}
- G11B 11/10504
- • • • {Recording (for shaping of magnetic domains [G11B 11/10528](#)-, for compensation of shift [G11B 11/1053](#))}
- U G11B 11/16
- using recording by mechanical cutting, deforming or pressing {([G11B 11/002](#) takes precedence)}
- G11B 11/22
- • with reproducing by capacitive means
- NOTE  
see provisionally [G11B 9/06](#)-, [G11B 9/07](#)-, [G11B 11/05](#)
- U G11B 11/24
- using recording by near-field interactions
- G11B 11/26
- • using microscopic probe means {, i.e. recording by means directly associated with the tip of a microscopic electrical probe as used in scanning tunneling microscopy [STM] or atomic force microscopy [AFM] for inducing physical or electrical perturbations in a recording medium (marking using electrical current [B41M 5/20](#)-, measuring roughness or irregularity of surfaces [G01B 7/34](#)-, details of scanning-probe microscopes [G01Q](#))}
- G11B 13/00**
- Recording simultaneously or selectively by methods covered by different main groups {among [G11B 3/00](#)-, [G11B 5/00](#)-, [G11B 7/00](#) and [G11B 9/00](#)}; Record carriers therefor {not otherwise provided for}; Reproducing therefrom {not otherwise provided for ([G11B 9/14](#)-, [G11B 11/002](#) take precedence; driving or moving of heads [G11B 3/02](#)-, [G11B 5/48](#)-, [G11B 7/08](#)-, [G11B 21/02](#))}**
- NOTE  
This group is limited to the combination of recording and reproducing on the same record carrier by more than one of the different method covered by groups [G11B 3/00](#)-, [G11B 5/00](#)-, [G11B 7/00](#) and [G11B 9/00](#)
- G11B 15/00**
- Driving, starting or stopping record carriers of filamentary or web form; Driving both such record carriers and heads; Guiding such record carriers or containers therefor; Control thereof; Control of operating function (driving or guiding heads [G11B 3/00](#) to [G11B 7/00](#)-, [G11B 21/00](#))**
- G11B 15/005
- {Programmed access in sequence to indexed parts of tracks of operating tapes, by driving or guiding the tape (access by driving of both record carrier and head [G11B 15/1816](#)-, see prov. also [G11B 15/602](#))}
- U G11B 15/02
- Control of operating function, e.g. switching from recording to reproducing
- G11B 15/03
- • by using counters
- NOTE  
see prov. also [G11B 15/00](#)-, [G11B 27/00](#)

- U G11B 15/05
- • by sensing features present on or derived from record carrier or container ([G11B 15/16](#) takes precedence)
- NOTE  
see provisional also [G11B 15/02](#)
- G11B 15/087
- • • by sensing recorded signals
- NOTE  
see provisional also [G11B 15/06](#)-, [G11B 15/02](#)-, [G11B 27/00](#)
- G11B 15/093
- • • by sensing driving condition of record carrier, e.g. travel, tape tension
- NOTE  
see provisional also [G11B 15/16](#)-, [G11B 15/22](#)-, [G11B 15/46](#)
- U G11B 15/18
- Driving; Starting; Stopping; Arrangements for control or regulation thereof {([G11B 15/56](#) takes precedence; handling tapes or filamentary material in general [B65H 23/00](#))}
- U G11B 15/1808
- • {Driving of both record carrier and head ([G11B 15/467](#) takes precedence; mounting of head [G11B 5/52](#))}
- U G11B 15/1825
- • • {driving or moving the head in a direction which cuts across the direction of travel of the tape, e.g. for helicoïdal scanning}
- G11B 15/1833
- • • • {with head driven in a plane, cyclically around an axis, e.g. on headwheel (construction of headwheel [G11B 5/53](#)-, [G11B 21/16](#)-, disposition of heads on headwheel [G11B 5/531](#)-, [G11B 21/02](#))}
- G11B 15/1841
- • • • • {with provision for information tracking by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement, e.g. for skew or time base correction (in the direction which cuts across tracks, i.e. for track following [G11B 3/38](#)-, [G11B 5/588](#)-, [G11B 7/085](#)-, [G11B 21/08](#)-, [G11B 21/10](#)-, by controlling headwheel rotation [G11B 15/4733](#)-, by guiding the tape [G11B 15/602](#))}
- G11B 15/22
- • Stopping means (slowing-down preparatory to stopping or speed-changing [G11B 15/48](#)-, speed-controlling by mechanical linkage [G11B 15/50](#)-, brake constructions in general [F16D](#) {[G11B 15/06](#) takes precedence; inside container [G11B 23/04](#))}
- G11B 15/43
- • Control or regulation of mechanical tension of record carrier, e.g. tape tension (controlling tension in filamentary material in general [B65H 59/00](#){ {by speed regulation [G11B 15/46](#)-, by using reserve loops [G11B 15/56](#))}
- G11B 15/46
- • Controlling, regulating, or indicating speed {(dependent on position of tape in reserve, loop [G11B 15/56](#)-, [G11B 15/58](#))}
- U G11B 15/467
- • • in arrangements for recording or reproducing wherein both record carriers and heads are driven {(see provisional also [G11B 15/1808](#))}
- U G11B 15/473
- • • • by controlling the speed of the heads
- NOTE  
see prov. also [G11B 5/588](#)
- G11B 15/4731
- • • • • {control of headwheel rotation (disposition or construction of headwheel motor [G11B 5/53](#)-, [G11B 21/02](#))}
- U G11B 17/00**      **Guiding record carriers not specifically of filamentary or web form, or of supports therefor (guiding cards or sheets [G06K 13/00](#))**
- U G11B 17/02
- Details
- U G11B 17/022
- • Positioning or locking of single discs
- U G11B 17/028
- • • of discs rotating during transducing operation
- G11B 17/03
- • • • in containers or trays {([G11B 17/032](#)-, [G11B 17/035](#) take precedence)}

- U G11B 17/22                   · from random access magazine of disc records  
G11B 17/24                   · · the magazine having a toroidal or part-toroidal shape
- NOTE  
Group [G11B 17/30](#) takes precedence over groups [G11B 17/24](#) to [G11B 17/28](#).
- U G11B 20/00                   Signal processing not specific to the method of recording or reproducing;  
Circuits therefor**
- G11B 20/00086               · {Circuits for prevention of unauthorised reproduction or copying, e.g. piracy (indicating unauthorised use of record carriers in general [G11B 23/28](#); scrambling for television signal recording [H04N 5/913](#); network architectures or network protocols for network security [H04L 63/00](#); cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#))}
- U G11B 20/02               · Analogue recording or reproducing  
G11B 20/06               · · Angle-modulation recording (angle modulation [H03C](#); demodulation of angle modulated oscillations [H03D](#))  
G11B 20/08               · · Pulse-modulation recording or reproducing (pulse-code-modulation recording [G11B 20/10](#); pulse modulation or pulse demodulation [H03K](#))  
G11B 20/10               · Digital recording or reproducing (digital computers in which at least part of the computation is effected electrically, arrangements for handling digital data [G06F](#); transmission of digital information [H04L](#))
- U G11B 20/12               · · Formatting, e.g. arrangement of data block or words on the record carriers {{within interface between computers and data recorders [G06F 3/06](#))}
- U G11B 2020/1264           · · · {wherein the formatting concerns a specific kind of data}
- U G11B 2020/1265           · · · · {Control data, system data or management information, i.e. data used to access or process user data}
- G11B 2020/1287           · · · · · {Synchronisation pattern, e.g. VCO fields (specific bit sequences of sync patterns [G11B 20/1403](#); A/V synchronisation [G11B 27/00](#))}
- U G11B 20/18               · · Error detection or correction; Testing, {e.g. of drop-outs}
- G11B 20/1833              · · · {by adding special lists or symbols to the coded information ([G11B 20/1806](#), [G11B 20/1866](#) take precedence)}
- U G11B 20/22               · for reducing distortions  
G11B 20/225               · · {for reducing wow or flutter (by controlling the speed of the record carrier [G11B 15/46](#), [G11B 19/28](#))}
- U G11B 21/00                   Head arrangements not specific to the method of recording or reproducing**
- U G11B 21/02               · Driving or moving of heads  
G11B 21/03               · · for correcting time base error {during transducing operation, by driving or moving the head in a direction more or less parallel to the direction of travel of the recording medium, e.g. tangential direction on a rotating disc (by driving or moving the head in a direction which cuts across the direction of travel of the recording medium [G11B 15/1808](#), [G11B 15/467](#))}
- G11B 21/04               · · Automatic feed mechanism producing a {progressive} transducing traverse of the head in a direction which cuts across the direction of travel of the recording medium, e.g. helical scan, {e.g. by lead-screw ([G11B 19/20](#), [G11B 21/08](#) and [G11B 21/10](#) take precedence)}

**G11B 23/00** **Record carriers not specific to the method of recording or reproducing; Accessories, e.g. containers, specially adapted for co-operation with the recording or reproducing apparatus {Intermediate mediums; Apparatus or processes specially adapted for their manufacture (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B29](#), [B41M](#), [B05D](#), [C08L](#), [F16N](#))}**

NOTE

In group [G11B 23/00](#), recording or reproducing apparatus does not include the record carriers.

- U G11B 23/0014 · {record carriers not specifically of filamentary or web form ([G11B 23/0057](#) takes precedence)}
- U G11B 23/0021 · · {discs}
- U G11B 23/0028 · · · {Details}
- G11B 23/0035 · · · · {means incorporated in the disc, e.g. hub, to enable its guiding, loading or driving (means for driving the head [G11B 21/06](#); guiding the disc for centering or locking [G11B 17/022](#); turntables or spindles for driving [G11B 19/2009](#))}
- G11B 23/0042 · · · · · {with provision for auxiliary features (sensing such features [G11B 17/00](#), [G11B 19/02](#))}
- G11B 23/02 · Containers; Storing means {both adapted to cooperate with the recording or reproducing means} (cabinets, cases, stands, modified to store record carriers [G11B 33/04](#); storing webs, tapes, or filamentary material in general [B65H 75/00](#))
- G11B 23/04 · · Magazines; Cassettes {for webs or filaments} ([G11B 23/12](#) takes precedence; {-cassettes with sealing or locking means [G11B 23/28](#); dummy cassettes for locking in the drive [G11B 33/005](#))}
- G11B 23/28 · Indicating {or preventing} prior or unauthorized use, {e.g. cassettes with sealing or locking means, write-protect devices for discs (write-protect devices for tapes [G11B 23/042](#), [G11B 23/08714](#); dummy cassettes for locking in the drive [G11B 33/005](#))}
- G11B 23/50 · Reconditioning of record carriers; Cleaning of record carriers; {Carrying-off electrostatic charges} ([G11B 3/58](#) takes precedence; {-carrying off electrostatic charges in general [H05F 3/00](#))}
- G11B 25/00** **Apparatus characterised by the shape of record carrier employed but not specific to the method of recording or reproducing (individual parts of apparatus [G11B 3/00](#) to [G11B 23/00](#), [G11B 33/00](#)), {e.g. dictating apparatus; Combinations of such apparatus}**
- U G11B 25/04 · using flat record carriers, e.g. disc, card
- G11B 25/046 · · {using stationary discs, or cards provided with a circular recording area (automatic feed mechanism producing a transducing t traverse of the head across stationary disc tracks [G11B 21/043](#); driving heads relatively to stationary record carriers for mechanical transducing [G11B 3/40](#))}
- G11B 25/10 · Apparatus capable of using record carriers defined in more than one of the sub-groups [G11B 25/02](#) to [G11B 25/08](#); {Adaptor devices therefor}
- U G11B 27/00** **Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel**
- G11B 27/002 · {Programmed access in sequence to a plurality of record carriers or indexed parts, e.g. tracks, thereof; e.g. for editing; (transfer of record carriers from magazine [G11B 15/68](#), [G11B 17/10](#); [G11B 17/22](#))}

- G11B 27/02
- Editing, e.g. varying the order of information signals recorded on, or reproduced from, record carriers (arrangements for sorting or merging computer data on continuous record carriers [G06F 7/22](#); mixing of video signals [H04N 5/265](#))
- WARNING**  
For groups [G11B 27/022](#) to [G11B 27/038](#), see provisionally also [G11B 27/02](#), [G11B 27/029](#) and [G11B 27/036](#)
- U G11B 27/022
- • Electronic editing of analogue information signals, e.g. audio or video signals
- G11B 27/024
- • • on tapes ([G11B 27/028](#), [G11B 27/029](#) take precedence)
- G11B 27/026
- • • on discs ([G11B 27/028](#), [G11B 27/029](#) take precedence)
- U G11B 27/031
- • Electronic editing of digitised analogue information signals, e.g. audio or video signals
- G11B 27/032
- • • on tapes ([G11B 27/036](#), [G11B 27/038](#) take precedence)
- G11B 27/034
- • • on discs ([G11B 27/036](#), [G11B 27/038](#) take precedence)
- U G11B 27/10
- Indexing; Addressing; Timing or synchronising; Measuring tape travel
- G11B 27/102
- {Programmed access in sequence to addressed parts of tracks of operating record carriers (access by moving the head [G11B 3/08](#), [G11B 5/54](#), [G11B 7/085](#), [G11B 21/022](#); by moving the record carrier [G11B 15/005](#), [G11B 17/005](#); by driving of both record carrier and head [G11B 15/1816](#))}
- U G11B 27/19
- • by using information detectable on the record carrier
- G11B 27/24
- • • by sensing features on the record carrier other than the transducing track (for controlling purposes [G11B 15/00](#), [G11B 17/00](#)); {sensing signals or marks recorded by another method than the main recording}
- G11B 27/34
- • Indicating arrangements (indicating measured values in general [G01D](#){  
{indicating means incorporated in magazine or cassette [G11B 23/046](#) and [G11B 23/0875](#)})
- G11B 31/00**
- Arrangements for the associated working of recording or reproducing apparatus with related apparatus (with cameras or projectors [G03B 31/00](#); {recording/reproducing of music for electrophonic musical instruments [G10H 1/0033](#); automatic arrangements for answering calls or for recording messages for absent subscribers [H04M 1/64](#); telephonic communication systems adapted for combination with dictation recording and playback systems [H04M 11/10](#); connection of TV recorder with other related apparatus, e.g. TV camera or receiver, in which the TV signal is significantly involved [H04N](#), e.g. [H04N 5/225](#), [H04N 5/765](#); combination of radio or TV with other apparatus, e.g. with vehicles [H05K 11/00](#))}**
- U **G11B 33/00**
- Constructional parts, details or accessories not provided for in the preceding groups (containers, packaging elements or packages specially adapted for record carriers [B65D 85/00](#))**
- G11B 33/02
- Cabinets; Cases; Stands; Disposition of apparatus therein or thereon (furniture aspects [A47B](#), e.g. [A47B 81/06](#); {showing stands, hangers or shelves adapted for particular articles [A47F 7/00](#); albums for record carriers, e.g. discs [B42F 5/005](#); suspended filing appliances for record carriers, e.g. discs [B42F 15/0005](#); fastening devices for wings, e.g. covers [E05C](#); for holding wings in one or more opened positions [E05C 17/00](#); hinges [E05D](#); closers or openers of wings, e.g. with braking or counter-balancing devices [E05F](#))}
- G11B 33/10
- Indicating arrangements; Warning arrangements {([G11B 15/04](#), [G11B 19/04](#), [G11B 27/34](#), [G11B 27/36](#) take precedence)}

## Project: N/A (G11C)

## G11C

**STATIC STORES (information storage based on relative movement between record carrier and transducer [G11B](#); semiconductor devices for storage [H01L](#), e.g. [H01L 27/108](#) to [H01L 27/115](#); pulse technique in general [H03K](#), e.g. electronic switches [H03K 17/00](#); {-using a static store as a picture recording medium [H04N 5/907](#)})**

NOTES

1. This subclass covers devices or arrangements for storage of digital or analogue information in which no relative movement takes place between an information storage element and a transducer; which incorporate a selecting-device for writing-in or reading-out the information into or from the store
2. This subclass does not cover elements not adapted for storage and not provided with such means as referred to in Note (3) below, which elements are classified in the appropriate subclass, e.g. of [H01](#), [H03K](#).
3. In this subclass, the following terms are used with the meaning indicated:
  - "storage element" is an element which can hold at least one item of information and is provided with means for writing-in or reading-out this information;
  - "memory" is a device, including storage elements, which can hold information to be extracted when desired.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

<a href="#">G11C 8/02</a>	covered by	<a href="#">G11C 8/00</a>
<del>—</del> ,	<a href="#">H03K 17/00</a>	
<a href="#">G11C 11/4193</a>	covered by	
<a href="#">G11C 11/00</a>		
<a href="#">G11C 11/4195</a>	covered by	
<a href="#">G11C 11/00</a>		
<a href="#">G11C 11/4197</a>	covered by	
<a href="#">G11C 11/00</a>		

**U G11C 5/00****Details of stores covered by [G11C 11/00](#)**

G11C 5/005

- {Circuit means for protection against loss of information of semiconductor storage devices (manufacturing semi-conductor by using bombardement with radiation [H01L 21/26](#); error detection, monitoring [G06F 11/00](#))}

G11C 5/14

- Power supply arrangements (in general [G05F](#)-, [H02J](#)-, [H02M](#)), {e.g. Power down/chip (de)selection, layout of wiring/power grids, multiple supply levels}

**G11C 7/00**

**Arrangements for writing information into, or reading information out from, a digital store ([G11C 5/00](#) takes precedence; auxiliary circuits for stores using semiconductor devices [G11C 11/4063](#)-, [G11C 11/413](#) )**

G11C 7/02

- with means for avoiding parasitic signals

WARNING

Not complete; see also [G11C 7/18](#)-, [G11C 7/22](#)

G11C 7/06

- Sense amplifiers; Associated circuits, {e.g. timing or triggering circuits} (amplifiers per se [H03F](#)-, [H03K](#))

**G11C 8/00**

**Arrangements for selecting an address in a digital store (for stores using transistors [G11C 11/407](#)-, [G11C 11/413](#);- {-switching or gating circuits for general use [H03K 17/00](#)})**

- G11C 8/04
- using a sequential addressing device, e.g. shift register, counter {(FIFO [G06F 5/06](#); LIFO [G06F 7/78](#); multidimensional memory addressing [G06F 12/0207](#))}
- U G11C 11/00**      **Digital stores characterised by the use of particular electric or magnetic storage elements; Storage elements therefor ([G11C 14/00](#) to [G11C 21/00](#) take precedence)**
- G11C 11/02
- using magnetic elements {(using multibit magnetic storage elements [G11C 11/5607](#); counters with magnetic elements [H03K 23/76](#); pulse generators, static switches, logic circuits with such elements [H03K 3/45](#), [H03K 17/80](#), [H03K 19/16](#); measurement of magnetic variables [G01R 33/00](#))}
- G11C 11/04
- • using rod-type storage elements {(contains no documents; see [G11C 11/06085](#), [G11C 11/14](#), [G11C 11/155](#))}
- U G11C 11/06**
- • using single-aperture storage elements, e.g. ring core; using multi-aperture plates in which each individual aperture forms a storage element
- G11C 11/06007
- • {using a single aperture or single magnetic closed circuit}
- NOTE**  
Provisionally contains the following details; control write -, read -, address circuitry (pulse generators in general [H03K 5/00](#), [H03K 17/00](#)); arrangements for temperature compensation; checking of the correct functioning and repair arrangements (checking methods in general [G06F 11/00](#), [G06F 11/28](#); testing magnetic elements per se [G01R 33/00](#)); magnetic properties, choice of materials or the like (materials per se [H01F 1/00](#))
- G11C 11/061
- • • using element with single aperture or magnetic loop for storage, one element per bit, and for destructive read-out {(contains no documents, see [G11C 11/06007](#), [G11C 11/06014](#), [G11C 11/06021](#), [G11C 11/06028](#))}
- G11C 11/16
- • using elements in which the storage effect is based on magnetic spin effect {(sensors using magnetoresistive multilayer structures [G01R 33/093](#); thin layer magnetic read heads for magnetic discs [G11B 5/31](#); non-reciprocal magnetic elements in waveguides [H01P](#); composition of ferromagnetic material [H01F 1/00](#); gyrators [H03H 7/002](#))}
- U G11C 11/19**
- using non-linear reactive devices in resonant circuits {(contains no documents, see [G11C 11/20](#))}
- G11C 11/20
- • using parametrons, {i.e. ferroresonant triggers; with overcritical feedback magnetic amplifiers or similar (pulse generators using parametrons and ferroresonant devices [H03K 19/162](#), [H03K 19/164](#); counters using such elements [H03K 23/001](#))}
- U G11C 11/21**
- using electric elements
- G11C 11/22
- • using ferroelectric elements {(using multibit ferroelectric storage elements [G11C 11/5657](#); pulse generators using ferroelectric elements [H03K 3/45](#); counters using such elements [H03K 23/76](#))}
- G11C 11/23
- • using electrostatic storage on a common layer, e.g. Forrester-Haef tubes, {William tubes} ([G11C 11/22](#) takes precedence; {construction of Williams tubes [H01J 31/00](#))}
- G11C 11/24
- • using capacitors ([G11C 11/22](#) takes precedence; using a combination of semiconductor devices and capacitors [G11C 11/34](#), e.g. [G11C 11/40](#))
- U G11C 11/26**
- • using discharge tubes {(counters using such elements [H03K 25/00](#))}
- G11C 11/28
- • • using gas-filled tubes {(counting tubes [G11C 11/265](#); pulse generators, electronic switches, logic circuits using such elements [H03K 3/37](#), [H03K 17/52](#), [H03K 19/04](#))}

- G11C 11/30
  - • • using vacuum tubes {(counting tubes [G11C 11/265](#); pulse generators, electronic switches, logic circuits using such elements [H03K 3/37](#)-, [H03K 17/52](#)-, [H03K 19/04](#))}
- G11C 11/34
  - • using semiconductor devices {(processes or apparatus for the manufacture or treatment of semiconductor or solid state devices [H01L 21/00](#)-, integrated circuit devices [H01L 27/00](#)-, generating electric pulses, e.g. bistable devices using semiconductor devices [H03K 3/00](#))}
- U G11C 11/40
  - • • using transistors
- U G11C 11/41
  - • • • forming {static} cells with positive feedback, i.e. cells not needing refreshing or charge regeneration, e.g. bistable multivibrator or Schmitt trigger
- G11C 11/412
  - • • • • using field-effect transistors only {(latent image memory [G11C 7/20](#)-, multi-port cells [G11C 8/16](#))}
- G11C 11/44
  - • using super-conductive elements, e.g. cryotron {(pulse generators using such elements [H03K 3/38](#)-, counters [H03K 23/001](#))}
- G11C 11/50
  - using actuation of electric contacts to store the information (mechanical stores [G11C 23/00](#)-, switches providing a selected number of consecutive operations of the contacts by a single manual actuation of the operating part [H01H 41/00](#))
- G11C 11/56
  - using storage elements with more than two stable states represented by steps, e.g. of voltage, current, phase, frequency (counting arrangements comprising multi-stable elements of this type [H03K 25/00](#)-, [H03K 29/00](#))
- G11C 13/00**

**Digital stores characterised by the use of storage elements not covered by groups [G11C 11/00](#)-, [G11C 23/00](#) to [G11C 25/00](#)**
- G11C 13/04
  - using optical elements {using other beam accessed elements, e.g. electron, ion beam (using electrostatic memory tubes [G11C 11/23](#)-, recording of television signals [H04N 5/76](#))}
- G11C 13/042
  - • {using information stored in the form of an interference pattern (hologram, lippman; holography [G03H](#)-, [G02B 5/32](#))}
- G11C 14/00**

**Digital stores characterised by arrangements of cells having volatile and non-volatile storage properties for back-up when the power is down {(bistable elements storing the actual state when the supply voltage fails [H03K 3/02335](#)-, [H03K 3/0375](#)-, [H03K 3/2865](#)-, [H03K 3/356008](#))}**
- G11C 15/00**

**Digital stores in which information comprising one or more characteristic parts is written into the store and in which information is read-out by searching for one or more of these characteristic parts, i.e. associative or content-addressed stores (in which information is addressed to a specific location [G11C 11/00](#)-, {-selection information using addressing means, e.g. hashing, tree addressing, chaining [G06F 11/22](#)-, information retrieval systems using a computer [G06F 17/30](#))}**
- U **G11C 16/00**

**Erasable programmable read-only memories ([G11C 14/00](#) takes precedence)**
- U G11C 16/02
  - electrically programmable {(programmable multibit digital storage elements [G11C 11/5621](#))}
- U G11C 16/04
  - • using variable threshold transistors, e.g. FAMOS
- G11C 16/0408
  - • • {comprising cells containing floating gate transistors ([G11C 16/0483](#)-, [G11C 16/0491](#) take precedence)}
- G11C 16/0466
  - • • {comprising cells with charge storage in an insulating layer, e.g. MNOS, SNOS ([G11C 16/0483](#)-, [G11C 16/0491](#) take precedence)}

- G11C 17/00** Read-only memories programmable only once; Semi-permanent stores, e.g. manually-replaceable information cards ({multibit read-only memories [G11C 11/5692](#); } erasable programmable read-only memories [G11C 16/00](#); coding, decoding or code conversion, in general [H03M](#); {-combination of ROM and RAM [G11C 11/005](#); [G11C 14/00](#); for electrical control of combustion engines [F02D 41/2406](#)})
- G11C 17/005 · {with a storage element common to a large number of data, e.g. perforated card ([G11C 17/02](#); [G11C 17/04](#) take precedence)}
- G11C 17/04 · using capacitive elements ([G11C 17/06](#); [G11C 17/14](#) take precedence)
- G11C 17/08 · using semiconductor devices, e.g. bipolar elements ([G11C 17/06](#); [G11C 17/14](#) take precedence)
- G11C 19/00** Digital stores in which the information is moved stepwise, e.g. shift register (counting chains [H03K 23/00](#)){stack stores, push-down stores (linear pulse counters [H03K 23/54](#); pulse distributors [H03K 5/15](#); methods and arrangements for shifting data [G06F 5/01](#))}
- U G11C 19/02 · using magnetic elements ([G11C 19/14](#) takes precedence)
- G11C 19/08 · · using thin films in plane structure {(thin magnetic films and apparatus or processes specially adapted for manufacturing or assembling the same [H01F 10/00](#); [H01F 41/14](#))}
- G11C 19/085 · · · {Generating magnetic fields therefor, e.g. uniform magnetic field for magnetic domain stabilisation (coil construction [H01F 5/00](#); electromagnets [H01F 7/06](#))}
- G11C 19/0875 · · · {Organisation of a plurality of magnetic shift registers (FIFO [G06F 5/06](#); LIFO [G06F 7/78](#))}
- U G11C 19/18 · using capacitors as main elements of the stages {(if capacitors are used as auxiliary stage in between main stages with other elements, the latter take precedence; [G11C 19/005](#) takes precedence)}
- U G11C 19/182 · · {in combination with semiconductor elements, e.g. bipolar transistors, diodes}
- G11C 19/188 · · · {Organisation of a multiplicity of shift registers, e.g. regeneration, timing, input-output circuits (FIFO [G06F 5/06](#); LIFO [G06F 7/78](#))}
- U G11C 19/28 · using semiconductor elements ([G11C 19/14](#) takes precedence)
- G11C 19/287 · · {Organisation of a multiplicity of shift registers (FIFO [G06F 5/06](#); LIFO [G06F 7/78](#))}
- G11C 19/34 · using storage elements with more than two stable states represented by steps, e.g. of voltage, current, phase, frequency {(in RAM multistable cells [G11C 11/56](#); in capacitive analog stores [G11C 27/04](#))}
- U G11C 21/00** Digital stores in which the information circulates {continuously}{stepwise [G11C 19/00](#)}
- G11C 21/005 · {using electrical delay line (construction of such lines [H03H 7/30](#); [H03H 11/26](#))}
- G11C 27/00** Electric analogue stores, e.g. for storing instantaneous values {(integrating circuits acting as stores [G06G 7/18](#); pulse counters with step by step integration and static storage [H03K 25/00](#))}
- G11C 29/00** Checking stores for correct operation; {Subsequent repair}; Testing stores during standby or offline operation {(testing of electronic circuits in general [G01R 31/28](#); error detection or error correction in computer memories during normal operation [G06F 11/1008](#); [G06F 11/1666](#); testing of computers during standby [G06F 11/22](#))}

**WARNING**

Groups [G11C 29/70](#) to [G11C 29/886](#) do not correspond to former or current IPC groups.

Concordance CPC : IPC for these groups is the following: - [G11C 29/70](#) -  
[G11C 29/886](#) : [G11C 29/00](#)

- U G11C 2207/00 Indexing scheme relating to arrangements for writing information into, or reading information out from, a digital store**
- G11C 2207/16 · Solid state audio (deprecated, only for historical reasons, [G06F 3/16](#)-, [G11B](#))
  - U G11C 2207/22 · Control and timing of internal memory operations
  - G11C 2207/2281 · · Timing of a read operation (sense amplifier timing [G11C 7/06](#)-, [G11C 7/08](#))
  - G11C 2207/229 · · Timing of a write operation (sense amplifier timing [G11C 7/06](#)-, [G11C 7/08](#))
- U G11C 2229/00 Indexing scheme relating to checking stores for correct operation, subsequent repair or testing stores during standby or offline operation**
- G11C 2229/70 · Indexing scheme relating to [G11C 29/70](#)-, for implementation aspects of redundancy repair

**Project: N/A (G21C)**

- U G21C 1/00 Reactors**
- G21C 1/02 · Fast fission reactors, i.e. reactors not using a moderator; {-Metal cooled reactors; Fast breeders}
  - G21C 1/04 · Thermal reactors; {-Epithermal reactors}
  - G21C 1/30 · Subcritical reactors; {-Experimental reactors with exception of swimming-pool reactors or zero-energy reactors}
- U G21C 3/00 Reactor fuel elements and their assemblies; Selection of substances for use as reactor fuel elements**
- U G21C 3/30 · Assemblies of a number of fuel elements in the form of a rigid unit
  - U G21C 3/32 · · Bundles of parallel pin-, rod-, or tube-shaped fuel elements
  - G21C 3/334 · · · Assembling {-, maintenance or repair of} the bundles {{assembling, maintenance or repair of other reactor components [G21C 19/207](#)}}
  - G21C 3/40 · Structural combination of fuel element with thermoelectric element for direct production of electric energy from fission heat (for temperature measurement [G21C 17/10](#)){-or with another arrangement for direct production of electric energy, e.g. a thermionic device (combination with thermoelements for temperature measurements [G21C 17/102](#))}
- U G21C 7/00 Control of nuclear reaction**
- U G21C 7/06 · by application of neutron-absorbing material, i.e. material with absorption cross-section very much in excess of reflection cross-section
  - U G21C 7/08 · · by displacement of solid control elements, e.g. control rods
  - G21C 7/20 · · · Disposition of shock-absorbing devices (shock-absorbers in general [F16F](#)) {Braking arrangements}
- U G21C 11/00 Shielding structurally associated with the reactor**
- G21C 11/02 · Biological shielding (in general [G21F](#)){Neutron or gamma shielding}
- G21C 17/00 Monitoring; Testing (measuring in general [G01](#)); {-Maintaining}**
- U G21C 19/00 Arrangements for treating, for handling, or for facilitating the handling of, fuel or other materials which are used within the reactor, e.g. within its pressure vessel**
- G21C 19/34 · Apparatus or processes for dismantling nuclear fuel, e.g. before reprocessing; {-Apparatus or processes for dismantling strings of spent fuel elements} (shielded cells [G21F 7/00](#))

**Project: N/A (G21H)**

- G21H 1/00** Arrangements for obtaining electrical energy from radioactive sources, e.g. from radioactive isotopes, {nuclear or atomic batteries}
- G21H 3/00** Arrangements for direct conversion of radiation energy from radioactive sources into forms of energy other than electric energy, e.g. {into} light {or mechanic energy}{lasers [H01S 3/00](#); {gamma masers [H01S 4/00](#))}

**Project: N/A (G21K)**

- U G21K 1/00** Arrangements for handling particles or ionizing radiation, e.g. focusing or moderating (production or acceleration of neutrons, electrically-charged particles, neutral molecular beams or neutral atomic beams [H05H 3/00](#) - [H05H 15/00](#))
- G21K 1/003** · {Manipulation of charged particles by using radiation pressure, e.g. optical levitation (acceleration of charged particles [H05H 5/00](#)-, [H05H 7/00](#)-, [H05H 9/00](#)-, [H05H 11/00](#)-, [H05H 13/00](#))}
- G21K 1/06** · using diffraction, refraction or reflection, e.g. monochromators ([G21K 1/10](#)-, [G21K 7/00](#) take precedence)
- G21K 1/067** · · {using surface reflection, e.g. grazing incidence mirrors, gratings (multilayer mirrors [G21K 1/062](#)-, crystal optics [G21K 1/06](#))}
- G21K 1/08** · Deviation, concentration or focusing of the beam by electric or magnetic means (electron-optical arrangements in electric discharge tubes [H01J 29/46](#)-, {details, e.g. electric or magnetic deviating means for direct voltage accelerators or in accelerators using single pulses [H05H 5/02](#)-, arrangements for injecting particles into orbits [H05H 7/08](#)-, arrangements for ejecting particles from orbits [H05H 7/10](#))}
- G21K 1/16** · using polarising devices, e.g. for obtaining a polarised beam {(ion sources, ion guns [H01J 27/02](#)-, polarised targets for producing nuclear reactions [H05H 6/005](#))}
- G21K 4/00** Conversion screens for the conversion of the spatial distribution of X-rays or particle radiation into visible images, e.g. fluoroscopic screens (photographic processes using X-ray intensifiers [G03C 5/17](#)-, discharge tubes comprising luminescent screens [H01J 1/62](#)-, cathode ray tubes for X-ray conversion with optical output [H01J 31/50](#))

**Project: N/A (H01B)**

- H01B** **CABLES; CONDUCTORS; INSULATORS; SELECTION OF MATERIALS FOR THEIR CONDUCTIVE, INSULATING OR DIELECTRIC PROPERTIES (selection for magnetic properties [H01F 1/00](#); waveguides [H01P](#); installations of cables or lines [H02G](#); {printed circuits [H05K](#))}**

NOTE

Group [H01B 12/00](#) takes precedence over groups [H01B 5/00](#) to [H01B 11/00](#).

**Project: N/A (H01C)**

H01C 7/00

Non-adjustable resistors formed as one or more layers or coatings; Non-adjustable resistors made from powdered conducting material or powdered semi-conducting material with or without insulating material (consisting of loose powdered or granular material [H01C 8/00](#); {measuring deformation in a solid state using the change in resistance formed by printed-circuit technique [G01B 7/20](#); insulating materials [H01B 3/00](#); passive thin-film or thick-film semiconductor or solid state devices [H01L 27/00](#); resistors without a potential-jump or surface barrier specially adapted for integrated circuits, details thereof, multistep manufacturing processes therefor [H01L 28/20](#)}; resistors with a potential-jump barrier or surface barrier, e.g. field effect resistors [H01L 29/00](#); semiconductor devices sensitive to electro-magnetic or corpuscular radiation, e.g. photoresistors, [H01L 31/00](#); devices using superconductivity [H01L 39/00](#); devices using galvanomagnetic or similar magnetic effects, e.g. magnetic-field-controlled resistors, [H01L 43/00](#); solid state devices for rectifying, amplifying, oscillating or switching without a potential-jump barrier or surface barrier [H01L 45/00](#); bulk negative resistance effect devices [H01L 47/00](#); {ohmic resistance heating [H05B 3/00](#); printed circuits [H05K](#)})

**Project: N/A (H01F)**

H01F

**MAGNETS; INDUCTANCES; TRANSFORMERS; SELECTION OF MATERIALS FOR THEIR MAGNETIC PROPERTIES** (ceramics based on ferrites [C04B 35/26](#); alloys [C22C](#); {construction of loading coils [H01B](#)}; thermomagnetic devices [H01L 37/00](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#))

NOTE

In this subclass, inductances and transformers are regarded as being "for power supply" if they are intended for this purpose even in systems operating at frequencies above 60 cycles/sec.

**U H01F 1/00**

**Magnets or magnetic bodies characterised by the magnetic materials therefor; Selection of materials for their magnetic properties**

H01F 1/0027

- {Thick magnetic films (forming thick magnetic films [H01F 41/16](#); magnetic record carriers [G11B 5/70](#))}

NOTE

Group [H01F 1/0036](#) takes precedence over groups [H01F 1/09](#), [H01F 1/11](#), [H01F 1/20](#), [H01F 1/33](#) and [H01F 1/36](#)

H01F 1/0036

- {showing low dimensional magnetism, i.e. spin rearrangements due to a restriction of dimensions, e.g. showing giant magnetoresistivity, ([H01F 1/153](#), [H01F 1/42](#) and [H01F 10/00](#) take precedence; magnetoresistive sensors [G01D 5/16](#), [G01R 33/06](#); magnetoresistive recording [G11B 5/39](#); magnetic-field-controlled resistors [H01L 43/08](#))}

U H01F 1/01

- of inorganic materials ([H01F 1/44](#) takes precedence)

U H01F 1/03

- • characterised by their coercivity {([H01F 1/40](#) takes precedence)}

U H01F 1/032

- • • of hard-magnetic materials

U H01F 1/04

- • • • Metals or alloys

H01F 1/047

- • • • • Alloys characterised by their composition

NOTE

In groups [H01F 1/053](#) to [H01F 1/059](#), an alloy is classified in the last appropriate place

- H01F 1/06 . . . . in the form of particles, e.g. powder ([H01F 1/047](#) takes precedence; {-record carriers [G11B 5/70605](#)})
- U H01F 1/12 . . . of soft-magnetic materials
- U H01F 1/14 . . . . Metals or alloys
- H01F 1/147 . . . . Alloys characterised by their composition {(treatment thereof for enhancing their electromagnetic properties [C21D 8/12](#))}
- NOTE**  
In groups [H01F 1/14708](#) to [H01F 1/15391](#), an alloy is classified in the last appropriate place
- H01F 1/14708 . . . . . {Fe-Ni based alloys (pure Fe or Ni [H01F 1/14](#), [H01F 1/16](#) or [H01F 1/20](#))}
- U H01F 1/34 . . . . Non-metallic substances, e.g. ferrites
- H01F 1/36 . . . . in the form of particles {([H01F 1/346](#), [H01F 1/348](#) and [H01F 1/38](#) take precedence)}
- H01F 1/40 . . of magnetic semiconductor materials, e.g. CdCr<sub>2</sub>S<sub>4</sub> (devices using galvanomagnetic or similar effects [H01L 43/00](#))
- H01F 1/401 . . . {diluted}
- NOTE**  
In group [H01F 1/401](#), a diluted magnetic semiconductor (DMS) is classified in the last appropriate place
- H01F 1/44 . . of magnetic liquids, e.g. ferrofluids (particles in a bonding agent [H01F 1/28](#), [H01F 1/36](#), {[H01F 1/37](#)})
- H01F 1/445 . . {the magnetic component being a compound, e.g. Fe<sub>3</sub>O<sub>4</sub> ([H01F 1/447](#) takes precedence)}
- H01F 3/00 Cores, Yokes, or armatures (magnetic materials [H01F 1/00](#); permanent magnets [H01F 7/02](#))**
- H01F 3/08 . . made from powder (powder coatings on sheets [H01F 3/02](#); on strips or ribbons [H01F 3/04](#); on wires [H01F 3/06](#))
- H01F 5/00 Coils (superconducting coils [H01F 6/06](#); fixed inductances of the signal type [H01F 17/00](#))**
- U **H01F 6/00 Superconducting magnets; Superconducting coils {(magnetic resonance assemblies using superconducting coil systems [G01R 33/3815](#))}**
- H01F 6/003 . {Methods and means for discharging superconductive storage (superconducting alloys [C22C](#); static memories with superconducting elements [G11C 11/44](#); superconducting circuit breakers with contacts [H01H 33/004](#); superconducting material [H01L 39/00](#); power cryotons [H01L 39/20](#); superconducting switches for low power [H03K 17/92](#))}
- H01F 7/00 Magnets (superconducting magnets [H01F 6/00](#); for separation of solid materials or fluids [B03C 1/00](#); for bench or like work-holders [B23B 31/28](#), [B23Q 3/00](#); work-holding devices [B25B 11/00](#); lifting magnets [B66C 1/00](#); {-operating or controlling locks using permanent magnets [E05B 47/0038](#); devices for holding a wing, e.g. door or window, by magnetic or electromagnetic attraction [E05C 19/16](#); relieving load or bearings using magnetic means [F16C 39/06](#)}; for electric meters [G01R](#); for relays [H01H](#); {-for electric discharge tubes [H01J](#), e.g. [H01J 3/24](#), [H01J 23/10](#), [H01J 29/68](#)}; for dynamo-electric machines [H02K](#))**
- U H01F 7/02 . . Permanent magnets {[PM]}
- U H01F 7/0231 . . {Magnetic circuits with PM for power or force generation}

- H01F 7/0236
  - • • {Magnetic suspension or levitation (for vehicles [B60L 13/04](#); magnetic bearings [F16C 39/063](#))}
- H01F 7/0252
  - • • {PM holding devices ([H01F 7/021](#); [H01F 7/0215](#); [H01F 7/0226](#) take precedence)}
- U H01F 7/0273
  - • {Magnetic circuits with PM for magnetic field generation}
- H01F 7/0278
  - • • {for generating uniform fields, focusing, deflecting electrically charged particles (for magnetic separation by Lorentz force [B03C 1/023](#); specially adapted for NMR applications [G01R 33/383](#))}
- H01F 7/06
  - Electromagnets; Actuators including electromagnets {(electric coils [H01F 5/00](#); devices for holding workpieces using electric force [B23Q 3/15](#); load-engaging elements for lifting articles electromagnetically [B66C 1/06](#); electromagnetic couplings [F16D 27/00](#); magnetic brakes [F16D 63/002](#); electromagnetically operated valves [F16K 11/24](#); [F16K 31/00](#); magnetically locked mine lamps [F21L 11/00](#); analysing materials by magnetic means [G01N 27/72](#); [G01N 27/80](#); electromagnets for winding mechanical clocks [G04C 1/02](#); electromagnetic relays [H01H 51/00](#); windings for salient poles of dynamo-electric machines [H02K 3/18](#); electromagnets for telegraphic communication [H04L](#); for arc lamps [H05B 31/28](#))}
- H01F 7/064
  - • {Circuit arrangements for actuating electromagnets (circuit arrangements for obtaining special operating characteristics [H01F 7/18](#); driving circuits for electromagnets making use of a switching regulator [H01H 47/325](#))}
- U H01F 7/08
  - • with armatures
- U H01F 7/121
  - • • Guiding or setting position of armatures, e.g. retaining armatures in their end position
- H01F 7/122
  - • • • by permanent magnets {([H01F 7/1615](#); [H01F 7/1646](#) take precedence)}
- U H01F 7/18
  - • • Circuit arrangements for obtaining desired operating characteristics, e.g. for slow operation, for sequential energisation of windings, for high-speed energisation of windings
- H01F 7/1805
  - • • • {Circuit arrangements for holding the operation of electromagnets or for holding the armature in attracted position with reduced energising current (for holding relay armature in attracted position with reduced energising current [H01H 47/04](#); quick energising of electro-dynamic machines [H02P 9/08](#); for quickly de-energising of dynamo-electric generators [H02P 9/123](#))}
- H01F 7/20
  - • without armatures (cores [H01F 3/00](#); coils [H01F 5/00](#); {-shaping metal by applying magnetic forces [B21D 26/14](#); electromagnets specially adapted for NMR applications [G01R 33/381](#))}
- H01F 7/202
  - • • {Electromagnets for high magnetic field strength (for superconducting electromagnets [H01F 6/00](#); for transformers or inductances without a magnetic core [H01F 30/08](#))}
- H01F 7/206
  - • • {Electromagnets for lifting, handling or transporting of magnetic pieces or material (electromagnets for guidance of vehicles, workpieces [B65G 21/2009](#); for magnetic suspension or levitation [H02N 15/00](#))}
- H01F 10/00**

**Thin magnetic films, e.g. of one-domain structure (magnetic record carriers [G11B 5/00](#); thin-film magnetic stores [G11C](#))**
- U H01F 10/08
  - characterised by magnetic layers ({[H01F 10/32](#) takes precedence } ; applying thin magnetic films to substrates [H01F 41/14](#))
- U H01F 10/10
  - • characterised by the composition
- U H01F 10/12
  - • • being metal or alloys (intermetallic compounds [H01F 10/18](#))

- H01F 10/14
- • • containing iron or nickel ({[H01F 10/126](#)}, [H01F 10/13](#)-, [H01F 10/16](#) take precedence)
- NOTE  
In this group, alloys containing iron or nickel are classified in the last appropriate place
- U H01F 10/18
- • • being compounds
- H01F 10/193
- • • • Magnetic semiconductor compounds {(in general [H01F 1/40](#)-, multilayers, e.g. superlattices [H01F 10/3213](#))}
- U H01F 10/20
- • • • Ferrites
- H01F 10/24
- • • • • Garnets {(in general [H01F 1/346](#)-, multilayers, e.g. superlattices [H01F 10/3209](#)-, applying magnetic garnet films to substrates by sputtering [H01F 41/186](#))}
- H01F 13/00**
- Apparatus or processes for magnetising or demagnetising ({devices for holding workpieces using magnetic or electric force acting directly on the workpieces [B23Q 3/15](#)}; for degaussing ships [B63G 9/06](#)-, for clocks or watches [G04D 9/00](#)-, {-recording or erasing of information on magnetic record carriers [G11B 5/00](#)}; demagnetising arrangements for colour television [H04N 9/29](#))}**
- H01F 17/00**
- Fixed inductances of the signal type (coils in general [H01F 5/00](#)-, {inductors without a potential-jump or surface barrier specially adapted for integrated circuits, details thereof and multistep manufacturing processes therefor [H01L 28/10](#)})}**
- H01F 17/0006
- {Printed inductances (printed coils for dynamo-electric machines [H02K 3/26](#)-, printed circuits [H05K](#))}
- U H01F 27/00**
- Details of transformers or inductances, in general**
- U H01F 27/28
- Coils; Windings; Conductive connections
- U H01F 27/288
- • {Shielding}
- H01F 27/2885
- • • {with shields or electrodes (shields or electrodes for pancake coils [H01F 27/2871](#)-, construction of electric or magnetic shields or screens [H01F 27/36](#))}
- U H01F 27/34
- Special means for preventing or reducing unwanted electric or magnetic effects, e.g. no-load losses, reactive currents, harmonics, oscillations, leakage fields
- H01F 27/346
- • {Preventing or reducing leakage fields (using magnetic shields [H01F 27/365](#)-, using auxiliary windings [H01F 27/38](#))}
- H01F 27/42
- Circuits specially adapted for the purpose of modifying, or compensating for, electric characteristics of transformers, reactors, or choke coils (circuits for controlling transformers, reactors or choke coils, for the purpose of obtaining a desired output [H02P 13/00](#)-, impedance networks [H03H](#))}
- U H01F 29/00**
- Variable transformers or inductances not covered by group [H01F 21/00](#) {(tap change devices [H01H 9/0005](#))}**
- U H01F 29/08
- with core, coil, winding, or shield movable to offset variation of voltage or phase shift, e.g. induction regulators
- H01F 29/10
- • having movable part of magnetic circuit {(high leakage transformers [H01F 38/08](#)-, dynamo-electric machines with movable part of magnetic circuit [H02K 23/44](#)-, [H02K 23/48](#))}
- H01F 29/14
- with variable magnetic bias ({amplitude modulation by means of variable impedance element [H03C 1/08](#)}; magnetic amplifiers [H03F](#)-, {-circuits for automatic telephonic communication [H04M 3/00](#)})}

- U H01F 41/00 Apparatus or processes specially adapted for manufacturing or assembling the devices covered by this subclass**
- U H01F 41/02 · for manufacturing cores, coils, or magnets ([H01F 41/14](#) takes precedence; for dynamo-electric machines [H02K 15/00](#))
- U H01F 41/0206 · {Manufacturing of magnetic cores by mechanical means (magnetic cores per se [H01F 27/24](#))}
- H01F 41/0233 · · {Manufacturing of magnetic circuits made from sheets (magnetic cores made from sheets [H01F 27/245](#); soft magnetic alloys in the form of sheets [H01F 1/16](#))}
- H01F 41/0246 · · {Manufacturing of magnetic circuits by moulding or by pressing powder (magnetic cores made by moulding or by pressing powder [H01F 27/255](#); soft magnetic particles [H01F 1/20](#); [H01F 1/36](#))}
- U H01F 41/0253 · {for manufacturing permanent magnets}
- H01F 41/026 · · {protecting methods against environmental influences, e.g. oxygen, by surface treatment (magnetic particles with skin [H01F 1/061](#); [H01F 1/09](#); [H01F 1/24](#); [H01F 1/33](#) and [G11B 5/706](#))}
- H01F 41/0266 · · {Moulding; Pressing ([H01F 41/0273](#) takes precedence; hard magnetic particles [H01F 1/06](#); [H01F 1/11](#))}
- H01F 41/14 · for applying magnetic films to substrates (covering metals, or materials with metals, in general [C23C](#); manufacturing record carriers [G11B 5/84](#))
- NOTE**  
Group [H01F 41/30](#) takes precedence over groups [H01F 41/16](#) to [H01F 41/24](#), and over group [H01F 41/32](#)
- U H01F 41/18 · · by cathode sputtering
- H01F 41/186 · · {for applying a magnetic garnet film (magnetic garnet materials [H01F 1/346](#); magnetic garnet films [H01F 10/24](#))}

**Project: N/A (H01G)**

- H01G CAPACITORS; CAPACITORS, RECTIFIERS, DETECTORS, SWITCHING DEVICES OR LIGHT-SENSITIVE DEVICES, OF THE ELECTROLYTIC TYPE (selection of specified materials as dielectric [H01B 3/00](#); {-ceramics [C04B](#)})**
- U H01G 4/00 Fixed capacitors; Processes of their manufacture (electrolytic capacitors [H01G 9/00](#))**
- U H01G 4/002 · Details
- U H01G 4/018 · · Dielectrics
- H01G 4/20 · · · using combinations of dielectrics from more than one of groups [H01G 4/02](#) to [H01G 4/06](#) ([H01G 4/12](#) takes precedence)
- H01G 4/33 · Thin- or thick-film capacitors (thin- or thick-film circuits [H01L 27/00](#); {capacitors without a potential-jump or surface barrier specially adapted for integrated circuits, details thereof, multistep manufacturing processes therefor [H01L 28/40](#)})
- H01G 4/40 · Structural combinations of fixed capacitors with other electric elements, the structure mainly consisting of a capacitor, e.g. RC combinations (thin or thick film circuits [H01L 27/00](#); {-capacitors without a potential-jump or surface barrier specially adapted for integrated circuits, details thereof, multistep manufacturing processes therefor [H01L 28/40](#)})
- U H01G 9/00 Electrolytic capacitors, rectifiers, detectors, switching devices, light-sensitive or temperature-sensitive devices; Processes of their manufacture**
- U H01G 9/004 · Details

- H01G 9/04
  - H01G 9/14
  - U H01G 9/20
  - U H01G 9/2027
  - H01G 9/2031
- • Electrodes {-or formation of dielectric layers thereon}
  - • Structural combinations {-or circuits} for modifying, or compensating for, electric characteristics of electrolytic capacitors (impedance networks [H03H](#))
  - Light-sensitive devices
  - • {comprising an oxide semiconductor electrode}
  - • • {comprising titanium oxide, e.g. TiO<sub>2</sub> ([H01G 9/2036](#) takes precedence)}

**Project: N/A (H01H)**

- H01H 9/00
  - U H01H 33/00
  - U H01H 33/02
  - H01H 33/021
  - U H01H 33/60
  - U H01H 33/66
  - U H01H 33/666
  - H01H 33/6661
  - H01H 50/00
- Details of switching devices, not covered by groups [H01H 1/00](#) to [H01H 7/00](#) (casings for switchgear [H02B 1/26](#); casings for electrical apparatus in general [H05K 5/00](#))**
- High-tension or heavy-current switches with arc-extinguishing or arc-preventing means**
- Details
  - • {Use of solid insulating compounds resistant to the contacting fluid dielectrics and their decomposition products, e.g. to SF<sub>6</sub> (insulators or insulating bodies characterised by the insulating materials, selection of materials for their insulating or dielectric properties per se [H01B 3/00](#))}
  - Switches wherein the means for extinguishing or preventing the arc do not include separate means for obtaining or increasing flow of arc-extinguishing fluid
  - • Vacuum switches
  - • • Operating arrangements
  - • • • {Combination with other type of switch, e.g. for load break switches ([H01H 33/143](#), [H01H 33/6662](#) take precedence)}
- Details of electromagnetic relays ({[H01H 51/28](#) takes precedence;} electric circuit arrangements [H01H 47/00](#); details of electrically-operated select or switches [H01H 63/00](#); {-testing of relays [G01R 31/00](#); electromagnets in general [H01F 7/06](#); relays for emergency protective circuit arrangements [H02H](#)})**

**Project: N/A (H01J)**

H01J

**ELECTRIC DISCHARGE TUBES OR DISCHARGE LAMPS (spark-gaps [H01T](#); arc lamps with consumable electrodes [H05B](#); particle accelerators [H05H](#))**

NOTES

1. This subclass covers only devices for producing, influencing, or using a flow of electrons or ions, e.g. for controlling, indicating, or switching of electric current, counting electric pulses, producing light or other electromagnetic oscillations, such as X-rays, or for separating or analysing radiation or particles, and having a closed or substantially closed casing containing a chosen gas, vapour, or vacuum, upon the pressure and nature of which the characteristics of the device depend. Light sources using a combination (other than covered by group [H01J 61/96](#) of this subclass) of discharge and other kinds of light generation are dealt with in [H05B 35/00](#).
2. In this subclass, groups [H01J 1/00](#) to [H01J 7/00](#) relate only to:
  - i. details of an unspecified kind of discharge tube or lamp, or
  - ii. details mentioned in a specification as applicable to two or more kinds of tubes or lamps as defined by groups [H01J 11/00](#), [H01J 13/00](#), [H01J 15/00](#), [H01J 17/00](#), [H01J 21/00](#), [H01J 25/00](#), [H01J 27/00](#), [H01J 31/00](#), [H01J 33/00](#), [H01J 35/00](#), [H01J 37/00](#), [H01J 40/00](#), [H01J 41/00](#), [H01J 47/00](#), [H01J 49/00](#), [H01J 61/00](#), [H01J 63/00](#) or

[H01J 65/00](#)-, hereinafter called basic kinds. A detail only described with reference to, or clearly only applicable to, tubes or lamps of a single basic kind is classified in the detail group appropriate to tubes or lamps of that basic kind, e.g. [H01J 17/04](#)-.

3. In this subclass, the following term is used with the meaning indicated:
  - "lamp" includes tubes emitting ultra-violet or infra-red light.
4. Attention is drawn to the definition of the expression "spark gaps" given in the Note following the title of subclass [H01T](#).
5. Apparatus or processes specially adapted for the manufacture of electric discharge tubes, discharge lamps, or parts thereof are classified in group [H01J 9/00](#)-.

- U H01J 1/00**      **Details of electrodes, of magnetic control means, of screens, or of the mounting or spacing thereof, common to two or more basic types of discharge tubes or lamps (details of electron-optical arrangements or of ion traps [H01J 3/00](#))**
- U H01J 1/02      • Main electrodes
- U H01J 1/30      • • Cold cathodes, e.g. field-emissive cathode
- H01J 1/312      • • • having an electric field perpendicular to the surface, e.g. tunnel-effect cathodes of Metal-Insulator-Metal [MIM] type {([H01J 1/304](#) to [H01J 1/308](#) take precedence [H01J 1/304](#) to [H01J 1/308](#) take precedence)}
- H01J 1/32      • • Secondary-electron-emitting electrodes ([H01J 1/35](#) takes precedence; luminescent screens [H01J 1/62](#)-; charge storage screens in general [H01J 1/78](#)-; charge storage screens using secondary emission for image tubes [H01J 29/41](#)-; dynodes for secondary emission tubes [H01J 43/10](#)-; secondary-emission detectors for measurement of nuclear or X-radiation [G01T 1/28](#))
- U H01J 1/54      • Screens on or from which an image or pattern is formed, picked up, converted, or stored; Luminescent coatings on vessels {(see provisionally also [H01J 29/08](#) to [H01J 29/36](#))}
- U H01J 1/62      • • Luminescent screens; Selection of materials for luminescent coatings on vessels {(see provisionally also [H01J 29/08](#) to [H01J 29/36](#))}
- H01J 1/63      • • • characterised by the luminescent material (luminescent materials or compositions [C09K 11/00](#){ see provisionally also [H01J 29/08](#) to [H01J 29/36](#))}
- H01J 1/66      • • • Supports for luminescent material (vessels [H01J 5/02](#){ see provisionally also [H01J 29/08](#) to [H01J 29/36](#))}
- U H01J 3/00**      **Details of electron-optical or ion-optical arrangements or of ion traps common to two or more basic types of discharge tubes or lamps**
- H01J 3/02      • Electron guns {(electron guns for discharge tubes with provision for introducing objects or material to be exposed to the discharge [H01J 37/06](#)-; for cathode ray tubes [H01J 29/48](#))}
- H01J 3/027      • • {Construction of the gun or parts thereof ([H01J 3/021](#) to [H01J 3/025](#)-, [H01J 3/026](#) and [H01J 3/028](#) take precedence)}
- H01J 3/06      • two or more guns being arranged in a single vacuum space, e.g. for plural-ray tubes ([H01J 3/07](#) takes precedence{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#))}
- H01J 3/08      • Arrangements for controlling intensity of ray or beam ([H01J 3/02](#)-, [H01J 3/04](#) take precedence{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#))}
- H01J 3/10      • Arrangements for centering ray or beam ([H01J 3/02](#)-, [H01J 3/04](#) take precedence{ see provisionally also [H01J 29/46](#) to [H01J 29/84](#))}

- H01J 3/12
- Arrangements for controlling cross-section of ray or beam; Arrangements for correcting aberration of beam, e.g. due to lenses ([H01J 3/02](#)-, [H01J 3/04](#) take precedence) {see provisionally also [H01J 29/46](#) to [H01J 29/84](#)}
- H01J 3/14
- Arrangements for focusing or reflecting ray or beam ([H01J 3/02](#)-, [H01J 3/04](#) take precedence) {see provisionally also [H01J 29/46](#) to [H01J 29/84](#)}
- H01J 3/26
- Arrangements for deflecting ray or beam (circuit arrangements for producing saw-tooth pulses or other deflecting voltages or currents [H03K](#)-; {[H01J 29/46](#) to [H01J 29/84](#) and [H01J 37/147](#) take precedence })
- U H01J 5/00**      **Details relating to vessels or to leading-in conductors common to two or more basic types of discharge tubes or lamps**
- U H01J 5/02
- Vessels; Containers; Shields associated therewith; Vacuum locks
- H01J 5/16
- • Optical or photographic arrangements structurally combined with the vessel (luminescent coatings [H01J 1/62](#) {see provisionally [H01J 29/84](#)})
- U H01J 5/32
- Seals for leading-in conductors
- H01J 5/34
- • for an individual conductor (pinched-stem seals [H01J 5/38](#)-; end-disc seals [H01J 5/40](#)-; annular seals [H01J 5/44](#))
- U H01J 7/00**      **Details not provided for in the preceding groups and common to two or more basic types of discharge tubes or lamps**
- H01J 7/30
- Igniting arrangements (circuit arrangements [H02M 1/02](#)-, [H05B](#))
- H01J 9/00**      **Apparatus or processes specially adapted to the manufacture, {installation, removal, maintenance} of electric discharge tubes, discharge lamps, or parts thereof (manufacture of vessels or containers from metal [B21](#), e.g. [B21D 51/00](#)-, from glass [C03B](#)); Recovery of material from discharge tubes or lamps**
- U H01J 9/24
- Manufacture or joining of vessels, leading-in conductors or bases
- H01J 9/244
- • {specially adapted for cathode ray tubes ([H01J 9/241](#)-, [H01J 9/26](#) take precedence)}
- H01J 9/245
- • {specially adapted for gas discharge tubes or lamps ([H01J 9/241](#)-, [H01J 9/26](#) take precedence)}
- U H01J 9/32
- • Sealing leading-in conductors
- H01J 9/323
- • • {Sealing leading-in conductors into a discharge lamp or a gas-filled discharge device (for incandescent lamps [H01K 3/20](#)-, joining glass to metal [C03C 27/00](#))}
- H01J 11/00**      **Gas-filled discharge tubes with alternating current induction of the discharge, e.g. AC-PDPs [Alternating Current Plasma Display Panels] (circuits or methods for driving PDPs [G09G 3/28](#)); Gas-filled discharge tubes without any main electrode inside the vessel; Gas-filled discharge tubes with at least one main electrode outside the vessel (discharge lamps [H01J 65/00](#) {[H01J 61/00](#)-, [H01J 63/00](#)})**
- NOTES
1. When classifying in this group, classification is made in all appropriate places.
  2. In this group, the following term is used with the meaning indicated:
    - "main electrode" means any of a sustain electrode, scan electrode or address electrode.
- U H01J 13/00**      **Discharge tubes with liquid-pool cathodes, e.g. metal-vapour rectifying tubes (lamps [H01J 61/00](#))**
- U H01J 13/02
- Details
- H01J 13/32
- • Cooling arrangements; Heating arrangements (for cathodes [H01J 13/14](#)-; for anodes [H01J 13/18](#))

- H01J 17/00** Gas-filled discharge tubes with solid cathode ([H01J 25/00](#)-, [H01J 27/00](#)-, [H01J 31/00](#) to [H01J 41/00](#) {[H01J 11/00](#)} take precedence; gas or vapour discharge lamps [H01J 61/00](#)-, gas filled spark gaps [H01T](#)-, Marx converters [H02M 7/26](#)-, tubes for generating potential differences by charges carried in a gas stream [H02N](#))
- U H01J 19/00** Details of vacuum tubes of the types covered by group [H01J 21/00](#)  
H01J 19/66
  - Means forming part of the tube for the purpose of providing electrical connection to it (construction of connectors [H01R](#){no documents, see [H01J 5/46](#) to [H01J 5/62](#)})
- H01J 21/00** Vacuum tubes ([H01J 25/00](#)-, [H01J 31/00](#) to [H01J 37/00](#)-, [H01J 43/00](#) take precedence; details of vacuum tubes [H01J 19/00](#)-, cathode ray or electron stream lamps [H01J 63/00](#))
- U H01J 23/00** Details of transit-time tubes of the types covered by group [H01J 25/00](#)  
U H01J 23/36
  - Coupling devices having distributed capacitance and inductance, structurally associated with the tube, for introducing or removing wave energy
- U H01J 23/40
  - to or from the interaction circuit
H01J 23/44
  - Rod-type coupling devices ([H01J 23/46](#)-, [H01J 23/48](#)-, [H01J 23/54](#) take precedence)
- H01J 25/00** Transit-time tubes, e.g. Klystrons, travelling-wave tubes, magnetrons (details of transit-time tubes [H01J 23/00](#)-, particle accelerators [H05H](#))  
H01J 25/50
  - Magnetrons, i.e. tubes with a magnet system producing an H-field crossing the E-field (with travelling wave not moving completely around the electron space [H01J 25/42](#)-, functioning with plural reflection or with reversed cyclotron action [H01J 25/62](#)-, [H01J 25/64](#))
- H01J 27/00** Ion beam tubes ([H01J 25/00](#)-, [H01J 33/00](#)-, [H01J 37/00](#) take precedence; particle accelerators [H05H](#))  
H01J 27/02
  - Ion sources; Ion guns ({for examination or processing discharge tubes [H01J 37/08](#)-, ion sources, ion guns for particle spectrometer or separator tubes [H01J 49/10](#)-, ion propulsion [F03H 1/00](#)); arrangements for handling particles, e.g. focusing, {charge exchanging, polarising} , [G21K 1/00](#)-, generating ions to be introduced into non-enclosed gases [H01T 23/00](#)-, generating plasma [H05H 1/24](#))
H01J 27/26
  - using surface ionisation, e.g. field effect ion sources, thermionic ion sources ([H01J 27/20](#)-, [H01J 27/24](#) take precedence)
- U H01J 29/00** Details of cathode-ray tubes or of electron-beam tubes of the types covered by group [H01J 31/00](#)  
H01J 29/003
  - {Arrangements for eliminating unwanted electromagnetic effects, e.g. demagnetisation arrangements, shielding coils ([H01J 29/06](#)-, [H01J 29/867](#) take precedence; demagnetisation in general [H01F 13/00](#)-, circuit arrangements therefor [H04N 9/29](#)-, screening of apparatus against electric or magnetic fields [H05K 9/00](#))}
- U H01J 29/02
  - Electrodes; Screens; Mounting, supporting, spacing or insulating thereof
- U H01J 29/10
  - Screens on or from which an image or pattern is formed, picked up, converted or stored
- U H01J 29/18
  - Luminescent screens
H01J 29/187
  - {screens with more than one luminescent material (as mixtures for the treatment of the screens) (for several superimposed luminescent layers [H01J 29/26](#)-, for adjacent dots or lines of different luminescent material [H01J 29/32](#))}

- U H01J 29/36      • . . Photoelectric screens; Charge-storage screens
- U H01J 29/38      • . . . not using charge storage, e.g. photo-emissive screen, extended cathode  
                    {(electrodes using photo-emission in general [H01J 1/34](#))}
- H01J 29/385      • . . . . {Photocathodes comprising a layer which modified the wave length  
                    of impinging radiation (luminescent layers sensitive to UV and X-rays  
                    [C09K 11/00](#), [G21K 4/00](#))}
- U H01J 29/39      • . . . Charge-storage screens {([H01J 29/395](#) takes precedence)}
- H01J 29/41      • . . . . using secondary emission, e.g. for supericonoscope {(electrodes using  
                    secondary emission in general [H01J 1/32](#); secondary emission tubes  
                    [H01J 43/00](#))}
- H01J 29/46      • Arrangements of electrodes and associated parts for generating or controlling  
                    the ray or beam, e.g. electron-optical arrangement {(transit time tubes  
                    [H01J 23/00](#), [H01J 25/00](#); X-ray tubes [H01J 35/00](#); beam tubes for examining  
                    ions, e.g. electron or ion microscopes, or processing of objects or materials  
                    e.g. electron or ion beam tubes [H01J 37/04](#); electron multipliers [H01J 43/04](#);  
                    handling of radiation or particles, e.g. focusing, deviating, not otherwise  
                    provided for [G21K 1/00](#))}
- H01J 29/467     • . {Control electrodes for flat display tubes, e.g. of the type covered by group  
                    [H01J 31/123](#)}
- NOTE  
[H01J 29/48](#) to [H01J 29/51](#) take precedence over groups [H01J 29/52](#) to  
[H01J 29/68](#).
- U H01J 29/48      • . Electron guns
- H01J 29/485      • . . {Construction of the gun or of parts thereof ([H01J 29/481](#), [H01J 29/482](#),  
                    [H01J 29/484](#) and [H01J 29/487](#) take precedence)}
- H01J 29/58      • . Arrangements for focusing or reflecting ray or beam {([H01J 29/467](#),  
                    [H01J 29/585](#) take precedence)}
- H01J 29/70      • . Arrangements for deflecting ray or beam ({[H01J 29/467](#), [H01J 29/525](#),  
                    [H01J 29/701](#), [H01J 29/708](#) take precedence } ; circuit arrangements for  
                    producing saw-tooth pulses or other deflecting voltages or currents [H03K](#))}
- U H01J 29/72      • . . along one straight line or along two perpendicular straight lines
- U H01J 29/76      • . . . Deflecting by magnetic fields only
- H01J 29/768      • . . . . {using printed windings (printed windings in general [H01F 27/2804](#);  
                    manufacturing printed coils per se [H01F 41/04](#); printed circuits and  
                    apparatus or processes for manufacturing printed circuits in general  
                    [H05K 1/00](#), e.g. [H05K 1/16](#), and [H05K 3/00](#))}
- U H01J 29/86      • Vessels; Containers; Vacuum locks
- H01J 29/867      • . {Means associated with the outside of the vessel for shielding, e.g. magnetic  
                    shields (screens for shielding inside the vessel [H01J 29/06](#); magnetic  
                    shielding in general [H05K 9/00](#))}
- H01J 31/00**      **Cathode ray tubes; Electron beam tubes ([H01J 25/00](#), [H01J 35/00](#),  
[H01J 37/00](#) take precedence; cathode ray or electron stream lamps  
[H01J 63/00](#); details of cathode ray tubes or of electron beam tubes  
[H01J 29/00](#))**
- U H01J 31/02      • having one or more output electrodes which may be impacted selectively by the  
                    ray or beam, and onto, from, or over which the ray or beam may be deflected or  
                    de-focused {(pulse counting circuits therewith [H03K 29/06](#))}
- U H01J 31/06      • . with more than two output electrodes, e.g. for multiple switching or counting
- H01J 31/065      • . . {for electrography or electrophotography, for transferring a charge pattern  
                    through the faceplate (leading-in arrangements [H01J 29/90](#); Lenard tubes  
                    [H01J 33/00](#); electrography or electrophotography per se [G03C](#))}

- U H01J 31/08
  - having a screen on or from which an image or pattern is formed, picked up, converted, or stored
- U H01J 31/10
  - • Image or pattern display tubes, i.e. having electrical input and optical output; Flying-spot tubes for scanning purposes
- U H01J 31/12
  - • • with luminescent screen
- H01J 31/121
  - • • • {tubes for oscillography (colour display tubes [H01J 31/20](#); cathode ray oscillography [G01R 13/20](#))}
- H01J 31/14
  - • • • Magic-eye or analogous tuning indicators {(mounting of visual indicators in a radio set [H03J 1/04](#); circuits for timing indicators [H03J 3/14](#))}
- U H01J 31/26
  - • Image pick-up tubes having an input of visible light and electric output (tubes without defined electron beams and having a light ray scanning photo-emissive screen [H01J 40/20](#))
- H01J 31/28
  - • • with electron ray scanning the image screen {([H01J 31/283](#); [H01J 31/286](#) take precedence)}
- H01J 35/00**

**X-ray tubes (X-ray lasers [H01S 4/00](#); X-ray technique in general [H05G](#), {e.g. apparatus or processes specially adapted for producing X-rays, not involving X-ray tubes, e.g. involving generation of a plasma [H05G 2/00](#))}**
- U H01J 35/02
  - Details
- H01J 35/16
  - • Vessels; Containers; Shields associated therewith {(vessels for high tension operation in general [H01J 5/06](#); mounting the tube within a closed housing [H05G 1/04](#))}
- H01J 35/20
  - • Selection of substances for gas fillings; Means for obtaining or maintaining the desired pressure within the tube, e.g. by gettering {(for gas-discharge tubes in general [H01J 7/02](#) to [H01J 61/76](#); evacuating, filling, gettering in general [H01J 9/38](#))}
- H01J 37/00**

**Discharge tubes with provision for introducing objects or material to be exposed to the discharge, e.g. for the purpose of examination or processing thereof ([H01J 33/00](#), [H01J 40/00](#), [H01J 41/00](#), [H01J 47/00](#), [H01J 49/00](#) take precedence; {scanning-probe techniques or apparatus [G01Q](#)}; contactless testing of electronic circuits using electron beams [G01R 31/305](#); {particle accelerators [H05H](#)})}**
- U H01J 37/02
  - Details
- H01J 37/023
  - • {Means for mechanically adjusting components not otherwise provided for (mechanically adjusting from the outside of electron or ion-optical components [H01J 37/067](#); positioning the object or material [H01J 37/20](#); vacuum locks, means for obtaining or maintaining the desired pressure within the tube [H01J 37/18](#); other manipulating devices [H01L 21/48](#), [G21F](#))}
- H01J 37/04
  - • Arrangements of electrodes and associated parts for generating or controlling the discharge, e.g. electron-optical arrangement, ion-optical arrangement {(electron or ion-optical systems for localised treatment of materials [H01J 37/3007](#); discharge control means in gas filled discharge tubes [H01J 37/32009](#))}
- H01J 37/06
  - • • Electron sources; Electron guns {(electron sources in general [H01J 1/02](#), [H01J 19/02](#); electron guns in general [H01J 3/02](#))}
- U H01J 37/147
  - • • Arrangements for directing or deflecting the discharge along a desired path {([H01J 37/045](#) takes precedence } ; lenses [H01J 37/10](#))}
- H01J 37/15
  - • • • External mechanical adjustment of electron or ion optical components ([H01J 37/067](#), [H01J 37/20](#) take precedence)
- H01J 37/20
  - • Means for supporting or positioning the objects or the material; Means for adjusting diaphragms or lenses associated with the support {(introducing the objects [H01J 37/18](#); preparing specimens for investigation [G01N 1/06](#), [G01N 1/28](#))}

- H01J 37/21
- Means for adjusting the focus {(adjusting the focus while observing the image by photographic or optical means [H01J 37/22](#); means for observing the object or the point of impact on the object in tubes for the localised treatment of materials [H01J 37/3005](#)}
- H01J 37/22
- Optical or photographic arrangements associated with the tube {(using a CRT for the display of the image in a scanning electron microscope [H01J 37/28](#); observing the object or the point of impact on the object in tubes for the localised treatment of materials [H01J 37/3007](#)}
- H01J 37/248
- Components associated with high voltage supply ({Means for measuring the high voltage per se [G01R 15/00](#) ; high voltage supply per se [H02J](#), [H02M](#))
- U H01J 37/26
- Electron or ion microscopes; Electron or ion diffraction tubes
- H01J 37/266
- {Measurement of magnetic- or electric fields in the object; Lorentz microscopy (emission microscopes [H01J 37/285](#); reflecting microscopes [H01J 37/29](#); spot analysing [H01J 37/252](#)}
- H01J 37/28
- with scanning beams ({[H01J 37/268](#), [H01J 37/292](#), [H01J 37/2955](#) take precedence } ; microanalysers using scanning beams [H01J 37/256](#))
- H01J 37/32
- Gas-filled discharge tubes, {e.g. for surface treatment of objects such as coating, plating, etching, sterilising or bringing about chemical reactions} ({general methods or devices for heat treatments of ferrous or non-ferrous metals or alloys by cathodic discharges [C21D 1/38](#); methods of carburising or nitriding of metals in general [C23C 8/00](#); methods for coating, plating or surface treating of or with metallic material [C23C 8/36](#), [C23C 14/32](#), [C23C 16/50](#); methods for coating, plating or surface treating of or with semiconductors [H01L 21/00](#); } heating by discharge [H05B](#))
- U H01J 37/32009
- {Arrangements for generation of plasma specially adapted for examination or treatment of objects, e.g. plasma sources (plasma generation in general [H05H 1/24](#))}
- H01J 37/32082
- • {Radio frequency generated discharge ([H01JH01J 37/32357](#), [H01JH01J 37/32366](#), [H01JH01J 37/32394](#) and [H01JH01J 37/32403](#) take precedence)}
- H01J 37/32192
- • {Microwave generated discharge ([H01JH01J 37/32357](#), [H01JH01J 37/32366](#), [H01JH01J 37/32394](#), [H01JH01J 37/32403](#) take precedence)}
- H01J 37/32321
- • {Discharge generated by other radiation ([H01JH01J 37/32055](#), [H01JH01J 37/32055](#), [H01JH01J 37/32073](#), [H01JH01J 37/32082](#), [H01JH01J 37/32192](#), [H01JH01J 37/32348](#) take precedence)}
- U H01J 37/32431
- {Constructional details of the reactor}
- H01J 37/32798
- • {Further details of plasma apparatus not provided for in groups [H01J 37/3244](#) - [H01J 37/32788](#); special provisions for cleaning or maintenance of the apparatus}
- H01J 37/34
- operating with cathodic sputtering ([H01J 37/36](#) takes precedence; {methods of cathodic sputtering [C23C 14/34](#))}
- U H01J 37/3411
- • {Constructional aspects of the reactor}
- H01J 37/345
- • • {Magnet arrangements in particular for cathodic sputtering apparatus (material of magnets or magnets in general [H01F 1/00](#), [H01F 7/00](#))}
- U H01J 41/00**
- Discharge tubes for measuring pressure of introduced gas {or for detecting presence of gas}; Discharge tubes for evacuation by diffusion of ions**
- U H01J 41/02
- Discharge tubes for measuring pressure of introduced gas {or for detecting presence of gas}
- H01J 41/10
- of particle spectrometer type (particle spectrometers per se [H01J 49/00](#) {not used, see [G01L 21/30](#)})

- H01J 43/00**      **Secondary-emission tubes; Electron-multiplier tubes (dynamic electron-multiplier tubes [H01J 25/76](#); secondary-emission detectors for measurement of nuclear or X-radiation [G01T 1/28](#))**
- U H01J 43/04      · Electron multipliers {(if forming part of electron gun [H01J 3/023](#))}
- U H01J 43/06      · · Electrode arrangements
- H01J 43/08      · · · Cathode arrangements {(photo-emissive electrodes [H01J 1/34](#), [H01J 1/35](#)); construction of photo cathodes [H01J 40/06](#), [H01J 40/16](#), [H01J 47/00](#), [H01J 49/08](#)}
- H01J 43/10      · · · Dynodes ([H01J 43/24](#), [H01J 43/26](#) take precedence; secondary-electron-emitting electrodes in general [H01J 1/32](#))
- H01J 45/00**      **Discharge tubes functioning as thermionic generators {(structural combination of fuel element with thermoelectric element [G21C 3/40](#); nuclear power plants using thermionic converters [G21D 7/04](#); structural combination of a radioactive source with a thermionic converter, e.g. radioisotope batteries [G21H 1/10](#); generators in which thermal or kinetic energy is converted into electrical energy by ionisation of a fluid and removal of the charge therefrom [H02N 3/00](#))}**
- H01J 47/00**      **Tubes for determining the presence, intensity, density or energy of radiation or particles {(discharge tubes using igniting by associated radioactive materials or fillings, e.g. current stabilising tubes [H01J 17/32](#)); photoelectric discharge tubes not involving the ionisation of a gas [H01J 40/00](#); {discharge tubes for measuring the pressure, partial pressure of introduced gas or for detecting presence of gas [H01J 41/02](#); ionisation chambers using a solid dielectric [G01T 3/008](#))}**
- U H01J 47/001      · {Details}
- U H01J 47/002      · · {Vessels or containers}
- H01J 47/004      · · · {Windows permeable to X-rays, gamma-rays, or particles (windows for discharge tubes with provision for emergence of electrons or ions from the vessel [H01J 33/04](#); windows for X-ray tubes [H01J 35/18](#))}
- H01J 47/08      · Geiger-Müller counter tubes {(gas filling with very short deionisation times [H01J 17/64](#), [H01T](#))}
- U H01J 49/00**      **Particle spectrometer or separator tubes**
- NOTE
- In classifying particle separators, no distinction is made between spectrometry and spectrography, the difference being only in the manner of detection which in the first case is electrical and in the second case is by means of a photographic film.
- U H01J 49/0027      · {Methods for using particle spectrometers}
- H01J 49/0036      · · {Step by step routines describing the handling of the data generated during a measurement (recognising patterns in signals [G06K 9/00496](#); bioinformatics [G06F 19/10](#))}
- U H01J 49/02      · Details
- H01J 49/025      · · {Detectors specially adapted to particle spectrometers (data acquisition [H01J 49/0036](#); detectors per se [G01T](#), e.g. [G01T 1/28](#), [G01T 1/29](#))}
- U H01J 49/04      · · Arrangements for introducing or extracting samples to be analysed, e.g. vacuum locks; Arrangements for external adjustment of electron- or ion-optical components
- H01J 49/0409      · · · {Sample holders or containers (containers for retaining a material to be analyzed, [B01L 3/50](#), for DNA, [C12Q 1/6834](#), for biological materials, [G01N 33/543](#))}

- U H01J 49/06
  - • Electron- or ion-optical arrangements
- H01J 49/062
  - • • {Ion guides (linear ion traps performing mass selection [H01J 49/4225](#)-, mass filters [H01J 49/421](#))}
- U H01J 49/26
  - Mass spectrometers or separator tubes (isotope separation using these tubes [B01D 59/44](#))
- U H01J 49/28
  - • Static spectrometers
- U H01J 49/284
  - • • {using electrostatic and magnetic sectors with simple focusing, e.g. with parallel fields such as Aston spectrometer}
- H01J 49/286
  - • • • {with energy analysis, e.g. Castaing filter (in cathode-ray or electron-beam tubes [H01J 29/84](#)-, electron-or ion-optical arrangements for separating electrons or ions from an analysing or processing beam [H01J 37/05](#)-, micro- or spot-analysing tubes [H01J 37/252](#))}
- U H01J 49/34
  - • Dynamic spectrometers
- U H01J 49/42
  - • • Stability-of-path spectrometers, e.g. monopole, quadrupole, multipole, farvitrons
- U H01J 49/426
  - • • • {Methods for controlling ions}
- U H01J 49/427
  - • • • • {Ejection and selection methods}
- H01J 49/4285
  - • • • • • {Applying a resonant signal, e.g. selective resonant ejection matching the secular frequency of ions ([H01J 49/429](#)-, [H01J 49/428](#) take precedence)}

**H01J 61/00**

**Gas- or vapour-discharge lamps (use for sterilising milk products [A23C](#)-, use for medical purposes [A61N 5/00](#)-, use for disinfecting water [C02F](#)-, use for lighting [F21](#)-, {use for advertising [G09F](#)} ; circuits therefor [H05B](#)-, arc lamps with consumable electrodes [H05B](#)-, electro-luminescent lamps [H05B](#))**

- U H01J 61/02
  - Details
- U H01J 61/30
  - • Vessels; Containers
- H01J 61/35
  - • • provided with coatings on the walls thereof; Selection of materials for the coatings (using coloured coatings [H01J 61/40](#)-, using luminescent coatings [H01J 61/42](#))

**H01J 63/00**

**Cathode-ray or electron-stream lamps (flying-spot tubes [H01J 31/10](#)-, magic-eye tuning indicators [H01J 31/14](#)-, lamps with incandescent body heated by the ray or stream [H01K](#) {see also [H01J 29/00](#)})**

**U H01J 2217/00**

**Gas-filled discharge tubes ([H01J 2211/00](#) takes precedence)**

H01J 2217/04

- Electrodes (for display panels not making use of alternating current [H01J 2217/492](#)-, for discharge tubes in general [H01J 2201/00](#))

**U H01J 2237/00**

**Discharge tubes exposing object to beam, e.g. for analysis treatment, etching, imaging**

NOTES

1. For features of general interest which may be found in other types of discharge tubes, an indexing code corresponding to general schemes [H01J 2201/00](#) to [H01J 2203/00](#) is given, e.g. for cathodes, vessels, cooling means or the like
2. Same rules apply for manufacturing procedures ([H01J 2209/00](#)), unless really specific to the tube concerned.
3. The codes in this main group are grouped according to the following principle: details common to gas or plasma discharge of the above mentioned tubes: [H01J 2237/00](#) to [H01J 2237/2487](#)  
Imaging or analysing: [H01J 2237/25](#) to [H01J 2237/2857](#)  
particle beam processing: [H01J 2237/30](#) to [H01J 2237/31798](#)  
plasma processing: [H01J 2237/32](#) to [H01J 2237/339](#)

- H01J 2237/006
- Details of gas supplies - e.g. in an ion source, to a beam line, to a specimen or to a workpiece, ([H01J 37/3244](#) takes precedence; environmental cells for electron microscopes [H01J 2237/2003](#); microscopes with environmental specimen chamber [H01J 2237/2608](#))
- U H01J 2237/02
- Details
- H01J 2237/024
- • Moving components not otherwise provided for (diaphragms [H01J 2237/0458](#); objects [H01J 2237/202](#))
- U H01J 2237/30
- Electron or ion beam tubes for processing objects
- U H01J 2237/304
- • Controlling tubes
- U H01J 2237/30433
- • • System calibration (for microscopes [H01J 2237/2826](#))
- H01J 2237/3045
- • • • Deflection calibration (deflecting in general [H01J 2237/15](#); specific to material treating [H01J 2237/30483](#))
- H01J 2237/30466
- • • Detecting endpoint of process (for plasma apparatus [H01J 37/32963](#); for sputtering apparatus [H01J 37/3479](#))
- U H01J 2237/317
- • Processing objects on a micro-scale
- U H01J 2237/3175
- • • Lithography
- WARNING
- As from January 1st, 2009 this group and its subgroups are no longer used for classification of new documents. The backlock is continuously reclassified to [H01J 2237/31715](#) and subgroups.
- U H01J 2237/31793
- • • • Problems associated with lithography
- H01J 2237/31798
- • • • • detecting pattern defects (with SEM [H01J 2237/2817](#); correcting [H01J 2237/31735](#), [H01J 2237/3174](#))
- U H01J 2329/00**      **Electron emission display panels, e.g. field emission display panels**
- U H01J 2329/86
- Vessels
- H01J 2329/88
- • Coatings on walls of the vessels ([H01J 2329/18](#); [H01J 2329/868](#); [H01J 2329/89](#) take precedence)

**Project: N/A (H01L)**

H01L

**SEMICONDUCTOR DEVICES; ELECTRIC SOLID STATE DEVICES NOT OTHERWISE PROVIDED FOR (use of semiconductor devices for measuring [G01](#); resistors in general [H01C](#); magnets, inductors {in general} , transformers [H01F](#); capacitors in general [H01G](#); electrolytic devices [H01G 9/00](#); batteries, accumulators [H01M](#); waveguides, resonators or lines of the waveguide type [H01P](#); line connectors, current collectors [H01R](#); stimulated emission devices [H01S](#); electromechanical resonators [H03H](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#); electric light sources in general [H05B](#); printed circuits, hybrid circuits, casings or constructional details of electric apparatus, manufacture of assemblages of electrical components [H05K](#); use of semiconductor devices in circuits having a particular application, see the subclass for the application)**

NOTES

1. This subclass covers electric solid state devices which are not provided for in any other subclass and details thereof. This includes:

- semiconductor devices adapted for rectifying, amplifying, oscillating or switching;
- semiconductor devices sensitive to radiation;
- electric solid state devices using thermoelectric, superconductive, piezo-electric, electrostrictive, magnetostrictive, galvano-magnetic or bulk negative resistance effects and integrated circuit devices.

Also covered by this subclass are photo-resistors, magnetic field dependent resistors, field effect resistors, capacitors with potential-jump barrier, resistors with potential-jump barrier or surface barrier, incoherent light emitting diodes, electromechanical solid state transducers and thin-film or thick-film circuits. Furthermore, it provides for processes and apparatus adapted for the manufacture or treatment of such devices, except where such processes relate to single step processes for which provision exists elsewhere.

2. In this subclass:

- The expression "solid state body" refers to the body of material within which, or at the surface of which, the physical effects characteristic of the device occur. In thermoelectric devices it includes all materials in the current path.  
Regions in or on the body of the device (other than the solid state body itself), which exert an influence on the solid state body electrically, are considered to be "electrodes" whether or not an external electrical connection is made thereto. {Electrodes are often referred to as "contacts" in the literature.} An electrode may include several portions and the term includes metallic regions which exert influence on the solid state body through an insulating region, (e.g. capacitive coupling) and inductive coupling arrangements to the body. The dielectric region in a capacitive arrangement is regarded as part of the electrode. In arrangements including several portions only those portions which exert an influence on the solid state body by virtue of their shape, size or disposition or the material of which they are formed are considered to be part of the electrode. The other portions are considered to be "arrangements for conducting electric current to or from the solid state body" or "interconnections between solid state components formed in or on a common substrate", i.e. leads.
- The word "device" refers to an electric circuit element; where an electric circuit element is one of a plurality or elements formed in or on a common substrate it is referred to as a "component".
- A "complete device" is a device in its fully assembled state which may or may not require further treatment, e.g. electro-forming, before it is ready for use but which does not require the addition of further structural units.
- The word "parts" includes all structural units which are included in a complete device.
- A "container" is an enclosure forming part of the complete device and is essentially a solid construction in which the body of the device is placed, or which is formed around the body without forming an intimate layer thereon. An enclosure which consists of one or more layers formed on the body and in intimate contact therewith is referred to as an "encapsulation".
- "Integrated circuit" is a device where all components, e.g. diodes, resistors, are built up on a common substrate and form the device including interconnections between the components.

3. "Integration processes" are processes for the manufacture of at least two different components where the process is especially adapted to their integration, e.g. to take advantage of it or to reduce their manufacturing cost. Example: in a CMOS process, the same ion implant dopes the p-MOS gate and the n-MNOS source and drain.

Consequently, a process for the manufacture of a component per se is not considered as an integration process, even though that component will be part of an integrated circuit.

"Assembly" of a device is the building up of the device from its component constructional units and includes the provision of fillings in containers.

When referring to the periodic table of the elements, either the new IUPAC notation, i.e. numbering system from 1 to 18, or the previous IUPAC form may be used to indicate an element group, e.g. group IV elements according to the

previous IUPAC form correspond to group 14 elements according to the new notation

#### WARNINGS

1. The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups

[H01L 21/301](#) covered by [H01L 21/30](#)  
[H01L 21/328](#) covered by [H01L 29/66075](#)  
[H01L 21/329](#) covered by [H01L 29/66083](#)  
[H01L 21/33](#) covered by [H01L 29/66227](#)  
[H01L 21/331](#) covered by [H01L 29/66234](#)  
[H01L 21/332](#) covered by [H01L 29/66363](#)  
[H01L 21/334](#) covered by [H01L 29/66075](#)  
[H01L 21/335](#) covered by [H01L 29/66409](#)  
[H01L 21/336](#) covered by [H01L 29/66477](#)  
[H01L 21/337](#) covered by [H01L 29/66893](#)  
[H01L 21/338](#) covered by [H01L 29/66848](#)  
[H01L 21/339](#) covered by [H01L 29/66946](#)  
[H01L 21/58](#) covered by [H01L 24/80](#)

[H01L 21/8239](#) covered by [H01L 27/1052](#)  
[H01L 21/60](#) covered by [H01L 24/80](#)

[H01L 21/66](#) covered by [H01L 22/34](#)  
[H01L 21/603](#) covered by [H01L 24/80](#)

[H01L 21/607](#) covered by [H01L 24/80](#)

[H01L 21/8242](#) covered by [H01L 27/10844](#)

[H01L 21/8244](#) covered by [H01L 27/11](#)  
[H01L 21/8246](#) covered by [H01L 27/112](#)  
[H01L 21/8247](#) covered by [H01L 27/11517](#)  
[H01L 21/98](#) covered by [H01L 25/50](#)

[H01L 29/38](#) covered by [H01L 29/04](#) to [H01L 29/365](#)

[H01L 29/96](#) covered by [H01L 29/68](#) to [H01L 29/945](#)  
[H01L 51/30](#) covered by [H01L 51/0032](#)

[H01L 51/40](#) covered by [H01L 51/0001](#)

[H01L 51/46](#) covered by [H01L 51/0032](#)

[H01L 51/48](#) covered by [H01L 51/0001](#)

[H01L 51/54](#) covered by [H01L 51/0032](#)

2. Groups [H01L 23/562](#) to [H01L 23/576](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 23/562](#) - [H01L 23/564](#) : [H01L 23/00](#) - [H01L 23/57](#) : [H01L 23/58](#)
3. Groups [H01L 22/00](#) to [H01L 22/34](#) do not correspond to a former or current IPC group. Concordance CPC : IPC for these groups is as follows: - [H01L 22/00](#) - [H01L 22/34](#) : [H01L 21/66](#)
4. Groups [H01L 24/00](#) to [H01L 24/98](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 24/00](#) - [H01L 24/98](#) : [H01L 23/00](#)
5. Group [H01L 25/50](#) does not correspond to a former or current IPC group. Concordance CPC : IPC for this group is as follows: - [H01L 25/50](#) : [H01L 21/98](#)
6. Groups [H01L 28/00](#) - [H01L 28/92](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 28/00](#) - [H01L 28/92](#) : [H01L 49/02](#)

## H01L 21/00

**Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof ({testing or measuring during manufacture or treatment, or reliability measurements [H01L 22/00](#); multistep manufacturing processes for passive two-terminal components without a potential-jump or surface barrier for integrated circuits [H01L 28/00](#); } processes or apparatus peculiar to the manufacture or treatment of devices provided for in groups [H01L 31/00](#) to [H01L 51/00](#) or of parts thereof, see these groups; single-step processes covered by other subclasses, see the relevant subclasses, e.g. [C23C](#), [C30B](#); photomechanical production of textured or patterned surfaces, materials or originals therefor, apparatus specially adapted therefor, in general [G03F](#))**

U H01L 21/02  
H01L 21/02104

- Manufacture or treatment of semiconductor devices or of parts thereof
- {Forming layers (deposition in general [C23C](#); crystal growth in general [C30B](#))}

### WARNING

Group [H01L 21/02104](#) and subgroups are not complete pending reorganisation. See also groups [H01L 21/20](#), [H01L 21/36](#), [H01L 21/06](#), [H01L 21/16](#) and subgroups

H01L 21/02107

- • {Forming insulating materials on a substrate}

### WARNING

This group and subgroups are not complete pending the completion of a reclassification; see also [H01L 21/312](#), [H01L 21/314](#), [H01L 21/316](#), and [H01L 21/318](#) and subgroups thereof

U H01L 21/02109

- • • {characterised by the type of layer, e.g. type of material, porous/non-porous, pre-cursors, mixtures or laminates}

H01L 21/02112

- • • • {characterised by the material of the layer}

### NOTE

Layers comprising sublayers, i.e. multi-layers, are additionally classified in [H01L 21/022](#); porous layers are additionally classified in [H01L 21/02203](#)

H01L 21/02172

- • • • • {the material containing at least one metal element, e.g. metal oxides, metal nitrides, metal oxynitrides or metal carbides (materials containing silicon [H01L 21/02123](#); metal silicates [H01L 21/02142](#))}

- H01L 21/022
- • • • {the layer being a laminate, i.e. composed of sublayers, e.g. stacks of alternating high-k metal oxides (adhesion layers or buffer layers [H01L 21/02304](#), [H01L 21/02362](#))}
- U H01L 21/02225
- • • • {characterised by the process for the formation of the insulating layer}
- H01L 21/02227
- • • • {formation by a process other than a deposition process}
- NOTE**  
Subject matter classified in the range of [H01L 21/0223](#) to [H01L 21/02249](#) is additionally classified in [H01L 21/02249](#), [H01L 21/02255](#) and [H01L 21/02252](#), depending on the type of reaction
- U H01L 21/02226
- • • • {formation by a deposition process (per se [C23C](#))}
- H01L 21/02293
- • • • • {formation of epitaxial layers by a deposition process (epitaxial growth per se [C30B](#))}
- NOTE**  
Formation of non-epitaxial layers by MBE, ALE, etc. is not covered by this group; for MBE see [H01L 21/02269](#); for ALE see [H01L 21/0228](#)
- U H01L 21/02296
- • • • {characterised by the treatment performed before or after the formation of the layer ([H01L 21/02227](#) and subgroups take precedence)}
- NOTE**  
This group and subgroups only cover processes which are directly linked to the layer formation; routine anneals, i.e. thermal treatment without further features like a special atmosphere, presence of a plasma, thermally induced chemical reactions, change of phase (crystal structure) etc. are not classified here; for cleaning see [H01L 21/02041](#) and subgroups; for etching processes see [H01L 21/311](#) and subgroups; for planarization processes see [H01L 21/31051](#) and subgroups; for processes to repair etch damage see [H01L 21/3105](#) and subgroups
- U H01L 21/02318
- • • • • {post-treatment}
- NOTE**  
This group only covers processes that are part of the layer formation; treatments which are performed after completion of the insulating layer are covered by [H01L 21/3105](#) and subgroups
- H01L 21/02321
- • • • • {introduction of substances into an already existing insulating layer ([H01L 21/02227](#) and subgroups take precedence)}
- NOTE**  
processes like the introduction of phosphorus into silicon oxide by diffusion, or doping of an already existing insulating layer are covered by this group and subgroups; for the method of introduction, see [H01L 21/02337](#), [H01L 21/02343](#), [H01L 21/02345](#) and subgroups
- H01L 21/027
- • Making masks on semiconductor bodies for further photolithographic processing not provided for in group [H01L 21/18](#) or [H01L 21/34](#) {(photographic masks or originals per se [G03F 1/00](#); registration or positioning of photographic masks or originals [G03F 9/00](#); photographic cameras [G03B](#); control of position [G05D 3/00](#))}
- H01L 21/04
- • the devices having at least one potential-jump barrier or surface barrier, e.g. PN junction, depletion layer, carrier concentration layer {(multistep processes specially adapted for the manufacture of said devices [H01L 29/66007](#), [H01L 29/401](#); details of semiconductor bodies [H01L 29/02](#))}

- H01L 21/18
- • • the devices having semiconductor bodies comprising elements of the fourth group of the Periodic System or AllIBV compounds with or without impurities, e.g. doping materials {(H01L 21/041 to H01L 21/042~~5~~, H01L 21/045 to H01L 21/048 take precedence)}
- NOTE  
This group covers also processes and apparatus which, by using the appropriate technology, are clearly suitable for manufacture or treatment of devices whose bodies comprise elements of the fourth group of the Periodic System or AllIBV compounds, even if the material used is not explicitly specified.
- U H01L 21/20
- • • • Deposition of semiconductor materials on a substrate, e.g. epitaxial growth {solid phase epitaxy}
- WARNING  
This group is no longer used for the classification of new documents as from December 1, 2009. The backlog of this group is being continuously reclassified to H01L 21/02365 and subgroups
- H01L 21/2003
- • • • • {Characterised by the substrate (H01L 21/203~~5~~, H01L 21/205~~5~~, H01L 21/208 take precedence)}
- H01L 21/28
- • • • Manufacture of electrodes on semiconductor bodies using processes or apparatus not provided for in H01L 21/20 to H01L 21/268~~5~~; {(etching for patterning the electrodes H01L 21/311 and H01L 21/3213)}
- U H01L 21/28008
- • • • • {Making conductor-insulator-semiconductor electrodes}
- U H01L 21/28017
- • • • • • {the insulator being formed after the semiconductor body, the semiconductor being silicon}
- NOTE  
This group covers deposition of the insulators, including epitaxial insulators, and the conductors within the same process or chamber
- H01L 21/28026
- • • • • • • {characterised by the conductor (H01L 21/28176 takes precedence)}
- NOTE  
When the final conductor comprises a superconductor, subject matter is not classified according to the subgroups H01L 21/28035 to H01L 21/28097~~5~~. Instead, it is classified in H01L 21/28026
- U H01L 21/28035
- • • • • • • • {the final conductor layer next to the insulator being silicon, e.g. polysilicon, with or without impurities (H01L 21/28105 takes precedence)}
- NOTE  
A very thin, e.g. silicon, adhesion or seed layer is not considered as the one next to the insulator
- U H01L 21/28044
- • • • • • • • • {the conductor comprising at least another non-silicon conductive layer}
- H01L 21/28061
- • • • • • • • • • {the conductor comprising a metal or metallic silicide formed by deposition, e.g. sputter deposition, i.e. without a silicidation reaction (H01L 21/28052 takes precedence)}
- NOTE  
To assess the coverage of groups H01L 21/28052 and H01L 21/28061~~5~~, barrier layers, e.g. TaSiN, are not considered

- U H01L 21/283 . . . . . Deposition of conductive or insulating materials for electrodes {conducting electric current}
- U H01L 21/285 . . . . . from a gas or vapour, e.g. condensation
- U H01L 21/28506 . . . . . {of conductive layers}
- U H01L 21/28512 . . . . . {on semiconductor bodies comprising elements of the fourth group of the Periodic System}
- H01L 21/28525 . . . . . {the conductive layers comprising semiconducting material ([H01L 21/28518](#), [H01L 21/28537](#) take precedence)}
- H01L 21/30 . . . . . Treatment of semiconductor bodies using processes or apparatus not provided for in groups [H01L 21/20](#) to [H01L 21/26](#) (manufacture of electrodes thereon [H01L 21/28](#))
- U H01L 21/302 . . . . . to change their surface-physical characteristics or shape, e.g. etching, polishing, cutting
- U H01L 21/306 . . . . . Chemical or electrical treatment, e.g. electrolytic etching (to form insulating layers [H01L 21/31](#))
- H01L 21/308 . . . . . using masks ([H01L 21/3063](#), [H01L 21/3065](#) take precedence)
- H01L 21/31 . . . . . to form insulating layers thereon, e.g. for masking or by using photolithographic techniques (layers forming electrodes [H01L 21/28](#); encapsulating layers [H01L 21/56](#)); After treatment of these layers
- H01L 21/312 . . . . . Organic layers, e.g. photoresist ([H01L 21/3105](#), [H01L 21/32](#) take precedence; {photoresists per se [G03C](#)})
- WARNING  
This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof
- H01L 21/314 . . . . . Inorganic layers ([H01L 21/3105](#), [H01L 21/32](#) take precedence)
- WARNING  
This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof
- U H01L 21/316 . . . . . composed of oxides or glassy oxides or oxide based glass
- WARNING  
This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof
- H01L 21/31604 . . . . . {Deposition from a gas or vapour ([H01L 21/31691](#), [H01L 21/31695](#) take precedence)}
- H01L 21/31608 . . . . . {Deposition of SiO<sub>2</sub> ([H01L 21/31625](#), [H01L 21/31629](#) and [H01L 21/31633](#) take precedence)}
- H01L 21/3165 . . . . . {formed by oxidation ([H01L 21/31691](#), [H01L 21/31695](#) take precedence)}
- H01L 21/34 . . . . . the devices having semiconductor bodies not provided for in groups {[H01L 21/0405](#), [H01L 21/0445](#)}, [H01L 21/06](#), [H01L 21/16](#) and [H01L 21/18](#) with or without impurities, e.g. doping materials

- H01L 21/46 . . . . Treatment of semiconductor bodies using processes or apparatus not provided for in groups [H01L 21/428](#) (manufacture of electrodes thereon [H01L 21/44](#))
- U H01L 21/461 . . . . . to change their surface-physical characteristics or shape, e.g. etching, polishing, cutting
- H01L 21/469 . . . . . to form insulating layers thereon, e.g. for masking or by using photolithographic techniques (layers forming electrodes [H01L 21/44](#); encapsulating layers [H01L 21/56](#)); After-treatment of these layers
- H01L 21/47 . . . . . organic layers, e.g. photoresist ([H01L 21/475](#), [H01L 21/4757](#) take precedence)
- H01L 21/471 . . . . . Inorganic layers ([H01L 21/475](#), [H01L 21/4757](#) take precedence)
- H01L 21/4763 . . . . . Deposition of non-insulating, e.g. conductive -, resistive -, layers on insulating layers; After-treatment of these layers (manufacture of electrodes [H01L 21/28](#), [H01L 21/44](#))
- H01L 21/48 . . . . Manufacture or treatment of parts, e.g. containers, prior to assembly of the devices, using processes not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#) ({apparatus therefor [H01L 21/67005](#); insulative sealing of leads in bases [H01L 21/50](#)}; containers, encapsulations, fillings, mountings per se [H01L 23/00](#); {-marking of parts [H01L 23/544](#)})
- NOTE  
In this group, the expression "treatment" covers also the removal of leads from parts
- U H01L 21/4814 . . . . {Conductive parts}
- H01L 21/4846 . . . . . {Leads on or in insulating or insulated substrates, e.g. metallisation ([H01L 21/4821](#) takes precedence; metallisation of ceramics in general [C04B 41/51](#); printed circuits [H05K 3/00](#))}
- H01L 21/4885 . . . . . {Wire-like parts or pins (wire ball formation [B23K 20/00](#); methods related to connecting semiconductor or other solid state bodies [H01L 24/00](#))}
- WARNING  
The documents of this group and subgroups dealing with methods for connecting semiconductor or other solid state bodies are being continuously reclassified to [H01L 24/43](#)
- H01L 21/50 . . . . Assembly of semiconductor devices using processes or apparatus not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#), {e.g. sealing of a cap to a base of a container}
- NOTE  
Arrangements for connecting or disconnecting semiconductor or other solid state bodies, or methods related thereto, other than those arrangements or methods covered by the following subgroups, are covered by [H01L 24/00](#)
- H01L 21/58 . . . . {Insulative} mounting semiconductor devices on supports ({[H01L 21/563](#), [H01L 23/49513](#) take precedence)}
- WARNING  
This group is no longer used for the classification of new documents as from June 1, 2010. The backlog of this group is being continuously reclassified to [H01L 24/80](#) and subgroups

- H01L 21/67
- Apparatus specially adapted for handling semiconductor or electric solid state devices during manufacture or treatment thereof; Apparatus specially adapted for handling wafers during manufacture or treatment of semiconductor or electric solid state devices or components; {Apparatus not specifically provided for elsewhere (processes per se [H01L 21/30](#), [H01L 21/46](#), [H01L 23/00](#); simple temporary support means, e.g. using adhesives, electric or magnetic means [H01L 21/68](#), [H01L 21/302](#); apparatus for manufacturing arrangements for connecting or disconnecting semiconductor or solid-state bodies and for methods related thereto [H01L 24/74](#);)}
- NOTE
- In this subgroup the term substrate designates a semiconductor or electric solid state device or component, or a wafer
- H01L 21/67005
- {Apparatus not specifically provided for elsewhere (processes per se [H01L 21/30](#), [H01L 21/46](#), [H01L 23/00](#); simple temporary support means, e.g. using adhesives, electric or magnetic means [H01L 21/68](#), [H01L 21/302](#))}
- H01L 21/67011
- • {Apparatus for manufacture or treatment (processes [H01L 21/30](#), [H01L 21/46](#); for production or after-treatment of single crystals or homogeneous polycrystalline material [C30B 35/00](#))}
- H01L 21/67017
- • • {Apparatus for fluid treatment ([H01L 21/67126](#), [H01L 21/6715](#) take precedence)}
- H01L 21/67126
- • • {Apparatus for sealing, encapsulating, glassing, decapsulating or the like (processes [H01L 23/02](#), [H01L 23/28](#))}
- H01L 21/67242
- • • {Apparatus for monitoring, sorting or marking (testing or measuring during manufacture [H01L 22/00](#), marks per se [H01L 23/544](#); testing individual semiconductor devices [G01R 31/26](#))}
- H01L 21/67276
- • • • {Production flow monitoring, e.g. for increasing throughput (program-control systems per se [G05B 19/00](#), e.g. total factory control [G05B 19/418](#))}
- U H01L 21/673
- • using specially adapted carriers {or holders; Fixing the workpieces on such carriers or holders (holders for supporting a complete device in operation [H01L 23/32](#))}
- H01L 21/6734
- • • {specially adapted for supporting large square shaped substrates (containers and packaging elements for glass sheets [B65D 85/48](#), transporting of glass products during their manufacture [C03B 35/00](#))}
- U H01L 21/6735
- • • {Closed carriers}
- H01L 21/67363
- • • • {specially adapted for containing substrates other than wafers ([H01L 21/67356](#), [H01L 21/67359](#) take precedence)}
- H01L 21/67366
- • • • {characterised by materials, roughness, coatings or the like (materials relating to an injection moulding process [B29C 45/00](#); chemical composition of materials [C08L 51/00](#))}
- U H01L 21/68
- • for positioning, orientation or alignment (for conveying [H01L 21/677](#))
- WARNING
- This group is in reorganisation. See provisionally also group [H01L 21/6835](#)
- H01L 21/682
- • • {Mask-wafer alignment (in general [G03F 7/70](#), [G03F 9/70](#))}
- H01L 21/683
- • for supporting or gripping (for conveying [H01L 21/677](#), for positioning, orientation or alignment [H01L 21/68](#))
- H01L 21/6835
- • • {using temporarily an auxiliary support}
- NOTE
- [H01L 21/6835](#), details of the apparatus are to be further indexed using the indexing codes chosen from [H01L 2221/68304](#) and subgroups

- H01L 21/70
- Manufacture or treatment of devices consisting of a plurality of solid state components formed in or on a common substrate or of parts thereof; Manufacture of integrated circuit devices or of parts thereof ({multistep manufacturing processes of assemblies consisting of a plurality of individual semiconductor or other solid state devices [H01L 25/00](#)}, manufacture of assemblies consisting or preformed electrical components [H05K 3/00](#)-, [H05K 13/00](#))
- H01L 21/71
- • Manufacture of specific parts of devices defined in group [H01L 21/70](#) ({[H01L 21/0405](#)-, [H01L 21/0445](#)}, [H01L 21/28](#)-, [H01L 21/44](#)-, [H01L 21/48](#) take precedence)
- U H01L 21/76
- • • Making of isolation regions between components
- U H01L 21/762
- • • • Dielectric regions, {e.g. EPIC dielectric isolation, LOCOS; Trench refilling techniques, SOI technology, use of channel stoppers}
- H01L 21/76224
- • • • • {using trench refilling with dielectric materials (trench filling with polycrystalline silicon [H01L 21/763](#)-, together with vertical isolation, e.g. trench refilling in a SOI substrate [H01L 21/76264](#))}
- H01L 21/7624
- • • • • {using semiconductor on insulator [SOI] technology ([H01L 21/76297](#) takes precedence; manufacture of integrated circuits on insulating substrates [H01L 21/84](#)-, silicon on sapphire [SOS] technology [H01L 21/86](#))}
- H01L 21/768
- • • Applying interconnections to be used for carrying current between separate components within a device {comprising conductors and dielectrics}
- NOTE**
- Groups [H01L 21/768](#) to [H01L 21/76898](#) cover multi-step processes for manufacturing interconnections.  
Information peculiar to single-step processes should also be classified in the corresponding group, e.g.
- cleaning [H01L 21/02041](#)
  - etching [H01L 21/311](#)-, [H01L 21/3213](#)
  - masking [H01L 21/027](#)-, [H01L 21/033](#)-, [H01L 21/31144](#), [H01L 21/32139](#)
  - planarizing [H01L 21/3105](#)-, [H01L 21/321](#)
- U H01L 21/76838
- • • • {characterised by the formation and the after-treatment of the conductors (etching for patterning the conductors [H01L 21/3213](#))}
- NOTE**
- When the interconnect is also used as the conductor part of a conductor insulator semiconductor electrode (gate level interconnections), documents are classified in the relevant electrode manufacture groups, e.g. [H01L 21/28026](#)
- U H01L 21/76841
- • • • • {Barrier, adhesion or liner layers}
- H01L 21/76867
- • • • • • {characterized by methods of formation other than PVD, CVD or deposition from a liquids (PVD [H01L 21/2855](#)-, CVD [H01L 21/28556](#)-, deposition from liquids [H01L 21/288](#))}
- H01L 21/77
- • Manufacture or treatment of devices consisting of a plurality of solid state components or integrated circuits formed in, or on, a common substrate
- NOTE**
- Integration processes for the manufacture of devices of the type classified in [H01L 27/14](#) to [H01L 27/32](#) are not classified in this group and its sub-groups. Instead, as they are peculiar to said devices, they are classified together with the devices Multistep processes for manufacturing memory structures in general using field effect technology are covered by [H01L 27/1052](#); Multistep processes for manufacturing dynamic random access memory structures are covered by [H01L 27/10844](#); Multistep processes for manufacturing static random access memory structures are covered by [H01L 27/11](#)-,

Multistep processes for manufacturing read-only memory structures are covered by [H01L 27/112](#); Multistep processes for manufacturing electrically programmable read-only memory structures are covered by [H01L 27/115](#)

- U H01L 21/78
  - • • with subsequent division of the substrate into plural individual devices (cutting to change the surface-physical characteristics or shape of semiconductor bodies [H01L 21/304](#))
- U H01L 21/82
  - • • • to produce devices, e.g. integrated circuits, each consisting of a plurality of components
- H01L 21/8256
  - • • • • the substrate being a semiconductor, using technologies not covered by one of groups {[H01L 21/8206](#), [H01L 21/8213](#)}, [H01L 21/822](#), [H01L 21/8252](#) and [H01L 21/8254](#) ([H01L 21/8258](#) takes precedence)
- H01L 21/8258
  - • • • • the substrate being a semiconductor, using a combination of technologies covered by {[H01L 21/8206](#), [H01L 21/8213](#)}, [H01L 21/822](#), [H01L 21/8252](#), [H01L 21/8254](#) or [H01L 21/8256](#)
- H01L 22/00** {Testing or measuring during manufacture or treatment; Reliability measurements, i.e. testing of parts without further processing to modify the parts as such; Structural arrangements therefor (detecting or counting or handling [H01L 21/67005](#); marks applied to semiconductor devices [H01L 23/544](#); testing methods or structures peculiar to devices provided for in groups [H01L 31/00](#) to [H01L 51/00](#), see these groups; investigating or analysing materials by the use of optical means [G01N 21/00](#); testing electrical properties of individual semiconductor devices [G01R 31/26](#); testing of photovoltaic systems [H02S 50/00](#))}
- U H01L 22/20
  - {Sequence of activities consisting of a plurality of measurements, corrections, marking or sorting steps}
- H01L 22/22
  - • {Connection or disconnection of sub-entities or redundant parts of a device in response to a measurement (testing and repair of stores after manufacture including at wafer scale [G11C 29/00](#); fuses per se [H01L 23/525](#))}
- H01L 22/26
  - • {Acting in response to an ongoing measurement without interruption of processing, e.g. endpoint detection, in-situ thickness measurement (endpoint detection arrangements in CMP apparatus [B24B 37/013](#), in discharge apparatus [H01J 37/32](#))}
- U H01L 22/30
  - {Structural arrangements specially adapted for testing or measuring during manufacture or treatment, or specially adapted for reliability measurements}
- H01L 22/34
  - • {Circuits for electrically characterising or monitoring manufacturing processes, e. g. whole test die, wafers filled with test structures, on-board-devices incorporated on each die, process control monitors or pad structures thereof, devices in scribe line (switching, multiplexing, gating devices [G01R 19/25](#); process control with lithography, e.g. dose control, [G03F 7/20](#); structures for alignment control by optical means [G03F 7/70633](#))}
- H01L 23/00** Details of semiconductor or other solid state devices ([H01L 25/00](#) takes precedence; {structural arrangements for testing or measuring during manufacture or treatment, or for reliability measurements [H01L 22/00](#); arrangements for connecting or disconnecting semiconductor or solid-state bodies, or methods related thereto [H01L 24/00](#); finger print sensors [G06K 9/00006](#)})

#### NOTE

This group does not cover:

- details of semiconductor bodies or of electrodes of devices provided for in group [H01L 29/00](#), which details are covered by that group;
- details peculiar to devices provided for in a single main group of groups [H01L 31/00](#) to [H01L 51/00](#), which details are covered by those groups.

- H01L 23/02
  - Containers; Seals ([H01L 23/12](#)-, [H01L 23/34](#)-, [H01L 23/48](#)-, [H01L 23/552](#)-, [H01L 23/66](#)) take precedence; {for memories [G11C](#)}
- U H01L 23/12
  - Mountings, e.g. non-detachable insulating substrates
- U H01L 23/14
  - • characterised by the material or its electrical properties {(printed circuit boards [H05K 1/00](#))}
- H01L 23/15
  - • • Ceramic or glass substrates {([H01L 23/142](#)-, [H01L 23/145](#)-, [H01L 23/147](#) take precedence)}
- H01L 23/16
  - Fillings or auxiliary members in containers {or encapsulations}, e.g. centering rings ([H01L 23/42](#)-, [H01L 23/552](#) take precedence)
- H01L 23/28
  - Encapsulations, e.g. encapsulating layers, coatings, {e.g. for protection} ([H01L 23/552](#) takes precedence; {-insulating layers for contacts or interconnections [H01L 23/5329](#))}
- H01L 23/32
  - Holders for supporting the complete device in operation, i.e. detachable fixtures ([H01L 23/40](#) takes precedence; connectors, {e.g. sockets} , in general [H01R](#)-; for printed circuits [H05K](#))
- U H01L 23/34
  - Arrangements for cooling, heating, ventilating or temperature compensation; {Temperature sensing arrangements (thermal treatment apparatus [H01L 21/00](#))}
- H01L 23/36
  - • Selection of materials, or shaping, to facilitate cooling or heating, e.g. heatsinks {([H01L 23/28](#)-, [H01L 23/40](#)-, [H01L 23/42](#)-, [H01L 23/44](#)-, [H01L 23/46](#) take precedence; heating [H01L 23/345](#))}
- H01L 23/367
  - • • Cooling facilitated by shape of device {([H01L 23/38](#)-, [H01L 23/40](#)-, [H01L 23/42](#)-, [H01L 23/44](#)-, [H01L 23/46](#) take precedence)}
- U H01L 23/373
  - • • Cooling facilitated by selection of materials for the device {or materials for thermal expansion adaptation, e.g. carbon}
- H01L 23/3731
  - • • • {Ceramic materials or glass ([H01L 23/3732](#)-, [H01L 23/3733](#)-, [H01L 23/3735](#)-, [H01L 23/3737](#)-, [H01L 23/3738](#) take precedence)}
- H01L 23/3733
  - • • • {having a heterogeneous or anisotropic structure, e.g. powder or fibres in a matrix, wire mesh, porous structures ([H01L 23/3732](#)-, [H01L 23/3737](#) take precedence)}
- H01L 23/3736
  - • • • {Metallic materials ([H01L 23/3732](#)-, [H01L 23/3733](#)-, [H01L 23/3735](#)-, [H01L 23/3737](#)-, [H01L 23/3738](#) take precedence)}
- H01L 23/46
  - • involving the transfer of heat by flowing fluids ([H01L 23/42](#)-, [H01L 23/44](#) take precedence)
- H01L 23/473
  - • • by flowing liquids {([H01L 23/4332](#)-, [H01L 23/4338](#) take precedence)}
- U H01L 23/48
  - Arrangements for conducting electric current to or from the solid state body in operation, e.g. leads, terminal arrangements (in general [H01R](#)); {Selection of materials therefor}

**NOTE**

Arrangements for connecting or disconnecting semiconductor or other solid state bodies, or methods related thereto, other than those arrangements or methods covered by the following subgroups, are covered by [H01L 24/00](#)

- U H01L 23/482
  - • consisting of lead-in layers inseparably applied to the semiconductor body {(electrodes [H01L 29/40](#))}

**WARNING**

The documents of this group dealing with arrangements for connecting semiconductor or other solid state bodies are being continuously reclassified to [H01L 24/01](#) and subgroups

- H01L 23/485
- • • consisting of layered constructions comprising conductive layers and insulating layers, e.g. planar contacts (~~H01L 23/4821~~, ~~H01L 23/4822~~, ~~H01L 23/4824~~, ~~H01L 23/4825~~ take precedence; materials ~~H01L 23/532~~, bond pads ~~H01L 24/02~~, bump connectors ~~H01L 24/10~~)
- WARNING
- The documents of this group dealing with arrangements for connecting semiconductor or other solid state bodies are being continuously reclassified to ~~H01L 24/01~~ and subgroups
- U H01L 23/488
- • consisting of soldered {or bonded} constructions ({bump connectors ~~H01L 24/01~~})
- H01L 23/49
- • • Wire-like {arrangements or pins or rods (using optical fibres ~~H01L 23/48~~; pins attached to insulating substrates ~~H01L 23/49811~~)}
- WARNING
- This group is no longer used for the classification of new documents as from June 1, 2010. The backlog of this group is being continuously reclassified to **H01L23/00C2W** and subgroups
- U H01L 23/498
- • • Leads, {i.e. metallisations or lead-frames} on insulating substrates, {e.g. chip carriers (shape of the substrate ~~H01L 23/13~~)}
- H01L 23/49827
- • • {Via connections through the substrates, e.g. pins going through the substrate, coaxial cables (~~H01L 23/49822~~, ~~H01L 23/49833~~, ~~H01L 23/4985~~, ~~H01L 23/49861~~ take precedence)}
- H01L 23/49861
- • • {Lead-frames fixed on or encapsulated in insulating substrates (~~H01L 23/4985~~, ~~H01L 23/49805~~ take precedence)}
- H01L 23/49866
- • • {characterised by the materials (materials of the substrates ~~H01L 23/14~~, of the lead-frames ~~H01L 23/49579~~)}
- U H01L 23/52
- Arrangements for conducting electric current within the device in operation from one component to another, {i.e. interconnections, e.g. wires, lead frames (optical interconnections ~~G02B 6/00~~)}
- H01L 23/538
- • the interconnection structure between a plurality of semiconductor chips being formed on, or in, insulating substrates ({~~H05K~~ takes precedence; manufacture or treatment ~~H01L 21/4846~~; mountings per se ~~H01L 23/12~~; {materials ~~H01L 23/49866~~)}
- H01L 23/5384
- • • {Conductive vias through the substrate with or without pins, e.g. buried coaxial conductors (~~H01L 23/5383~~, ~~H01L 23/5385~~ take precedence; pins attached to insulating substrates ~~H01L 23/49811~~)}
- H01L 23/544
- Marks applied to semiconductor devices {or parts}, e.g. registration marks, {alignment structures, wafer maps (test patterns for characterising or monitoring manufacturing processes ~~H01L 22/00~~)}
- NOTE
- When classifying in group ~~H01L 23/544~~, details are to be further indexed by using the indexing codes chosen from ~~H01L 2223/544~~ and subgroups
- H01L 23/562
- {Protection against mechanical damage (~~H01L 23/02~~, ~~H01L 23/28~~ take precedence)}
- H01L 23/58
- Structural electrical arrangements for semiconductor devices not otherwise provided for, {e.g. in combination with batteries (~~H01L 23/49593~~, ~~H01L 23/49596~~ take precedence)}
- H01L 23/585
- • {comprising conductive layers or plates or strips or rods or rings (~~H01L 23/60~~, ~~H01L 23/62~~, ~~H01L 23/64~~, ~~H01L 23/66~~ take precedence)}
- U H01L 23/64
- • Impedance arrangements

- H01L 23/642
- • • {Capacitive arrangements (~~H01L 23/49589~~, ~~H01L 23/645~~, ~~H01L 23/647~~, ~~H01L 23/66~~ take precedence; capacitive effects between wiring layers on the semiconductor body ~~H01L 23/5222~~)}
- H01L 23/645
- • • {Inductive arrangements (~~H01L 23/647~~, ~~H01L 23/66~~ take precedence)}
- H01L 23/647
- • • {Resistive arrangements (~~H01L 23/66~~, ~~H01L 23/62~~ take precedence)}
- H01L 23/66
- • • High-frequency adaptations

**NOTE**

When classifying in group ~~H01L 23/66~~, details are to be further indexed by using the indexing codes chosen from ~~H01L 2223/66~~ and subgroups

**H01L 24/00****{Arrangements for connecting or disconnecting semiconductor or solid-state bodies; Methods or apparatus related thereto}****NOTES**

1. This group does not cover: - details of semiconductor bodies or of electrodes of devices provided for in group ~~H01L 29/00~~, which details are covered by that group; - details peculiar to devices provided for in a single main group of groups ~~H01L 31/00~~ to ~~H01L 51/00~~, which details are covered by those groups. - printed circuits, which are covered by groups ~~H05K 1/00~~ to ~~H05K 1/189~~; - apparatus or manufacturing processes for printed circuits, which are covered by groups ~~H05K 3/00~~ to ~~H05K 3/4685~~; - manufacture or treatment of parts, which are covered by group ~~H01L 21/48~~ and subgroups except ~~H01L 21/4885~~ to ~~H01L 21/4896~~; - assemblies of semiconductor devices, which are covered by groups ~~H01L 21/50~~ to ~~H01L 21/568~~; - applying interconnections to be used for carrying current between separate components within a device, which is covered by group ~~H01L 21/768~~ and subgroups; - containers or seals, which are covered by groups ~~H01L 23/02~~ to ~~H01L 23/10~~; - mountings, which are covered by groups ~~H01L 23/12~~ to ~~H01L 23/15~~ and subgroups; - arrangements for cooling, heating, ventilating or temperature compensation, which are covered by groups ~~H01L 23/34~~ to ~~H01L 23/4735~~; - arrangements for conducting electric current, which are covered by groups ~~H01L 23/48~~ to ~~H01L 23/50~~, and by groups ~~H01L 23/52~~ to ~~H01L 23/5389~~; - structural electrical arrangements, which are covered by groups ~~H01L 23/58~~ to ~~H01L 23/66~~; - assemblies of semiconductor or other solid state devices, which are covered by groups ~~H01L 25/00~~ to ~~H01L 25/18~~.

2. In this group the following indexing codes are used :

~~H01L 24/00~~~~H01L 2224/00~~, ~~H01L 2924/00~~, and subgroups thereof

**WARNING**

~~H01L 21/4885~~, ~~H01L 21/58~~, ~~H01L 23/48~~, ~~H01L 23/482~~, ~~H01L 23/485~~, ~~H01L 23/488~~

**H01L 24/01**

- {Means for bonding being attached to, or being formed on, the surface to be connected, e.g. chip-to-package, die-attach, "first-level" interconnects; Manufacturing methods related thereto}

**WARNING**

1. Not complete, see provisionally also ~~H01L 23/482~~, ~~H01L 23/485~~ and subgroups 2. Pending reorganisation subgroups of this group are not complete; see also this group and the other subgroups

**H01L 24/02**

- {Bonding areas (on insulating substrates, e.g. chip carriers, ~~H01L 23/49816~~, ~~H01L 23/49838~~, ~~H01L 23/5389~~); Manufacturing methods related thereto}

**WARNING**

1. Pending reorganisation see provisionally also ~~H01L 24/10~~ for Under Bump Metallization [UBM] 2. Pending reorganisation, subgroups of this group are not complete; see also this group

- H01L 24/34
- {Strap connectors, e.g. copper straps for grounding power devices; Manufacturing methods related thereto}
- WARNING
1. Pending reorganisation see provisionally also [H01L 24/01-](#), [H01L 24/42-](#), [H01L 24/85](#) 2. Pending reorganisation, subgroups of this group are not complete; see also this group
- U H01L 24/42
- {Wire connectors; Manufacturing methods related thereto}
- H01L 24/43
- • {Manufacturing methods}
- WARNING
- [H01L 21/4885](#) and subgroups, [H01L 24/42-](#), [H01L 24/85](#)
- H01L 24/44
- • • {Structure, shape, material or disposition of the wire connectors prior to the connecting process}
- WARNING
- [H01L 24/42-](#), [H01L 24/85](#)
- H01L 24/47
- • • {Structure, shape, material or disposition of the wire connectors after the connecting process}
- WARNING
- [H01L 24/42-](#), [H01L 24/85](#) ]
- H01L 24/48
- • • • {of an individual wire connector}
- WARNING
- [H01L 24/42-](#), [H01L 24/85](#)
- H01L 24/49
- • • • {of a plurality of wire connectors}
- WARNING
- [H01L 24/42-](#), [H01L 24/85](#) ]
- H01L 24/50
- {Tape automated bonding [TAB] connectors, i.e. film carriers; Manufacturing methods related thereto (thin flexible metallic tape with or without a film carrier [H01L 23/49572-](#), flexible insulating substrates [H01L 23/4985-](#), [H01L 23/5387](#))}
- WARNING
- [H01L 24/86](#)
- H01L 24/73
- {Means for bonding being of different types provided for in two or more of groups [H01L 24/10-](#), [H01L 24/18-](#), [H01L 24/26-](#), [H01L 24/34-](#), [H01L 24/42-](#), [H01L 24/50-](#), [H01L 24/63-](#), [H01L 24/71](#)}
- U H01L 25/00
- Assemblies consisting of a plurality of individual semiconductor or other solid state devices {; Multistep manufacturing processes thereof}{lead frames with assemblies of semiconductor devices thereon [H01L 23/49575](#); assembling semiconductor devices using processes or apparatus not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#), e.g. sealing of a cap to a base of a container, [H01L 21/50](#);} devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); photovoltaic modules or arrays of photovoltaic cells [H01L 31/042](#) {, [H01G 9/20](#)}**
- H01L 25/03
- all the devices being of a type provided for in the same subgroup of groups [H01L 27/00](#) to [H01L 51/00-](#), e.g. assemblies of rectifier diodes
- U H01L 25/04
- • the devices not having separate containers
- U H01L 25/046
- • • {the devices being of a type provided for in group [H01L 51/00](#)}

- H01L 25/047
- • • {the devices being of a type provided for in group [H01L 51/42](#), e.g. photovoltaic modules based on organic solar cells}
- H01L 25/048
- • • {the devices being of a type provided for in group [H01L 51/50](#), e.g. assembly of organic light emitting devices}
- U H01L 25/10
- • the devices having separate containers
- H01L 25/105
- • • {the devices being of a type provided for in group [H01L 27/00](#)}
- NOTE
- When classifying in group [H01L 25/105](#), details of the assemblies are to be further indexed by using the indexing codes chosen from [H01L 2225/1005](#) and subgroups
- H01L 25/16
- the devices being of types provided for in two or more different main groups of [H01L 27/00](#) to [H01L 49/00](#) {and [H01L 51/00](#)}, e.g. forming hybrid circuits {(interconnections for hybrid circuits [H01L 23/5389](#))}
- H01L 25/50
- {Multistep manufacturing processes of assemblies consisting of devices, each device being of a type provided for in group [H01L 27/00](#) or [H01L 29/00](#) ([H01L 21/50](#) takes precedence)}
- H01L 27/00**
- Devices consisting of a plurality of semiconductor or other solid state components formed in or on a common substrate (processes or apparatus specially adapted for the manufacture or treatment thereof or of parts thereof [H01L 21/70](#), [H01L 31/00](#) to [H01L 51/00](#); details thereof [H01L 23/00](#), [H01L 29/00](#) to [H01L 51/00](#); assemblies consisting of a plurality of individual solid state devices [H01L 25/00](#); assemblies of electrical components in general [H05K](#))**
- NOTE
- In this group, in the absence of an indication to the contrary, classification is made in the last appropriate place.
- H01L 27/01
- comprising only passive thin-film or thick-film elements formed on a common insulating substrate {(passive two-terminal components without a potential-jump or surface barrier for integrated circuits, details thereof and multistep manufacturing processes therefor [H01L 28/00](#))}
- NOTE
- In groups [H01L 27/01](#) to [H01L 27/26](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
- U H01L 27/02
- including semiconductor components specially adapted for rectifying, oscillating, amplifying or switching and having at least one potential-jump barrier or surface barrier; including integrated passive circuit elements with at least one potential-jump barrier or surface barrier
- U H01L 27/0203
- • {Particular design considerations for integrated circuits}
- H01L 27/0248
- • • {for electrical or thermal protection, e.g. electrostatic discharge [ESD] protection (emergency protective circuit arrangements [H02H](#); circuit arrangements for protecting electronic switches [H03K 17/08](#); circuit arrangements for protecting logic circuits [H03K 19/003](#))}
- U H01L 27/0251
- • • • {for MOS devices}
- H01L 27/0255
- • • • {using diodes as protective elements (diode connected field effect transistors [H01L 27/0266](#); diode connected bipolar transistors [H01L 27/0259](#))}
- U H01L 27/04
- • the substrate being a semiconductor body
- U H01L 27/10
- • • including a plurality of individual components in a repetitive configuration
- U H01L 27/102
- • • • including bipolar components

- U H01L 27/1022 . . . . . {including bipolar transistors}
- H01L 27/1023 . . . . . {Bipolar dynamic random access memory structures (circuits [G11C 11/24](#), [G11C 11/34](#))}
- U H01L 27/105 . . . . . including field-effect components
- NOTE  
In this group and its subgroups classification is made in any appropriate place
- H01L 27/108 . . . . . Dynamic random access memory structures (circuits [G11C 11/24](#), [G11C 11/34](#))
- NOTE  
In this group and its subgroups classification is made in any appropriate place
- U H01L 27/10844 . . . . . {Multistep manufacturing methods}
- U H01L 27/10847 . . . . . {for structures comprising one transistor one-capacitor memory cells}
- WARNING  
not complete pending completion of reclassification; see also [H01L 27/10844](#)
- H01L 27/1085 . . . . . {with at least one step of making the capacitor or connections thereto (making a capacitor for integrated circuits [H01L 28/40](#), [H01L 29/66181](#))}
- U H01L 27/11 . . . . . Static random access memory structures {and multistep manufacturing processes therefor (circuits [G11C 11/40](#))}
- H01L 27/1112 . . . . . {the load element being a resistor (resistors for integrated circuits [H01L 28/20](#), [H01L 29/8605](#))}
- H01L 27/14 . . . . . including semiconductor components sensitive to infra-red radiation, light, electromagnetic radiation of shorter wavelength, or corpuscular radiation and specially adapted either for the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation (radiation-sensitive components structurally associated with one or more electric light sources only [H01L 31/14](#); couplings of light guides with optoelectronic elements [G02B 6/42](#))
- U H01L 27/144 . . . . . Devices controlled by radiation
- U H01L 27/146 . . . . . Imager structures
- U H01L 27/14601 . . . . . {Structural or functional details thereof}
- H01L 27/14609 . . . . . {Pixel-elements with integrated switching, control, storage or amplification elements (scanning details of imagers [H04N 3/15](#); circuitry of imagers [H04N 5/369](#))}
- H01L 28/00 {Passive two-terminal components without a potential-jump or surface barrier for integrated circuits; Details thereof; Multistep manufacturing processes therefor (testing or measuring during manufacture [H01L 22/00](#); integration methods [H01L 21/70](#); integrated circuits [H01L 27/00](#); two-terminal components with a potential-jump or surface barrier [H01L 29/00](#); resistors in general [H01C](#); inductors in general [H01F](#); capacitors in general [H01G](#))}**

**H01L 29/00**

**Semiconductor devices adapted for rectifying, amplifying, oscillating or switching, or capacitors or resistors with at least one potential-jump barrier or surface barrier, e.g. PN junction depletion layer or carrier concentration layer; Details of semiconductor bodies or of electrodes thereof; {Multistep manufacturing processes therefor} ([H01L 31/00](#) - [H01L 47/00](#), [H01L 51/05](#) take precedence; processes or apparatus adapted for the manufacture or treatment thereof or of parts thereof [H01L 21/00](#); details other than of semiconductor bodies or of electrodes thereof [H01L 23/00](#); devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); {-passive two-terminal components without a potential-jump or surface barrier for integrated circuits, details thereof and multistep manufacturing processes therefor [H01L 28/00](#); } resistors in general [H01C](#); capacitors in general [H01G](#), {e.g. ceramic barrier-layer capacitors [H01G 4/1272](#)})**

**NOTE**

In this main group, classification is made both in groups [H01L 29/02](#) to [H01L 29/51](#) and in groups [H01L 29/66](#) to [H01L 29/94](#) if both of these sets of groups are relevant.

- U H01L 29/02      • Semiconductor bodies; {Multistep manufacturing processes therefor}
- U H01L 29/06      • • characterised by their shape; characterised by the shapes, relative sizes, or dispositions of the semiconductor regions; {characterised by the concentration or distribution of impurities within semiconductor regions}
- H01L 29/0603     • • • {characterised by particular constructional design considerations, e.g. for preventing surface leakage, for controlling electric field concentration or for internal isolations regions (isolation regions between components [H01L 21/76](#); design considerations for integrated circuits [H01L 27/00](#); geometrical design considerations for devices [H01L 29/0657](#))}
- U H01L 29/08     • • • with semiconductor regions connected to an electrode carrying current to be rectified, amplified or switched and such electrode being part of a semiconductor device which comprises three or more electrodes
- U H01L 29/0843   • • • • {Source or drain regions of field-effect devices}
- H01L 29/0847   • • • • • {of field-effect transistors with insulated gate ([H01L 29/0653](#) takes precedence; with a passive supplementary region between source or drain and substrate related to punch-through, capacity or isolation phenomena [H01L 29/1079](#); with LDD or DDD structure [H01L 29/7833](#); for thin film transistors [H01L 29/78618](#))}
- U H01L 29/10     • • • with semiconductor regions connected to an electrode not carrying current to be rectified, amplified or switched and such electrode being part of a semiconductor device which comprises three or more electrodes
- U H01L 29/1025   • • • • {Channel region of field-effect devices}
- U H01L 29/1029   • • • • • {of field-effect transistors}
- H01L 29/1033   • • • • • • {with insulated gate, e.g. characterised by the length, the width, the geometric contour or the doping structure (with channel and gate aligned in the lengthwise direction [H01L 29/42376](#); with buried channel [H01L 29/7838](#))}
- U H01L 29/12     • • characterised by the materials of which they are formed
- H01L 29/122     • • • {Single quantum well structures (single heterojunctions, couples of materials [H01L 29/165](#), [H01L 29/205](#), [H01L 29/225](#), [H01L 29/267](#))}

- H01L 29/15
- • Structures with periodic or quasi periodic potential variation, e.g. multiple quantum wells, superlattices (such structures applied for the control of light [G02F 1/017](#)-, applied in semiconductor lasers [H01S 5/34](#))
- NOTE  
Group [H01L 29/15](#) takes precedence over groups [H01L 29/16](#) to [H01L 29/26](#)-.  
.
- U H01L 29/16
- • including, apart from doping materials or other impurities, only elements of the fourth group of the Periodic System in uncombined form {(including SiC [H01L 29/24](#))}
- H01L 29/161
- • • including two or more of the elements provided for in group [H01L 29/16](#)-, {e.g. alloys ([H01L 29/1604](#) takes precedence)}
- H01L 29/24
- • including, apart from doping materials or other impurities, only semiconductor materials not provided for in groups [H01L 29/16](#)-, [H01L 29/18](#)-, [H01L 29/20](#)-, [H01L 29/22](#) (including organic materials [H01L 51/00](#))
- H01L 29/26
- • including, apart from doping materials or other impurities, elements provided for in two or more of the groups [H01L 29/16](#)-, [H01L 29/18](#)-, [H01L 29/20](#)-, [H01L 29/22](#)-, [H01L 29/24](#)-, {e.g. alloys}
- U H01L 29/40
- Electrodes; {Multistep manufacturing processes therefor}
- U H01L 29/41
- characterised by their shape, relative sizes or dispositions
- H01L 29/413
- • {Nanosized electrodes, e.g. nanowire electrodes comprising one or a plurality of nanowires (transparent electrodes comprising carbon nanotubes [H01L 51/444](#)-, nanotechnology per se [B82B](#); nanosized carbon materials, e.g. carbon nanotubes, per se [C01B 31/0206](#))}
- U H01L 29/423
- • not carrying the current to be rectified, amplified or switched
- U H01L 29/42312
- • • {Gate electrodes for field effect devices}
- U H01L 29/42316
- • • • {for field-effect transistors}
- U H01L 29/4232
- • • • • {with insulated gate}
- H01L 29/42356
- • • • • {Disposition, e.g. buried gate electrode ([H01L 29/42324](#) and [H01L 29/4234](#) take precedence)}
- WARNING  
This group and subgroup thereof are not complete, see provisionally also [H01L 29/78](#)-, [H01L 29/7801](#) and subgroups thereof, [H01L 29/7827](#) and [H01L 29/7834](#)
- H01L 29/42364
- • • • • {characterised by the insulating layer, e.g. thickness or uniformity} ([H01L 29/42324](#) and [H01L 29/4234](#) take precedence)}
- U H01L 29/43
- characterised by the materials of which they are formed
- U H01L 29/49
- • Metal-insulator-semiconductor electrodes, {e.g. gates of MOSFET ([H01L 29/435](#) takes precedence)}
- NOTE  
This group covers also devices using any other conductor material in place of metal
- H01L 29/4916
- • • {the conductor material next to the insulator being a silicon layer, e.g. polysilicon doped with boron, phosphorus or nitrogen ([H01L 29/4908](#)-, [H01L 29/4983](#) take precedence)}
- H01L 29/495
- • • {the conductor material next to the insulator being a simple metal, e.g. W, Mo ([H01L 29/4908](#)-, [H01L 29/4983](#) take precedence)}

- H01L 29/4966
  - . . . {the conductor material next to the insulator being a composite material, e.g. organic material, TiN, MoSi<sub>2</sub> ([H01L 29/4908](#), [H01L 29/4983](#) take precedence)}
- U H01L 29/66
  - . Types of semiconductor device; {Multistep manufacturing processes therefor}
- U H01L 29/66007
  - . {Multistep manufacturing processes}
- H01L 29/66075
  - . . . {of devices having semiconductor bodies comprising group 14 or group 13/15 materials (comprising semiconducting carbon [H01L 29/66015](#); comprising crystalline silicon carbide [H01L 29/66053](#))}
- U H01L 29/66227
  - . . . . {the devices being controllable only by the electric current supplied or the electric potential applied, to an electrode which does not carry the current to be rectified, amplified or switched, e.g. three-terminal devices}
- U H01L 29/66234
  - . . . . . {Bipolar junction transistors [BJT]}
- H01L 29/66272
  - . . . . . {Silicon vertical transistors ([H01L 29/66242](#), [H01L 29/66257](#) and [H01L 29/66265](#) take precedence)}
- U H01L 29/66409
  - . . . . . {Unipolar field-effect transistors}
- U H01L 29/66477
  - . . . . . {with an insulated gate, i.e. MISFET}
- H01L 29/66666
  - . . . . . . {Vertical transistors ([H01L 29/66712](#), [H01L 29/66742](#) take precedence)}
- H01L 29/66992
  - . . {controllable only by the variation of applied heat (controllable by IR radiation [H01L 31/00](#); measuring quantity of heat [G01K 17/00](#))}
- U H01L 29/68
  - . . controllable by only the electric current supplied, or only the electric potential applied, to an electrode which does not carry the current to be rectified, amplified or switched
- U H01L 29/70
  - . . . Bipolar devices
- U H01L 29/72
  - . . . . Transistor-type devices, i.e. able to continuously respond to applied control signals
- U H01L 29/73
  - . . . . . Bipolar junction transistors
- H01L 29/7302
  - . . . . . . {structurally associated with other devices (assemblies of devices [H01L 25/00](#); integrated circuits [H01L 27/00](#); IGBT [H01L 29/7393](#))}
- U H01L 29/74
  - . . . . Thyristor-type devices, e.g. having four-zone regenerative action {(two-terminal thyristors [H01L 29/87](#))}
- H01L 29/7404
  - . . . . . {structurally associated with at least one other device (assemblies [H01L 25/00](#); integrated circuits [H01L 27/00](#))}
- H01L 29/742
  - . . . . . . {the device being a field effect transistor (for turn-on or turn-off by field effect [H01L 29/745](#), [H01L 29/749](#))}
- U H01L 29/76
  - . . . Unipolar devices, {e.g. field effect transistors}
- U H01L 29/778
  - . . . . with two-dimensional charge carrier gas channel, e.g. HEMT; {with two-dimensional charge-carrier layer formed at a heterojunction interface ([H01L 29/803](#) takes precedence)}
- H01L 29/78
  - . . . . . with field effect produced by an insulated gate {([H01L 29/7725](#), [H01L 29/775](#), [H01L 29/778](#) take precedence)}
- U H01L 29/7801
  - . . . . . . {DMOS transistors, i.e. MISFETs with a channel accommodating body or base region adjoining a drain drift region (lateral high-voltage MISFETs with channel well and drain offset region [H01L 29/7835](#))}
- U H01L 29/7802
  - . . . . . . . {Vertical DMOS transistors, i.e. VDMOS transistors}

- H01L 29/7803 . . . . . {structurally associated with at least one other device (assemblies [H01L 25/00](#); integrated circuits [H01L 27/00](#))}
- WARNING  
This group and subgroups thereof are not complete, see provisionally also [H01L 29/7802](#)
- H01L 29/7811 . . . . . {with an edge termination structure (guard regions per se [H01L 29/0619](#); field plates per se [H01L 29/402](#))}
- WARNING  
This group is not complete, see provisionally also [H01L 29/7802](#), [H01L 29/7809](#) and [H01L 29/7813](#)
- H01L 29/7815 . . . . . {with voltage or current sensing structure, e.g. emulator section, overcurrent sensing cell}
- WARNING  
This group is not complete, see provisionally also [H01L 29/7802](#), [H01L 29/7809](#) and [H01L 29/7813](#)
- U H01L 29/7816 . . . . . {Lateral DMOS transistors, i.e. LDMOS transistors}
- WARNING  
This group and subgroups thereof are not complete, see provisionally also [H01L 29/7801](#)
- H01L 29/7817 . . . . . {structurally associated with at least one other device (assemblies [H01L 25/00](#); integrated circuits [H01L 27/00](#))}
- H01L 29/7823 . . . . . {with an edge termination structure (guard regions per se [H01L 29/0619](#); field plates per se [H01L 29/402](#))}
- H01L 29/7827 . . . . . {Vertical transistors ([H01L 29/7802](#), [H01L 29/78642](#) take precedence)}
- H01L 29/783 . . . . . {comprising a gate to body connection, i.e. bulk dynamic threshold voltage MOSFET (for thin film transistors [H01L 29/78612](#), [H01L 29/78696](#))}
- H01L 29/7831 . . . . . {with multiple gate structure (FinFETs or MuGFETs [H01L 29/7855](#), thin film transistors [H01L 29/78645](#))}
- U H01L 29/7833 . . . . . {with lightly doped drain or source extension, e.g. LDD MOSFET`s; DDD MOSFET`s (for thin film transistors [H01L 29/78618](#))}
- H01L 29/7836 . . . . . {with a significant overlap between the lightly doped extension and the gate electrode ([H01L 29/7834](#), [H01L 29/7835](#) take precedence)}
- H01L 29/786 . . . . . Thin film transistors, {i.e. transistors with a channel being at least partly a thin film (transistors having only the source or the drain region on an insulator layer [H01L 29/0653](#); thin film FinFETs [H01L 29/785](#))}
- H01L 29/78606 . . . . . {with supplementary region or layer in the thin film or in the insulated bulk substrate supporting it for controlling or increasing the safety of the device ([H01L 29/78642](#), [H01L 29/78645](#) take precedence)}
- H01L 29/78645 . . . . . {with multiple gate}
- NOTE  
In groups [H01L 29/78651](#) to [H01L 29/78696](#), the materials specified for the transistors are the material of the channel region
- U H01L 29/80 . . . . . with field effect produced by a PN or other rectifying junction gate, {i.e. potential-jump barrier}

- H01L 29/802 . . . . . {with heterojunction gate, e.g. transistors with semiconductor layer acting as gate insulating layer, MIS-like transistors ([H01L 29/806](#) takes precedence; with one dimensional electron gas [H01L 29/775](#); with dimensional electron gas [H01L 29/778](#))}
- H01L 29/808 . . . . . with a PN junction gate, {e.g. PN homojunction gate ([H01L 29/7725](#), [H01L 29/775](#), [H01L 29/778](#), [H01L 29/806](#) take precedence)}
- H01L 29/812 . . . . . with a Schottky gate {([H01L 29/7725](#), [H01L 29/775](#), [H01L 29/778](#), [H01L 29/806](#) take precedence; with Schottky contact on top of heterojunction gate [H01L 29/802](#))}
- H01L 31/00** **Semiconductor devices sensitive to infra-red radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation and adapted either for the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof; Details thereof ([H01L 51/42](#) takes precedence; devices consisting of a plurality of solid state components formed in, or on, a common substrate, other than combinations of radiation-sensitive components with one or more electric light sources, [H01L 27/00](#); production of heat using solar heat [F24J 2/00](#); measurement of X-radiation, gamma radiation, corpuscular radiation or cosmic radiation with semiconductor detectors [G01T 1/24](#); with resistance detectors [G01T 1/26](#); measurement of neutron radiation with semiconductor detectors [G01T 3/08](#); couplings of light guides with optoelectronic elements [G02B 6/42](#); obtaining energy from radioactive sources [G21H](#))**
- U H01L 31/0248 . characterised by their semiconductor bodies
- U H01L 31/0256 . . characterised by the material
- U H01L 31/0264 . . . Inorganic materials
- U H01L 31/028 . . . . including, apart from doping material or other impurities, only elements of the fourth group of the Periodic System
- H01L 31/0284 . . . . {comprising porous silicon as part of the active layer(s) (porous silicon as antireflective layer for photodiodes [H01L 31/0216](#); for solar cells [H01L 31/02168](#))}
- U H01L 31/032 . . . . including, apart from doping materials or other impurities, only compounds not provided for in groups [H01L 31/0272](#) to [H01L 31/0312](#)
- H01L 31/0321 . . . . {characterised by the doping material ([H01L 31/0323](#), [H01L 31/0325](#) take precedence)}
- H01L 31/12 . Structurally associated with, e.g. formed in or on a common substrate with, one or more electric light sources, e.g. electroluminescent light sources, and electrically or optically coupled thereto (semiconductor devices with at least one potential barrier or surface barrier adapted for light emission [H01L 33/00](#); amplifiers using electroluminescent element and photocell [H03F 17/00](#); electroluminescent light sources per se [H05B 33/00](#))

**H01L 33/00** Semiconductor devices with at least one potential-jump barrier or surface barrier specially adapted for light emission; Processes or apparatus specially adapted for the manufacture or treatment thereof or of parts thereof; Details thereof ([H01L 51/50](#) takes precedence; devices consisting of a plurality of semiconductor components formed in or on a common substrate and including semiconductor components with at least one potential-jump barrier or surface barrier, specially adapted for light emission [H01L 27/15](#); semiconductor lasers [H01S 5/00](#))

NOTES

1. This group covers light emitting diodes [LEDs] or superluminescent diodes [SLDs], including LEDs or SLDs emitting infra-red [IR] light or ultra-violet [UV] light.

2. In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

**H01L 35/00** Thermo-electric devices comprising a junction of dissimilar materials, i.e. exhibiting Seebeck or Peltier effect with or without other thermo-electric effects or thermomagnetic effects; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof; Details thereof (devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); refrigerating machines using electric or magnetic effects [F25B 21/00](#); thermometers using thermoelectric or thermomagnetic elements [G01K 7/00](#); obtaining energy from radioactive sources [G21H](#))

- U H01L 35/12 · Selection of the material for the legs of the junction
- U H01L 35/14 · · using inorganic compositions
- H01L 35/20 · · · comprising metals only ([H01L 35/16](#); [H01L 35/18](#) take precedence)

**H01L 37/00** Thermoelectric devices without a junction of dissimilar materials; Thermomagnetic devices, e.g. using Nernst-Ettinghausen effect; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); {-radiation pyrometers using pyroelectric detectors [G01J 5/34](#)} thermometers using thermo-electric or thermomagnetic elements [G01K 7/00](#); selection of materials for magnetography, e.g. for Curie-point writing [G03G 5/00](#))

**H01L 39/00** Devices using superconductivity; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); {-light detection [G01J](#), [G02F 2/00](#); application to memories [G11C 11/44](#), [G11C 15/00](#), [G11C 19/32](#)} ; superconducting conductors cables or transmission lines [H01B 12/00](#); {-microwaves [H01P 7/00](#), [H01P 11/00](#)} ; superconductive coils or windings [H01F](#); amplifiers using superconductivity [H03F 19/00](#); {-impulse generators and logic circuits [H03K 3/38](#), [H03K 17/92](#), [H03K 19/195](#); lasers [H01S 3/00](#), [H01S 5/00](#)})

NOTE

In this group, in the absence of an indication to the contrary, an invention is classified in the last appropriate place

- U H01L 39/02 · Details
- U H01L 39/12 · · characterised by the material
- U H01L 39/121 · · · {Organic materials}
- H01L 39/123 · · · · {Fullerene superconductors, e.g. soccerball-shaped allotrope of carbon, e.g. C<sub>60</sub>, C<sub>94</sub> (fullerenes in general [C07C 13/00](#))}

- U H01L 39/24 · Processes or apparatus peculiar to the manufacture or treatment of devices provided for in [H01L 39/00](#) or of parts thereof
- H01L 39/249 · · {Treatment of superconductive layers by irradiation, e.g. ion-beam, electron-beam, laser beam, X-rays (irradiation devices [G21K](#), [H01J](#))}
- H01L 43/00** **Devices using galvano-magnetic or similar magnetic effects; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); devices with potential-jump barrier, or surface barrier controllable by variation of a magnetic field [H01L 29/82](#))**
- H01L 45/00** **Solid state devices adapted for rectifying, amplifying, oscillating or switching without a potential-jump barrier or surface barrier, e.g. dielectric triodes; Ovshinsky-effect devices; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); devices using superconductivity [H01L 39/00](#); piezo-electric devices [H01L 41/00](#); bulk negative resistance effect devices [H01L 47/00](#); {memories [G11C 11/34](#); [G11C 13/0002](#); amplifying circuits [H03F 11/00](#); pulse generation [H03K 3/02](#); electronic switching circuits [H03K 17/00](#); logic circuits [H03K 19/00](#))}**
- WARNING
- Groups [H01L 45/04](#) - [H01L 45/16](#) do not correspond to former or current IPC groups. IPC concordance of said groups is - [H01L 45/04](#) - [H01L 45/16](#) : [H01L 45/00](#). Groups [H01L 45/06](#) to [H01L 45/1691](#) are not complete pending reclassification; see provisionally also group [H01L 45/04](#)
- H01L 51/00** **Solid state devices using organic materials as the active part, or using a combination of organic materials with other materials as the active part; Processes or apparatus specially adapted for the manufacture or treatment of such devices, or of parts thereof (devices consisting of a plurality of components formed in or on a common substrate [H01L 27/28](#); thermoelectric devices using organic material [H01L 35/00](#), [H01L 37/00](#); piezoelectric, electrostrictive or magnetostrictive elements using organic material [H01L 41/00](#))**
- H01L 51/0001 · {Processes specially adapted for the manufacture or treatment of devices or of parts thereof (multistep processes [H01L 51/0098](#), [H01L 51/05](#), [H01L 51/42](#), [H01L 51/50](#))}
- H01L 51/0032 · {Selection of organic semiconducting materials, e.g. organic light sensitive or organic light emitting materials}
- NOTE
- This group only covers the selection of organic materials for their electrical or other properties insofar as they are specific for their use in devices covered by the group [H01L 51/00](#).
- For the materials per se, see the relevant subclasses.
- Attention is drawn to the following places:
- organic materials in general [C07C](#), [C07D](#), [C07F](#), [C08L](#);
  - organic materials as electrical conductors [H01B 1/12](#);
  - organic materials as electrical insulators [H01B 3/18](#)
- U H01L 51/0034 · · {Organic polymers or oligomers (organic macromolecular compounds or compositions per se [C08](#))}
- U H01L 51/004 · · · {comprising aliphatic or olefinic chains, e.g. poly N-vinylcarbazol, PVC, PTFE}

- H01L 51/0041
  - • • {Poly acetylene (per se [C08G 61/04](#), [C08F 38/02](#), [C08F 138/02](#), [C08F 238/02](#)) or derivatives}
- H01L 51/005
  - {Macromolecular systems with low molecular weight, e.g. cyanine dyes, coumarine dyes, tetrathiafulvalene ([H01L 51/0045](#), [H01L 51/0077](#), [H01L 51/0093](#), [H01L 51/0094](#) take precedence)}
- H01L 51/0098
  - {Molecular electronic devices (molecular computers [G06F 15/80](#); molecular memories [G11C 11/00](#), [G11C 13/02](#))}
- U H01L 51/05
  - specially adapted for rectifying, amplifying, oscillating or switching, or capacitors or resistors with at least one potential- jump barrier or surface barrier {multistep processes for their manufacture}
- U H01L 51/0575
  - • {the devices being controllable only by variation of the electric current supplied or the electric potential applied, to one or more of the electrodes carrying the current to be rectified, amplified, oscillated or switched, e.g. two-terminal devices}
- H01L 51/0595
  - • • {molecular electronic devices (molecular computers [G06F 15/80](#); molecular memories [G11C 11/00](#), [G11C 13/02](#))}
- U H01L 51/42
  - specially adapted for sensing infra-red radiation, light, electro-magnetic radiation of shorter wavelength or corpuscular radiation and adapted for the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation {using organic materials as the active part, or using a combination of organic materials with other material as the active part; Multistep processes for their manufacture}
- U H01L 51/4213
  - • {Comprising organic semiconductor-inorganic semiconductor hetero-junctions ([H01L 51/4253](#) takes precedence)}
- H01L 51/422
  - • • {Majority carrier devices using sensitisation of widebandgap semiconductors, e.g. TiO<sub>2</sub> (photoelectrochemical devices with a liquid or solid electrolyte [H01G 9/20](#))}
- H01L 51/50
  - specially adapted for light emission, e.g. organic light emitting diodes [OLED] or polymer light emitting devices [PLED]; (organic semiconductor lasers [H01S 5/36](#); {circuit arrangements for OLED or PLED [H05B 33/0896](#); control arrangements for organic electroluminescent displays [G09G 3/3208](#))}
- U H01L 2221/00**
  - Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof covered by [H01L 21/00](#)**
- U H01L 2221/67
  - Apparatus for handling semiconductor or electric solid state devices during manufacture or treatment thereof; Apparatus for handling wafers during manufacture or treatment of semiconductor or electric solid state devices or components; Apparatus not specifically provided for elsewhere
- U H01L 2221/683
  - • for supporting or gripping
- U H01L 2221/68304
  - • • using temporarily an auxiliary support
- H01L 2221/68372
  - • • • used to support a device or wafer when forming electrical connections thereto (when forming bonding pads [H01L 24/03](#); when forming bump connectors [H01L 24/11](#); when forming layer connectors [H01L 24/27](#))
- U H01L 2224/00**
  - Indexing scheme for arrangements for connecting or disconnecting semiconductor or solid-state bodies and methods related thereto as covered by [H01L 24/00](#)**
- U H01L 2224/01
  - Means for bonding being attached to, or being formed on, the surface to be connected, e.g. chip-to-package, die-attach, "first-level" interconnects; Manufacturing methods related thereto
- U H01L 2224/02
  - • Bonding areas; Manufacturing methods related thereto
- U H01L 2224/04
  - • • Structure, shape, material or disposition of the bonding areas prior to the connecting process

- U H01L 2224/05 . . . . of an individual bonding area
- U H01L 2224/05001 . . . . . Internal layers
- U H01L 2224/05099 . . . . . Material
- H01L 2224/05193 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/051](#) to [H01L 2224/05191](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/05198 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/05199 . . . . . Material of the matrix
- H01L 2224/05293 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/052](#) to [H01L 2224/05291](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/05298 . . . . . Fillers
- U H01L 2224/05299 . . . . . Base material
- H01L 2224/05393 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/053](#) to [H01L 2224/05391](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/05399 . . . . . Coating material
- H01L 2224/05493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/054](#) to [H01L 2224/05491](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/0554 . . . . . External layer
- U H01L 2224/05599 . . . . . Material
- H01L 2224/05693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/056](#) to [H01L 2224/05691](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/05698 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/05699 . . . . . Material of the matrix
- H01L 2224/05793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/057](#) to [H01L 2224/05791](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/05798 . . . . . Fillers
- U H01L 2224/05799 . . . . . Base material
- H01L 2224/05893 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/058](#) to [H01L 2224/05891](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/05899 . . . . . Coating material
- H01L 2224/05993 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/059](#) to [H01L 2224/05991](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/10 . . . . . Bump connectors; Manufacturing methods related thereto

- U H01L 2224/12 . . . Structure, shape, material or disposition of the bump connectors prior to the connecting process
- U H01L 2224/13 . . . . of an individual bump connector
- U H01L 2224/13001 . . . . . Core members of the bump connector
- U H01L 2224/13099 . . . . . Material
- H01L 2224/13193 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/131](#) to [H01L 2224/13191](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/13198 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/13199 . . . . . Material of the matrix
- H01L 2224/13293 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/132](#) to [H01L 2224/13291](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/13298 . . . . . Fillers
- U H01L 2224/13299 . . . . . Base material
- H01L 2224/13393 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/133](#) to [H01L 2224/13391](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/13399 . . . . . Coating material
- H01L 2224/13493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/134](#) to [H01L 2224/13491](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/1354 . . . . . Coating
- U H01L 2224/13599 . . . . . Material
- H01L 2224/13693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/136](#) to [H01L 2224/13691](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/13698 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/13699 . . . . . Material of the matrix
- H01L 2224/13793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/137](#) to [H01L 2224/13791](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/13798 . . . . . Fillers
- U H01L 2224/13799 . . . . . Base material
- H01L 2224/13893 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/138](#) to [H01L 2224/13891](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/13899 . . . . . Coating material
- H01L 2224/13993 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/139](#) to [H01L 2224/13991](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond

- U H01L 2224/26      . . Layer connectors, e.g. plate connectors, solder or adhesive layers; Manufacturing methods related thereto
- U H01L 2224/28      . . . Structure, shape, material or disposition of the layer connectors prior to the connecting process
- U H01L 2224/29      . . . . of an individual layer connector
- U H01L 2224/29001   . . . . . Core members of the layer connector
- U H01L 2224/29099   . . . . . Material
- H01L 2224/29193   . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/291](#) to [H01L 2224/29191](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/29198   . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/29199   . . . . . Material of the matrix
- H01L 2224/29293   . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/292](#) to [H01L 2224/29291](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/29298   . . . . . Fillers
- U H01L 2224/29299   . . . . . Base material
- H01L 2224/29393   . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/293](#) to [H01L 2224/29391](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/29399   . . . . . Coating material
- H01L 2224/29493   . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/294](#) to [H01L 2224/29491](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/2954    . . . . . Coating
- U H01L 2224/29599   . . . . . Material
- H01L 2224/29693   . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/296](#) to [H01L 2224/29691](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/29698   . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/29699   . . . . . Material of the matrix
- H01L 2224/29793   . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/297](#) to [H01L 2224/29791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/29798   . . . . . Fillers
- U H01L 2224/29799   . . . . . Base material
- H01L 2224/29893   . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/298](#) to [H01L 2224/29891](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/29899   . . . . . Coating material

- H01L 2224/29993 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/299](#) to [H01L 2224/29991](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/34 . . . . . Strap connectors, e.g. copper straps for grounding power devices; Manufacturing methods related thereto
- U H01L 2224/36 . . . . . Structure, shape, material or disposition of the strap connectors prior to the connecting process
- U H01L 2224/37 . . . . . of an individual strap connector
- U H01L 2224/37001 . . . . . Core members of the connector
- U H01L 2224/37099 . . . . . Material
- H01L 2224/37193 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/371](#) to [H01L 2224/37191](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/37198 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/37199 . . . . . Material of the matrix
- H01L 2224/37293 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/372](#) to [H01L 2224/37291](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/37298 . . . . . Fillers
- U H01L 2224/37299 . . . . . Base material
- H01L 2224/37393 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/373](#) to [H01L 2224/37391](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/37399 . . . . . Coating material
- H01L 2224/37493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/374](#) to [H01L 2224/37491](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/3754 . . . . . Coating
- U H01L 2224/37599 . . . . . Material
- H01L 2224/37693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/376](#) to [H01L 2224/37691](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/37698 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/37699 . . . . . Material of the matrix
- H01L 2224/37793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/377](#) to [H01L 2224/37791](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/37798 . . . . . Fillers
- U H01L 2224/37799 . . . . . Base material

- H01L 2224/37893 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/378](#) to [H01L 2224/37891](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/37899 . . . . . Coating material
- H01L 2224/37993 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/379](#) to [H01L 2224/37991](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/42 . . . . . Wire connectors; Manufacturing methods related thereto
- U H01L 2224/44 . . . . . Structure, shape, material or disposition of the wire connectors prior to the connecting process
- U H01L 2224/45 . . . . . of an individual wire connector
- U H01L 2224/45001 . . . . . Core members of the connector
- U H01L 2224/45099 . . . . . Material
- H01L 2224/45193 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/451](#) to [H01L 2224/45191](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/45198 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/45199 . . . . . Material of the matrix
- H01L 2224/45293 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/452](#) to [H01L 2224/45291](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/45298 . . . . . Fillers
- U H01L 2224/45299 . . . . . Base material
- H01L 2224/45393 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/453](#) to [H01L 2224/45391](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/45399 . . . . . Coating material
- H01L 2224/45493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/454](#) to [H01L 2224/45491](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/4554 . . . . . Coating
- U H01L 2224/45599 . . . . . Material
- H01L 2224/45693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/456](#) to [H01L 2224/45691](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/45698 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/45699 . . . . . Material of the matrix
- H01L 2224/45793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/457](#) to [H01L 2224/45791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/45798 . . . . . Fillers

- U H01L 2224/45799 . . . . . Base material
- H01L 2224/45893 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/458](#) to [H01L 2224/45891](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/45899 . . . . . Coating material
- H01L 2224/45993 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/459](#) to [H01L 2224/45991](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/47 . . . Structure, shape, material or disposition of the wire connectors after the connecting process
- U H01L 2224/48 . . . . of an individual wire connector
- U H01L 2224/485 . . . . . Material
- U H01L 2224/48505 . . . . . at the bonding interface
- U H01L 2224/48599 . . . . . Principal constituent of the connecting portion of the wire connector being Gold (Au)
- H01L 2224/48693 . . . . . with a principal constituent of the bonding area being a solid not provided for in groups [H01L 2224/486](#) to [H01L 2224/4869](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/48699 . . . . . Principal constituent of the connecting portion of the wire connector being Aluminium (Al)
- H01L 2224/48793 . . . . . with a principal constituent of the bonding area being a solid not provided for in groups [H01L 2224/487](#) to [H01L 2224/4879](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/48799 . . . . . Principal constituent of the connecting portion of the wire connector being Copper (Cu)
- H01L 2224/48893 . . . . . with a principal constituent of the bonding area being a solid not provided for in groups [H01L 2224/488](#) to [H01L 2224/4889](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- H01L 2224/73 . . Means for bonding being of different types provided for in two or more of groups [H01L 2224/10](#)-, [H01L 2224/18](#)-, [H01L 2224/26](#)-, [H01L 2224/34](#)-, [H01L 2224/42](#)-, [H01L 2224/50](#)-, [H01L 2224/63](#)-, [H01L 2224/71](#)
- U H01L 2224/80 . . Methods for connecting semiconductor or other solid state bodies using means for bonding being attached to, or being formed on, the surface to be connected
- U H01L 2224/80001 . . by connecting a bonding area directly to another bonding area, i.e. connectorless bonding, e.g. bumpless bonding
- U H01L 2224/8038 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/80399 . . . . Material
- H01L 2224/80493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/804](#) to [H01L 2224/80491](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/80498 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/80499 . . . . . Material of the matrix

- H01L 2224/80593 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/805](#) to [H01L 2224/80591](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/80598 . . . . . Fillers
- U H01L 2224/80599 . . . . . Base material
- H01L 2224/80693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/806](#) to [H01L 2224/80691](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/80699 . . . . . Coating material
- H01L 2224/80793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/807](#) to [H01L 2224/80791](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/808 . . . Bonding techniques
- U H01L 2224/8085 . . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/80885 . . . . Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/80855](#) to [H01L 2224/8088](#)-, e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/81 . . . using a bump connector
- U H01L 2224/8136 . . . Bonding interfaces of the semiconductor or solid state body
- H01L 2224/81379 . . . . Material (material of the bump connector prior to the connecting process [H01L 2224/13099](#) and [H01L 2224/13599](#)-, and subgroups)
- U H01L 2224/8138 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/81399 . . . . Material
- H01L 2224/81493 . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/814](#) to [H01L 2224/81491](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/81498 . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/81499 . . . . . Material of the matrix
- H01L 2224/81593 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/815](#) to [H01L 2224/81591](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/81598 . . . . . Fillers
- U H01L 2224/81599 . . . . . Base material
- H01L 2224/81693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/816](#) to [H01L 2224/81691](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/81699 . . . . . Coating material
- H01L 2224/81793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/817](#) to [H01L 2224/81791](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/818 . . . Bonding techniques
- U H01L 2224/8185 . . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester

- H01L 2224/81885 . . . . Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/81855](#) to [H01L 2224/8188](#)-, e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/82 . . by forming build-up interconnects at chip-level, e.g. for high density interconnects [HDI]
- U H01L 2224/828 . . . Bonding techniques
- U H01L 2224/8285 . . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/82885 . . . . Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/82855](#) to [H01L 2224/8288](#)-, e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/83 . . using a layer connector
- U H01L 2224/8336 . . . Bonding interfaces of the semiconductor or solid state body
- H01L 2224/83379 . . . . Material (material of the layer connector prior to the connecting process [H01L 2224/29099](#) and [H01L 2224/29599](#)-, and subgroups)
- U H01L 2224/8338 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/83399 . . . . Material
- H01L 2224/83493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/834](#) to [H01L 2224/83491](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/83498 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/83499 . . . . . Material of the matrix
- H01L 2224/83593 . . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/835](#) to [H01L 2224/83591](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/83598 . . . . . Fillers
- U H01L 2224/83599 . . . . . Base material
- H01L 2224/83693 . . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/836](#) to [H01L 2224/83691](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/83699 . . . . . Coating material
- H01L 2224/83793 . . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/837](#) to [H01L 2224/83791](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/838 . . . Bonding techniques
- U H01L 2224/8385 . . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/83885 . . . . Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/83855](#) to [H01L 2224/8388](#)-, e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/84 . . using a strap connector
- U H01L 2224/8438 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/84399 . . . . Material
- H01L 2224/84493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/844](#) to [H01L 2224/84491](#)-, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond

- U H01L 2224/84498 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/84499 . . . . . Material of the matrix
- H01L 2224/84593 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/845](#) to [H01L 2224/84591](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/84598 . . . . . Fillers
- U H01L 2224/84599 . . . . . Base material
- H01L 2224/84693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/846](#) to [H01L 2224/84691](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/84699 . . . . . Coating material
- H01L 2224/84793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/847](#) to [H01L 2224/84791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/848 . . . Bonding techniques
- U H01L 2224/8485 . . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/84885 . . . . . Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/84855](#) to [H01L 2224/8488](#), e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/85 . . . using a wire connector
- U H01L 2224/8538 . . . Bonding interfaces outside the semiconductor or solid-state body
- U H01L 2224/85399 . . . . Material
- H01L 2224/85493 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/854](#) to [H01L 2224/85491](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/85498 . . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- U H01L 2224/85499 . . . . . Material of the matrix
- H01L 2224/85593 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/855](#) to [H01L 2224/85591](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/85598 . . . . . Fillers
- U H01L 2224/85599 . . . . . Base material
- H01L 2224/85693 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/856](#) to [H01L 2224/85691](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/85699 . . . . . Coating material
- H01L 2224/85793 . . . . . with a principal constituent of the material being a solid not provided for in groups [H01L 2224/857](#) to [H01L 2224/85791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2224/858 . . . Bonding techniques
- U H01L 2224/8585 . . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester

- H01L 2224/85885
  - • • • Combinations of two or more hardening methods provided for in at least two different groups from [H01L 2224/85855](#) to [H01L 2224/8588](#), e.g. for hybrid thermoplastic-thermosetting adhesives
- U H01L 2224/86
  - • using tape automated bonding [TAB]
- U H01L 2224/868
  - • • Bonding techniques
- U H01L 2224/8685
  - • • • using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
- H01L 2224/86885
  - • • • • Combinations of two or more hardening methods provided for in at least two different groups selected from [H01L 2224/86855](#) to [H01L 2224/8688](#), e.g. hybrid thermoplastic-thermosetting adhesives
- U H01L 2225/00**
  - Details relating to assemblies covered by the group [H01L 25/00](#) but not provided for in its subgroups**
- U H01L 2225/03
  - All the devices being of a type provided for in the same subgroup of groups [H01L 27/00](#) to [H01L 51/00](#)
- U H01L 2225/04
  - • the devices not having separate containers
- U H01L 2225/065
  - • • the devices being of a type provided for in group [H01L 27/00](#)
- U H01L 2225/06503
  - • • • Stacked arrangements of devices
- H01L 2225/06596
  - • • • • Structural arrangements for testing (testing or measuring during manufacture or treatment [H01L 22/00](#); testing electrical properties or locating electrical faults [G01R 31/00](#))
- U H01L 2924/00**
  - Indexing scheme for arrangements or methods for connecting or disconnecting semiconductor or solid-state bodies as covered by [H01L 24/00](#)**
- U H01L 2924/15
  - Details of package parts other than the semiconductor or other solid state devices to be connected
- U H01L 2924/151
  - • Die mounting substrate
- U H01L 2924/156
  - • • Material
- H01L 2924/15793
  - • • • with a principal constituent of the material being a solid not provided for in groups [H01L 2924/157](#) to [H01L 2924/15791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/161
  - • Cap
- U H01L 2924/1615
  - • • Shape
- U H01L 2924/16152
  - • • • Cap comprising a cavity for hosting the device, e.g. U-shaped cap
- U H01L 2924/1617
  - • • • • Cavity coating
- U H01L 2924/16171
  - • • • • • Material
- H01L 2924/16178
  - • • • • • • with a principal constituent of the material being a solid not provided for in groups [H01L 2924/157](#) to [H01L 2924/15791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/163
  - • • Connection portion e.g. seal
- U H01L 2924/164
  - • • • Material
- H01L 2924/16593
  - • • • • with a principal constituent of the material being a solid not provided for in groups [H01L 2924/157](#) to [H01L 2924/15791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/166
  - • • Material
- H01L 2924/16793
  - • • • with a principal constituent of the material being a solid not provided for in groups [H01L 2924/167](#) to [H01L 2924/16791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- U H01L 2924/171
  - • Frame
- U H01L 2924/176
  - • • Material

H01L 2924/17793

- • • with a principal constituent of the material being a solid not provided for in groups [H01L 2924/177](#) to [H01L 2924/17791](#), e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond

**Project: N/A (H01M)****U H01M 2/00****Constructional details or processes of manufacture of the non-active parts**

U H01M 2/20

- Current conducting connections for cells

H01M 2/34

- • with provision for preventing undesired use or discharge, {-e.g. complete cut of current (safety devices [H01M 2200/00](#))}

**H01M 4/00****Electrodes (electrodes for electrolytic processes [C25](#), {-electrodes for hybrid or electric double capacitor [H01G 11/22](#)})****U H01M 6/00****Primary cells; Manufacture thereof**NOTE

In this group, primary cells are electrochemical generators in which the cell energy is present in chemical form and is not regenerated.

U H01M 6/14

- Cells with non-aqueous electrolyte {([H01M 10/05](#) takes precedence)}

H01M 6/16

- • with organic electrolyte ([H01M 6/18](#), {-[H01M 10/05](#) take precedence})

H01M 6/40

- Printed batteries, {-e.g. thin film batteries}

H01M 6/52

- Reclaiming serviceable parts of waste cells or batteries, {-e.g. recycling}

**Project: N/A (H01P)****U H01P 1/00****Auxiliary devices (coupling devices of the waveguide type [H01P 5/00](#))**

U H01P 1/20

- Frequency-selective devices, e.g. filters ({variable impedance transformers, e.g. slug tuners or stub tuners [H01P 5/04](#)}; resonators [H01P 7/00](#))

H01P 1/201

- • Filters for transverse electromagnetic waves ([H01P 1/212](#),[H01P 1/213](#),[H01P 1/215](#),[H01P 1/219](#) take precedence)

**H01P 7/00**

**Resonators of the waveguide type ({variable impedance transformers [H01P 5/04](#)}; structurally associated with transit-time tubes and interacting with the discharge therein [H01J 23/18](#); {-generators of electronic oscillations using resonators of this type [H03B 5/18](#), [H03B 7/14](#), [H03B 9/14](#); electronic amplifiers using resonators of this type [H03F 3/54](#)}; microwave heating devices [H05B 6/64](#))**

**Project: N/A (H01Q)****H01Q**

**AERIALS (microwave radiators for near-field therapeutic treatment [A61N 5/04](#); apparatus for testing aerials or for measuring aerial characteristics [G01R](#); waveguides [H01P](#); radiators or aerials for microwave heating [H05B 6/72](#))**

NOTES

1. This subclass covers:

- in addition to the primary active radiating elements,
  - a. secondary devices for absorbing or for modifying the direction or polarisation of waves radiated from aerials, and
  - b. combinations with auxiliary devices such as earthing switches, lead-in devices, and lightning protectors;
- both transmitting and receiving aerials

2. This subclass does not cover devices of the waveguide type, such as resonators or lines, not designed as radiating elements, which are covered by subclass [H01P](#).

3. In this subclass, the following expression is used with the meaning indicated:

- "active radiating element" covers corresponding parts of a receiving aerial.

**U H01Q 1/00**

**Details of, or arrangements associated with, aerials (arrangements for varying orientation of directional pattern [H01Q 3/00](#))**

NOTES

1. This group covers only:

- structural details or features of aerials not dependent on electric operation;
- structural details or features applicable to more than one type of aerial or aerial element.

2. Structural details or features described with reference to, or clearly applicable only to, aerials or aerial elements of a particular type are classified in the group appropriate to that type.

- H01Q 1/08
- Means for collapsing aerials or parts thereof; {Collapsible aerials} ({collapsible supports [H01Q 1/1235](#)}; collapsible loop aerials [H01Q 7/02](#); {-collapsible helical aerials [H01Q 11/086](#); collapsible reflecting surfaces [H01Q 15/161](#)-, [H01Q 15/20](#)}; collapsible H-aerials or Yagi aerials [H01Q 19/04](#))
- H01Q 1/084
- {Pivotable antennas (mechanical movement of aerial or aerial system for changing or varying the orientation or the shape of the directional pattern [H01Q 3/02](#);-; adjustment of angle between two radiating elements [H01Q 9/12](#))}
- H01Q 1/12
- Supports; Mounting means ({for the purpose of scanning [H01Q 3/00](#);-; mounting structure for reflecting surfaces [H01Q 15/14](#);-; Towers, masts, or poles [E04H 12/00](#)}; supporting conductors in general [H02G 7/00](#))
- H01Q 1/125
- {Means for positioning (stabilising [H01Q 1/18](#);-; remotely controlled positioning [H01Q 3/005](#))}
- H01Q 1/1257
- • {using the received signal strength (direction finding [G01S 3/38](#);-; diversity [H04B 7/10](#))}
- U H01Q 1/22
- • by structural association with other equipment or articles ({portable transceivers [H04B 1/3827](#))}
- U H01Q 1/2208
- • • {associated with components used in interrogation type services, i.e. in systems for information exchange between an interrogator/reader and a tag/transponder, e.g. in Radio Frequency Identification [RFID] systems ([G06K 7/00](#) and [G06K 19/00](#) take precedence)}
- H01Q 1/2233
- • • {used in consumption-meter devices, e.g. electricity, gas or water meters (remote reading of utility meters [G01D 4/002](#);-; transmission of measured values using a radio link in general [G08C 17/02](#))}
- U H01Q 1/24
- • • with receiving set
- H01Q 1/241
- • • • {used in mobile communications, e.g. GSM ([H01Q 1/247](#)-, [H01Q 1/248](#) take precedence)}
- H01Q 1/27
- Adaptation for use in or on movable bodies ([H01Q 1/08](#)-, [H01Q 1/12](#)-, [H01Q 1/18](#) take precedence; {-portable transceivers [H04B 1/3827](#))}
- H01Q 1/32
- • Adaptation for use in or on road or rail vehicles (telescopic elements [H01Q 1/10](#);-; resilient mountings for aerials [H01Q 1/20](#))
- H01Q 1/34
- • Adaptation for use in or on ships, submarines, buoys, or torpedoes (for subaqueous use [H01Q 1/04](#);-; retractable loop aerials [H01Q 7/02](#))
- H01Q 1/36
- Structural form of radiating elements, e.g. cone, spiral, umbrella; {Particular materials used therewith} ([H01Q 1/08](#)-, [H01Q 1/14](#) take precedence)

- H01Q 1/38
- formed by a conductive layer on an insulating support ({patch antennas [H01Q 9/0407](#); microstrip dipole antennas [H01Q 9/065](#); microstrip slot antennas [H01Q 13/106](#); transmission line microstrip antennas [H01Q 13/206](#); manufacturing reflecting surfaces using insulating material for supporting the reflecting surface [H01Q 15/142](#)}; conductors in general [H01B 5/14](#))
- H01Q 1/50
- Structural association of aerials with earthing switches, lead-in devices or lightning protectors (lead-in devices [H01B](#); lightning protectors, switches [H01H](#))
- U H01Q 1/52
- Means for reducing coupling between aerials; Means for reducing coupling between an aerial and another structure ({absorbing means [H01Q 17/00](#)})
- H01Q 1/526
- {Electromagnetic shields (anechoic chambers [G01R 29/105](#); shielding of instruments [G12B 17/00](#), of CRT [H01J 29/867](#), of electrical apparatus or components [H05K 9/00](#))}
- U H01Q 3/00 Arrangements for changing or varying the orientation or the shape of the directional pattern of the waves radiated from an aerial or aerial system {(means for positioning [H01Q 1/125](#))}**
- H01Q 3/26
- varying the relative phase or relative amplitude of energisation between two or more active radiating elements; varying the distribution of energy across a radiating aperture ({[H01Q 3/12](#)}, [H01Q 3/22](#), [H01Q 3/24](#) take precedence; {-use of steered beams for mobile service area coverage [H04W 16/28](#)})
- H01Q 3/2664
- {electrically moving the phase centre of a radiating element in the focal plane of a focussing device (switching [H01Q 3/245](#), phased-array feeds [H01Q 3/2658](#))}
- H01Q 3/30
- varying the {relative} phase {between the radiating elements of an array ([H01Q 3/2605](#), [H01Q 3/2658](#), [H01Q 3/2682](#), [H01Q 3/44](#) take precedence)}
- U H01Q 3/44
- varying the electric or magnetic characteristics of reflecting, refracting, or diffracting devices associated with the radiating element
- H01Q 3/443
- {varying the phase velocity along a leaky transmission line (frequency scanning [H01Q 3/22](#); non-resonant leaky-waveguide or transmission-line aerials [H01Q 13/20](#))}
- U H01Q 7/00 Loop aerials with a substantially uniform current distribution around the loop and having a directional radiation pattern in a plane perpendicular to the plane of the loop**
- H01Q 7/04
- Screened aerials ([H01Q 7/02](#), [H01Q 7/06](#) take precedence)
- H01Q 9/00 Electrically-short aerials having dimensions not more than twice the operating wavelength and consisting of conductive active radiating elements (loop aerials [H01Q 7/00](#); waveguide horns or mouths [H01Q 13/00](#); slot aerials [H01Q 13/00](#); combinations of active elements with secondary devices to give desired directional characteristic [H01Q 19/00](#); combinations of two or more active elements [H01Q 21/00](#))**
- U H01Q 9/04
- Resonant aerials
- H01Q 9/0407
- {Substantially flat resonant element parallel to ground plane, e.g. patch antenna (dipole [H01Q 9/285](#); monopole [H01Q 9/40](#))}
- H01Q 11/00 Electrically-long aerials having dimensions more than twice the shortest operating wavelength and consisting of conductive active radiating elements (leaky waveguides aerials, slot aerials [H01Q 13/00](#); combinations of active elements with secondary devices to give desired directional characteristic [H01Q 19/00](#); aerial arrays or systems [H01Q 21/00](#))**

- U H01Q 13/00** **Waveguide horns or mouths; Slot aerials; Leaky-waveguide aerials; Equivalent structures causing radiation along the transmission path of a guided wave {(multimode aerials [H01Q 25/04](#))}**
- U H01Q 13/02
- H01Q 13/0208
- H01Q 13/0241
- H01Q 13/20
- Waveguide horns
  - · {Corrugated horns (waveguide mouth antenna with corrugated flange [H01Q 13/065](#); manufacturing details [H01Q 13/0283](#))}
  - · {radiating a circularly polarised wave ([H01Q 13/0258](#) takes precedence; polarisation converters [H01Q 15/244](#); in a waveguide [H01P 1/17](#))}
  - Non-resonant leaky-waveguide or transmission-line aerials; Equivalent structures causing radiation along the transmission path of a guided wave {(varying the phase velocity [H01Q 3/443](#); near-field transmission systems using leaky cable [H04B 5/0018](#))}
- H01Q 15/00** **Devices for reflection, refraction, diffraction, or polarisation of waves radiated from an aerial, e.g. quasi-optical devices (variable for purpose of altering directivity [H01Q 3/00](#); arrangements of such devices for guiding waves [H01P 3/20](#); variable for purpose of modulation [H03C 7/02](#))**
- H01Q 15/0006
- H01Q 15/14
- H01Q 15/147
- H01Q 15/24
- {Devices acting selectively as reflecting surface, as diffracting or as refracting device, e.g. frequency filtering or angular spatial filtering devices ([H01Q 15/12](#); [H01Q 15/22](#); [H01Q 15/24](#) take precedence)}
  - Reflecting surfaces; Equivalent structures {(electromagnetic shields [H01Q 1/526](#); radar-reflecting targets in general [F41J 2/00](#))}
  - · {provided with means for controlling or monitoring the shape of the reflecting surface (for scanning [H01Q 3/01](#); aerials or aerial systems providing multiple beamwidths [H01Q 25/002](#))}
  - Polarising devices; Polarisation filters (devices functioning simultaneously both as polarisation filters and as refracting or diffracting devices or as reflectors [H01Q 15/12](#); [H01Q 15/22](#))}
- U H01Q 19/00** **Combinations of primary active aerial elements and units with secondary devices, e.g. with quasi-optical devices, for giving the aerial a desired directional characteristic {(combination of horns with slotted waveguide array [H01Q 13/0233](#))}**
- U H01Q 19/02
- U H01Q 19/021
- H01Q 19/027
- U H01Q 19/06
- H01Q 19/08
- H01Q 19/09
- U H01Q 19/10
- H01Q 19/104
- U H01Q 19/12
- H01Q 19/17
- Details {(fastening of an element on a boom [H01Q 1/1228](#))}
  - · {Means for reducing undesirable effects}
  - · · {for compensating or reducing aperture blockage (offset feeding [H01Q 19/132](#); [H01Q 19/192](#))}
  - using refracting or diffracting devices, e.g. lens {(radome [H01Q 1/42](#))}
  - · for modifying the radiation pattern of a radiating horn in which it is located {(corrugated horns [H01Q 13/0208](#); producing a circular polarisation [H01Q 13/0241](#))}
  - · wherein the primary active element is coated with or embedded in a dielectric or magnetic material (protective material [H01Q 1/40](#); with variable characteristics [H01Q 3/44](#))}
  - using reflecting surfaces
  - · {using a substantially flat reflector for deflecting the radiated beam, e.g. periscopic antennas (periscopic fed Cassegrain antennas [H01Q 19/191](#); passive relays [H04B 7/145](#))}
  - · wherein the surfaces are concave ([H01Q 19/18](#) takes precedence)
  - · · the primary radiating source comprising two or more radiating elements ([H01Q 19/15](#); [H01Q 25/00](#) take precedence)

- H01Q 19/18
- having two or more spaced reflecting surfaces ({surfaces of convex toroidal shape [H01Q 19/102](#); using a deflecting plane mirror [H01Q 19/104](#); splash plate feeds [H01Q 19/134](#)}; producing pencil beam by two cylindrical reflectors with their focal lines orthogonally disposed [H01Q 19/20](#))
- H01Q 19/28
- using a secondary device in the form of two or more substantially straight conductive elements (log-periodic aerials [H01Q 11/10](#); constituting a reflecting surface [H01Q 19/10](#))
- U H01Q 21/00**
- Aerial arrays or systems (producing a beam the orientation or the shape of the directional pattern of which can be changed or varied [H01Q 3/00](#); {combination of imbricated aerials or arrays operating on different wavebands [H01Q 5/40](#)}; electrically-long aerials [H01Q 11/00](#))**
- NOTE
- This group includes:
- arrays comprising two or more individually energised similar active aerial units spaced apart;
  - combinations of different types of active aerials or arrays;
  - combinations of substantially independent non-interacting active aerials or arrays.
- U H01Q 21/06
- Arrays of individually energised active aerial units similarly polarised and spaced apart
- U H01Q 21/061
- {Two dimensional planar arrays}
- H01Q 21/062
- • {using dipole aerials; ([H01Q 21/067](#); [H01Q 21/068](#) take precedence)}
- H01Q 21/20
- • the units being spaced along or adjacent to a curvilinear path {(slotted waveguide arrays [H01Q 21/005](#); circularly or helically slotted waveguides [H01Q 21/0062](#))}
- H01Q 21/24
- Combinations of aerial elements or aerial units polarised in different directions for transmitting or receiving circularly and elliptically polarised waves or waves linearly polarised in any direction {(circularly polarised patch antennas [H01Q 9/0428](#); circularly polarised horns [H01Q 13/0241](#); cross-polarised horns [H01Q 13/0258](#); polarisation converters [H01Q 15/242](#); cross-polarised rear feeds [H01Q 19/136](#); crossed polarisation dual antenna [H01Q 25/001](#))}
- H01Q 21/245
- • {provided with means for varying the polarisation (polarising devices [H01Q 15/24](#); tracking by comparing linear polarisation compounds [G01S 3/146](#); reducing depolarisation effects [H04B 7/00](#) polarisation diversity [H04B 7/10](#))}
- U H01Q 25/00**
- Aerials or aerial systems providing at least two radiating patterns (arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#))**
- H01Q 25/001
- {Crossed polarisation dual antennas (orthomode horns [H01Q 13/0258](#); cross-polarised rear feeds [H01Q 19/136](#); orthomode transducers [H01P 1/161](#))}

**Project: N/A (H01R)**

- H01R 9/00**
- Connectors and connecting arrangements providing a plurality of mutually insulated connections; Terminals or binding posts mounted upon a base or in a case; Terminal strips; Terminal blocks (details of direct connections or connections using contact members penetrating insulation [H01R 4/00](#); {individual connecting parts [H01R 11/00](#)}; specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures [H01R 12/00](#); coupling devices [H01R 12/70](#), [H01R 24/00](#)-[H01R 33/00](#); flexible or turnable line connectors [H01R 35/00](#))**
- U H01R 9/03
- Connectors arranged to contact a plurality of the conductors of a multiconductor cable, {e.g. tapping connections}

- H01R 9/07
- for flat or ribbon cables {-or flexible printed circuits}
- WARNING  
This group and its subgroups is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and its subgroups is being continuously reclassified to [H01R 12/00](#), [H01R 12/50](#) and their respective subgroups.
- H01R 9/09
- Connectors for printed circuits (printed connections to or between printed circuits [H05K](#)); {-Terminals, terminal strips, terminal blocks or bases for printed circuits}
- WARNING  
This group and its subgroups is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and its subgroups is being continuously reclassified to [H01R 12/00](#), [H01R 12/50](#) and their respective subgroups.
- H01R 11/00**
- Connectors providing two or more spaced connecting locations for conductive members which are thereby interconnected; End pieces for wires or cables, supported by the wire or cable and for facilitating electrical connection to some other wire, terminal, or conductive member (connections between members in direct contact [H01R 4/00](#); structural associations of a plurality of mutually-insulated electrical connecting elements [H01R 9/00](#); coupling devices [H01R 12/70](#), [H01R 24/00](#)-[H01R 29/00](#), [H01R 33/00](#); flexible or turnable line connectors [H01R 35/00](#))**
- U H01R 13/00**
- Details of coupling devices of the kinds covered by groups [H01R 12/70](#) or [H01R 24/00](#)-[H01R 33/00](#) {(electro-optical connectors [G02B 6/24](#))}**
- U H01R 13/02**
- Contact members
- H01R 13/193**
- Means for increasing contact pressure at the end of engagement of coupling part, {-e.g. zero insertion force or no friction (combined with printed circuit boards [H01R 23/6813](#))}
- H01R 13/58**
- Means for relieving strain on wire connection, e.g. cord grip, {-for avoiding loosening of connections between wires and terminals within a coupling device terminating a cable (for flat or ribbon cables [H01R 12/771](#); for distribution boxes [H02G 3/0616](#))}
- U H01R 13/62**
- Means for facilitating engagement or disengagement of coupling parts or for holding them in engagement
- H01R 13/629**
- Additional means for facilitating engagement or disengagement of coupling parts, e.g. aligning or guiding means, levers, gas pressure {-electrical locking indicators, manufacturing tolerances (separate tools or apparatus [H01R 43/26](#))}
- H01R 13/648**
- Protective earth or shield arrangements on coupling devices (coaxially arranged shields [H01R 24/38](#) ){-e.g. anti-static shielding}
- U H01R 23/00**
- Two-part coupling devices having four or more poles, with or without additional protective earth connection; Separate parts thereof**
- WARNING  
This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 24/00](#) and its subgroups. See also [H01R 2107/00](#) as part of the indexing scheme associated with group [H01R 24/00](#) and its subgroups, relating to the number of poles in a two-part coupling device.

- H01R 23/68
- for connection to or between printed circuits; {-Non printed connecting arrangements of printed circuit boards (PCB's) ([H01R 23/668](#) takes precedence)}

**WARNING**

This group and its subgroups is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and its subgroups is being continuously reclassified to [H01R 12/00](#), [H01R 12/70](#) and their respective subgroups.

- H01R 35/00
- Flexible or turnable line connectors, {-i.e. the rotation angle being limited} (rotary current collectors, distributors [H01R 39/00](#); {-arrangement of these connectors in vehicle steering wheels [B60R 16/027](#); arrangements of electric cables or lines between relatively movable parts [H02G 11/00](#)})**

- U H01R 39/00
- Rotary current collectors, distributors, or interrupters (cam-operated switches [H01H 19/00](#); structural association with dynamo-electric machine [H02K 13/00](#))**
- H01R 39/02
- Details {-for dynamo electric machines (for current collectors not particularly for dynamo electric machines [H01R 39/60](#), [H01R 39/64](#))}

**Project: N/A (H01S)**

- U H01S 1/00
- Lasers, i.e. devices for generation, amplification, modulation, demodulation, or frequency-changing, using stimulated emission, of electromagnetic waves of wavelength longer than that of infra-red waves**
- H01S 1/06
- gaseous, {i.e. beam masers (atomic clocks [G04F 5/14](#); circuits using beam masers as a reference frequency for regulating frequency of oscillators [H03L 7/26](#); molecular or atomic beam generation [H05H 3/02](#))}
- U H01S 3/00
- Lasers, i.e. devices for generation, amplification, modulation, demodulation, or frequency-changing, using stimulated emission, of infra-red, visible, or ultra-violet waves ({stimulated Brillouin or Raman effects [H01S 3/30](#)}; semiconductor lasers [H01S 5/00](#))**
- H01S 3/0007
- {Applications not otherwise provided for (working metals or other materials by laser beam [B23K 26/00](#); using photons to produce a reactive propulsive thrust [F03H 3/00](#); optical recording of measured values in general [G01D 15/14](#); optics in general [G02B](#); holographic processes or apparatus [G03H](#); optical marking or sensing of data record carriers [G06K 7/10](#) to [G06K 7/14](#), [G06K 15/12](#); injection heating of plasma by laser [H05H 1/22](#); acceleration of neutral particles by electromagnetic wave pressure [H05H 3/04](#))}
- H01S 3/0014
- {Monitoring arrangements not otherwise provided for (photometry [G01J 1/00](#); e.g. [G01J 1/4257](#); radiation pyrometry [G01J 5/00](#); measuring coherence of light [G01J 9/00](#); measuring wavelength of light [G01J 9/00](#); e.g. [G01J 9/0246](#); measuring optical pulses [G01J 11/00](#); calorimetrically measuring power of laser beams [G01K 17/003](#))}
- H01S 3/005
- {Optical devices external to the laser cavity, specially adapted for lasers, e.g. for homogenisation of the beam or for manipulating laser pulses, e.g. pulse shaping (shaping laser beam for working metal or other materials [B23K 26/06](#); optical elements, systems or apparatus in general [G02B](#))}
- H01S 3/0057
- {Temporal shaping, e.g. pulse compression, frequency chirping (soliton generation and propagation [G02F 1/3513](#), [H01S 3/063](#) and [H01S 3/108](#))}
- H01S 3/0064
- {Anti-reflection devices, e.g. optical isolators (absorbing layers for marking or protecting purposes in laser working [B23K 26/0054](#); magneto-optical non-reciprocal devices [G02F 1/093](#), [G02F 1/0955](#))}
- U H01S 3/02
- Constructional details {( housings or packages of fibre lasers [H01S 3/06704](#))}

- H01S 3/03
  - • of gas laser discharge tubes {(gas discharge tubes in general [H01J 17/00-](#), [H01J 61/00](#))}
- H01S 3/036
  - • • Means for obtaining or maintaining the desired gas pressure within the tube, e.g. by gettering, replenishing; Means for circulating the gas, e.g. for equalising the pressure within the tube {(H01S 3/031 takes precedence; cooling arrangements for gas lasers [H01S 3/041-](#); gas dynamic lasers [H01S 3/0979-](#); in general [H01J 17/22-](#), [H01J 61/24](#))}
- U H01S 3/05
  - Construction or shape of optical resonators; Accomodation of active medium therein; Shape of active medium
- U H01S 3/06
  - • Construction or shape of active medium
- U H01S 3/063
  - • • Waveguide lasers, {i.e. whereby the dimensions of the waveguide are of the order of the light wavelength (waveguide gas lasers [H01S 3/0315](#))}
- H01S 3/067
  - • • • Fibre lasers {(optical pumping thereof [H01S 3/094003-](#); controlling the output parameters [H01S 3/10-](#); stabilisation of the output parameters [H01S 3/13-](#); characterised by scattering effects, i.e. stimulated Brillouin or Raman effects, [H01S 3/302](#))}
- H01S 3/08
  - • Construction or shape of optical resonators or components thereof {(waveguide lasers [H01S 3/063-](#); controlling the laser output [H01S 3/10-](#); stabilising [H01S 3/13](#))}
- H01S 3/08004
  - • • {incorporating a dispersive element, e.g. a prism for wavelength selection ([H01S 3/0811-](#), [H01S 3/08022](#) take precedence)}
- H01S 3/08013
  - • • {Resonator comprising a fibre, e.g. for modifying dispersion or repetition rate} (the active medium being a fibre [H01S 3/067](#))
- H01S 3/08054
  - • • {Passive cavity elements acting on the polarization, e.g. a polarizer for branching or walk-off compensation (quarter-wave plates in a Q-switch laser [H01S 3/1124-](#), [H01S 3/115](#))}
- H01S 3/08059
  - • • {Constructional details of the reflector, e.g. shape (mirrors in general [G02B 5/08-](#); mountings for mirrors [G02B 7/18](#))}
- U H01S 3/081
  - • • comprising more than two reflectors {(folded-path gas lasers [H01S 3/076](#))}
- H01S 3/083
  - • • • Ring lasers (ring laser gyrometers [G01C 19/66-](#); {fibre ring lasers [H01S 3/06791](#))}
- H01S 3/086
  - • • One or more reflectors having variable properties or positions for initial adjustment of the resonator (varying a parameter of the laser output during operation [H01S 3/10-](#); stabilisation of the laser output [H01S 3/13](#))
- U H01S 3/09
  - Processes or apparatus for excitation, e.g. pumping
- U H01S 3/091
  - • using optical pumping
- U H01S 3/0915
  - • • by incoherent light
- H01S 3/092
  - • • • of flash lamp ([H01S 3/0937](#) takes precedence; {flash lamps per se [H01J 61/80-](#); circuit arrangements for operating flash lamps in general [H05B 41/30](#))}
- H01S 3/095
  - • using chemical or thermal pumping {(generating plasma, e.g. by combustion [H02K 44/00-](#), [H05H 1/24](#))}
- H01S 3/0955
  - • using pumping by high energy particles {(H01S 3/0903-, [H01S 3/0906-](#), [H01S 3/09707](#) take precedence)}
- U H01S 3/10
  - Controlling the intensity, frequency, phase, polarisation or direction of the emitted radiation, e.g. switching, gating, modulating or demodulating (mode locking {[H01S 3/1106](#)}; controlling of light beams, frequency-changing, non-linear optics, optical logic elements, in general [G02F](#))

**NOTE**

Group [H01S 3/10007](#) takes precedence over groups [H01S 3/102](#) to [H01S 3/104](#)

- H01S 3/101
- Lasers provided with means to change the location from which, or the direction in which, laser radiation is emitted (optical-mechanical scanning systems in general [G02B 26/10](#); electro-, magneto- or acousto-optical deflection [G02F 1/29](#); {-control of position or direction of light beam generating device in general [G05D 3/00](#)})
- U H01S 3/106
- by controlling a device placed within the cavity ({[H01S 3/10076](#)}, [H01S 3/13](#) take precedence)
- H01S 3/107
- using an electro-optical device, e.g. exhibiting Pockels- or Kerr-effect ({[H01S 3/1061](#)-, [H01S 3/1063](#)-, [H01S 3/1065](#) take precedence)}
- U H01S 3/13
- Stabilisation of laser output parameters, e.g. frequency, amplitude
- NOTE**  
Group [H01S 3/1301](#) takes precedence over groups [H01S 3/131](#) to [H01S 3/134](#)
- U H01S 3/139
- by controlling the mutual position or the reflecting properties of the reflectors of the cavity {e.g. by controlling the cavity length}
- H01S 3/1392
- {by using a passive reference, e.g. absorption cell ([H01S 3/1396](#)-, [H01S 3/1398](#) take precedence)}
- H01S 3/23
- Arrangements of two or more lasers not provided for in groups [H01S 3/02](#) to [H01S 3/22](#)-, e.g. tandem arrangements of separate active media
- H01S 3/2366
- {comprising a gas as the active medium ([H01S 3/10092](#)-, [H01S 3/2383](#) take precedence)}
- H01S 4/00**
- Devices using stimulated emission or wave energy other than those covered by groups [H01S 1/00](#) or [H01S 3/00](#)-, e.g. phonon maser, gamma maser**
- U H01S 5/00**
- Semiconductor lasers {{superluminescent diodes [H01L 33/0045](#)}}**
- H01S 5/005
- {Optical devices external to the laser cavity, specially adapted therefor, e.g. for homogenisation or merging of the beams or for manipulating laser pulses, e.g. pulse shaping ([H01S 5/026](#)-, [H01S 5/18388](#) take precedence)}
- U H01S 5/02
- Structural details or components not essential to laser action
- H01S 5/024
- Cooling arrangements {(cooling solid state junction devices [H01L 23/34](#);- Heating arrangements ; [H01S 5/0261](#) takes precedence)}
- H01S 5/026
- Monolithically integrated components, e.g. waveguides, monitoring photo-detectors, drivers (stabilisation of output [H01S 5/06](#);- coupling light guides with opto-electronic elements [G02B 6/42](#);- devices consisting of a plurality of semiconductor or other solid state components formed in or on a common substrate, adapted for light emission [H01L 27/15](#))
- U H01S 5/06
- Arrangements for controlling the laser output parameters, e.g. by operating on the active medium (transmission systems employing light [H04B 10/00](#))
- H01S 5/0601
- {comprising an absorbing region ([H01S 5/0604](#)-, [H01S 5/0607](#)-, [H01S 5/0615](#) and [H01S 5/065](#) take precedence; bistable laser devices in general [G02F 3/026](#))}
- U H01S 5/065
- Mode locking; Mode suppression; Mode selection; {Self pulsating}
- H01S 5/0656
- {Seeding, i.e. an additional light input is provided for controlling the laser modes, for example by back-reflecting light from an external optical component ([H01S 5/14](#)-, [H01S 5/4062](#) and [H01S 5/4006](#) take precedence)}
- U H01S 5/10
- Construction or shape of the optical resonator, {e.g. extended or external cavity, coupled cavities, bent-guide, varying width, thickness or composition of the active region ([H01S 5/20](#) takes precedence)}

- H01S 5/14
- External cavity lasers {(external cavity elements, their control or stabilisation [H01S 3/08](#)-, [H01S 3/10](#) and [H01S 3/13](#))}

**NOTE**

in this group external cavity elements correspond to elements inside the laser cavity but outside the monolithic semiconductor body. These elements correspond to intra cavity elements in [H01S 3/00](#)

- U H01S 5/30
- Structure or shape of the active region; Materials used for the active region
- H01S 5/32
- comprising PN junctions, e.g. hetero- or double- heterostructures ([H01S 5/34](#)-, [H01S 5/36](#) take precedence)
- H01S 5/40
- Arrangement of two or more semiconductor lasers, not provided for in groups [H01S 5/02](#) to [H01S 5/30](#) ([H01S 5/50](#) takes precedence)
- H01S 5/50
- Amplifier structures not provided for in groups [H01S 5/02](#) to [H01S 5/30](#) (as repeaters in transmission systems [H04B 10/291](#))

**Project: N/A (H01T)**

- H01T 14/00
- Spark gaps not provided for in groups [H01T 2/00](#) to [H01T 13/00](#) (devices providing for corona discharge [H01T 19/00](#))**

**Project: N/A (H02G)****H02G**

**INSTALLATION OF ELECTRIC CABLES OR LINES, OR OF COMBINED OPTICAL AND ELECTRIC CABLES OR LINES (distribution points incorporating switches [H02B](#); guiding telephone cords [H04M 1/15](#); cable ducts or mountings for telephone or telegraph exchange installations [H04Q 1/06](#))**

**NOTES**

1. This subclass covers installation of communication cables or lines, including those comprising a combination of optical and electrical conductors, or of lightning conductors as well as installation of power cables or lines.
2. This subclass does not cover installation of purely optical cables, which is covered by groups {[G02B 6/4401](#)} , [G02B 6/46](#)-.
3. In this subclass, the following expression is used with the meaning indicated:
  - "electric cable" includes cables comprising optical conductors, e.g. fibres, in combination with electrical conductors.
4. In this subclass it is desirable to add indexing codes of group [H02G 2200/00](#) whenever appropriate

- U **H02G 1/00** **Methods or apparatus specially adapted for installing, maintaining, repairing or dismantling electric cables or lines**
- U H02G 1/06
- for laying cables, e.g. laying apparatus on vehicle (combined with trench digging or back-filling machines or dredgers [E02F 5/00](#))
- H02G 1/08
- through tubing or conduit, e.g. rod or draw wire for pushing or pulling {(inserting electrical cables into tubes using wallbores [E21B 17/206](#)-, for optical cables [G02B 6/4401](#))}
- H02G 1/12
- for removing insulation or armouring from cables, e.g. from the end thereof (pliers in general [B25B](#); cutters in general [B26B](#))
- H02G 3/00** **Installations of electric cables or lines in or on buildings, equivalent structures or vehicles (installations of bus-bars [H02G 5/00](#)-, overhead installations [H02G 7/00](#)-, installations in or on the ground [H02G 9/00](#)-, channels or vertical ducts for receiving utility lines [E04F 17/08](#)-, wiring of electric apparatus in general [H05K](#))**
- U H02G 3/02
- Details

- U H02G 3/04
  - • Protective tubings or conduits {or channels or other supports}(pipes or tubings in general [F16L](#))
- U H02G 3/0462
  - • • {Tubings, i.e. having a closed section}
- H02G 3/0481
  - • • • {with a circular cross-section ([H02G 3/0468](#), [H02G 3/0475](#) take precedence)}
- H02G 3/0487
  - • • • {with a non-circular cross-section ([H02G 3/0468](#), [H02G 3/0475](#) take precedence)}
- U H02G 3/06
  - • Joints for connecting lengths of protective tubing {or channels}, to each other or to casings, e.g. to distribution boxes; Ensuring electrical continuity in the joint
- U H02G 3/0616
  - • • {Joints for connecting tubing to casing}
- U H02G 3/0625
  - • • • {with means for preventing disengagement of conductors}
- H02G 3/065
  - • • • • {with means biting into the conductor-insulation, e.g. teeth-like elements or gripping fingers ([H02G 3/0675](#), [H02G 3/0683](#) take precedence)}
- H02G 3/0658
  - • • • • {with means constricting the conductor-insulation ([H02G 3/065](#), [H02G 3/0675](#), [H02G 3/0683](#) take precedence)}
- H02G 3/0666
  - • • • • {with means clamping the armour of the conductor ([H02G 3/0675](#), [H02G 3/0683](#) take precedence)}
- H02G 3/22
  - Arrangements for leading cables or lines through walls, floors, or ceilings, e.g. into building (devices for use where pipes, cables or protective tubing pass through walls or partitions [F16L 5/00](#); lead-in or lead-through insulators [H01B 17/26](#); insulating tubes or sleeves [H01B 17/58](#))
- H02G 3/26
  - Installations of cables, lines, or separate protective tubing therefor directly on or in walls, ceilings, or floors (by means of insulators [H02G 3/24](#); supports for pipes, cables or protective tubing [F16L 3/00](#); hose-clips [F16L 33/02](#))
- H02G 3/30
  - Installations of cables or lines on walls, floors or ceilings (support for pipes, cables or protective tubing [F16L 3/00](#); hose clips [F16L 33/02](#))
- U H02G 5/00**                    **Installations of bus-bars**
- U H02G 5/06
  - Totally-enclosed installations, e.g. in metal casings
- U H02G 5/063
  - • {filled with oil or gas}
- H02G 5/065
  - • • {Particle traps (gettering in vacuum switches [H01H 33/6683](#); in discharge or vacuum tubes [H01J 7/18](#), [H01J 19/70](#))}
- H02G 7/00**                    **Overhead installations of electric lines or cables (installations of bus-bars [H02G 5/00](#); trolley wires or contact lines for electric railways [B60M](#); fastening conductors to insulators [H01B 17/00](#), e.g. [H01B 17/06](#), [H01B 17/16](#), [H01B 17/22](#); protection against abnormal electric conditions [H01H](#); hook contacts for temporary connections to overhead lines [H01R 11/14](#))**
- H02G 9/00**                    **Installations of electric cables or lines in or on the ground or water (cathodic protection [C23F 13/02](#); detection of buried cables [G01V](#))**
- H02G 11/00**                    **Arrangements of electric cables or lines between relatively-movable parts ({storing means for coiled material specially adapted for repeatedly paying-out and re-storing length of material for particular purposes [B65H 75/34](#)}; current collectors [H01R](#); {-winding-up telephone cord [H04M 1/15](#))}**

**H02G 13/00** Installations of lightning conductors; Fastening thereof to supporting structure (indicating, counting or recording lightning strokes [G01](#); lightning arrestors [H01C 7/12](#), [H01C 8/04](#), [H01G 9/18](#), [H01T](#); earth plates, pins or other contacts [H01R](#))

**WARNING**

Groups [H02G 13/20](#) to [H02G 13/80](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H02G 13/20](#) - [H02G 13/80](#) : [H02G 13/00](#)

- U H02G 15/00** **Cable fittings**
- U H02G 15/02
- H02G 15/025
- H02G 15/08
- H02G 15/085
- H02G 15/10
- H02G 15/18
- Cable terminations (for gas- or oil-filled cables [H02G 15/22](#))
  - • {for coaxial cables or hollow conductors (connections between HF conductors [H01P 1/04](#); plug and socket connections per se [H01R 24/38](#))}
  - Cable junctions (for gas- or oil-filled cables [H02G 15/24](#); disconnectible junctions, electrical connections [H01R](#))
  - • {for coaxial cables or hollow conductors (plug and socket connections between HF conductors [H01P 1/04](#); plug and socket connections per se [H01R 24/38](#))}
  - • protected by boxes, e.g. by distribution, connection or junction boxes (terminal blocks [H01R 9/00](#); {-distribution boxes per se [H02G 3/08](#)})
  - • protected by sleeves, e.g. for communication cable (two-part covers [H02G 15/10](#); {-preforms having internal stresses [B29C 61/00](#)})

**Project: N/A (H02H)**

**H02H 3/00** Emergency protective circuit arrangements for automatic disconnection directly responsive to an undesired change from normal electric working condition with or without subsequent reconnection (specially adapted for specific types of electric machines or apparatus or for sectionalised protection of cable of line systems [H02H 7/00](#); systems for change-over to standby supply [H02J 9/00](#) ){integrated protection (for motors [H02H 7/0822](#))}

**Project: N/A (H02K)**

- U H02K 1/00** Details of the magnetic circuit (magnetic circuits or magnets in general, magnetic circuits for transformers for power supply [H01F](#); magnetic circuits for relays [H01H 50/16](#))
- U H02K 1/06
- U H02K 1/22
- H02K 1/24
- U H02K 21/00** Synchronous motors having permanent magnet; Synchronous generators having permanent magnet (stator cores with permanent magnets [H02K 1/17](#); rotor cores with permanent magnets [H02K 1/27](#))
- U H02K 21/02
- H02K 21/04
- U H02K 29/00** Motors or generators having non-mechanical commutating devices, e.g. discharge tubes, semiconductor devices
- U H02K 29/06
- H02K 29/12
- characterised by the shape, form, or construction
  - • Rotating parts of magnetic circuit
  - • • Rotor cores with salient poles; {-Variable reluctance rotors}
  - Details
  - • Windings on magnet for additional excitation {-; windings and magnets for additional excitation}
  - with position sensing devices
  - • using detecting coils {-using the machine windings as detecting coil}

**U H02K 41/00**

**Propulsion systems in which a rigid body is moved along a path due to dynamo-electric interaction between the body and a magnetic field travelling along the path {(electromagnetic launchers [F41B 6/00](#))}**

H02K 41/06

- Rolling motors, i.e. having the rotor axis parallel to the stator axis and following a circular path as the rotor rolls around the inside or outside of the stator;
- {-Nutating motors, i.e. having the rotor axis inclined with respect to the stator axis and performing a nutational movement as the rotor rolls on the stator}

**Project: N/A (H02M)**

H02M

**APPARATUS FOR CONVERSION BETWEEN AC AND AC, BETWEEN AC AND DC, OR BETWEEN DC AND DC, AND FOR USE WITH MAINS OR SIMILAR POWER SUPPLY SYSTEMS; CONVERSION OF DC OR AC INPUT POWER INTO SURGE OUTPUT POWER; CONTROL OR REGULATION THEREOF (systems for regulating electric or magnetic variables in general, e.g. using transformers, reactors or choke coils, combination of such systems with static converters [G05F](#); {-digital function or clock generators} for digital computers [G06F 1/00](#), {[G06F 1/025](#), [G06F 1/04](#)}; transformers [H01F](#); connection or control of one converter with regard to conjoint operation with a similar or other source of supply [H02J](#); dynamo-electric converters [H02K 47/00](#); controlling transformers, reactors or choke coils, control or regulation of electric motors, generators or dynamo-electric converters [H02P](#); pulse generators [H03K](#); {-static converters specially adapted for igniting or operating discharge lamps [H05B 41/28](#)})**

NOTES

1. This subclass covers only circuits or apparatus for the conversion of electric power, or arrangements for control or regulation of such circuits or apparatus. The electrotechnical elements employed are dealt within the appropriate subclasses, e.g. inductors, transformers [H01F](#), capacitors, electrolytic rectifiers [H01G](#), mercury rectifying or other discharge tubes [H01J](#), semiconductor devices [H01L](#), impedance networks or resonant circuit not primarily concerned with the transfer of electric power [H03H](#).
2. In this subclass, the following term is used with the meaning indicated:
  - "conversion", in respect of an electric variable, e.g. voltage or current, means the change of one or more of the parameters of the variable, e.g. amplitude, frequency, phase, polarity.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups :

[H02M 9/00](#) covered by [H03K 3/53](#)  
[H02M 9/02](#) covered by [H03K 3/53](#)  
[H02M 9/04](#) covered by [H03K 3/53](#)  
[H02M 9/06](#) covered by [H03K 3/53](#)

**U H02M 3/00**

**Conversion of dc power input into dc power output {(converters specially adapted for use in combination with a battery [H02J 7/0065](#))}**

U H02M 3/02

- without intermediate conversion into ac

U H02M 3/04

- · by static converters

U H02M 3/06

- · · using resistors or capacitors, e.g. potential divider

- H02M 3/07
- • • using capacitors charged and discharged alternately by semiconductor devices with control electrode, {e.g. charge pumps (for substrate bias voltage generators [G05F 3/205](#); for static stores [G11C 5/145](#), [G11C 16/06](#); charge pumping structures for internal polarisation [H01L 27/0222](#))}

**Project: N/A (H02N)**

- U H02N 2/00** **Electric machines in general using piezo-electric effect, electrostriction or magnetostriction (generating mechanical vibrations in general [B06B](#); piezo-electric, electrostrictive or magnetostrictive devices in general [H01L 41/00](#))**
- WARNING  
This group is not complete pending reorganisation; see provisionally also [H01L 41/00](#)
- H02N 2/02
- producing linear motion, e.g. actuators; Linear positioners; {-Linear motors}
- H02N 2/06
- • Drive circuits; Control arrangements {-or methods}
- H02N 2/08
- • using travelling waves {-i.e. Rayleigh surface waves}
- U H02N 2/10**
- producing rotary motion, e.g. rotary motors
- H02N 2/14
- • Drive circuits; Control arrangements {-or methods}
- H02N 2/16
- • using travelling waves {-i.e. Rayleigh surface waves}
- H02N 11/00** **Generators or motors not provided for elsewhere; Alleged perpetua mobilia obtained by electric or magnetic means (by hydrostatic pressure [F03B 17/04](#); {-by mechanical means [F03G 7/10](#);} by dynamo-electric means, {-including arrangements of permanent magnets interacting with other permanent magnets,} [H02K 53/00](#))**

**Project: N/A (H02P)**

- H02P 5/00** **Arrangements specially adapted for regulating or controlling the speed or torque of two or more electric motors (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); {-synchronous motors or other dynamo-electric motors with electronic commutators in dependence on the rotor position [H02P 6/00](#); motors rotating step by step [H02P 8/00](#);} vector control [H02P 21/00](#))**
- H02P 7/00** **Arrangements for regulating or controlling the speed or torque of electric DC motors (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); {-synchronous motors or other dynamo-electric motors with electronic commutators in dependence on the rotor position [H02P 6/00](#); motors rotating step by step [H02P 8/00](#);} vector control [H02P 21/00](#))**
- U H02P 7/06**
- for regulating or controlling an individual dc dynamo-electric motor by varying field or armature current
- U H02P 7/18**
- • by master control with auxiliary power
- U H02P 7/24**
- • • using discharge tubes or semiconductor devices
- U H02P 7/28**
- • • • using semiconductor devices
- NOTE  
Group [H02P 7/281](#) takes precedence over groups [H02P 7/282](#) to [H02P 7/298](#)
- U H02P 7/281**
- • • • {the DC-motor being operated in the four quadrants}

H02P 7/2815 . . . . . {whereby the speed is regulated by measuring the motor speed and comparing it with a given physical value}

NOTE

Groups [H02P 7/2815](#) takes precedence over groups [H02P 7/2825](#)-, [H02P 7/2855](#)

**H02P 15/00 Arrangements for controlling dynamo-electric brakes or clutches (controlling speed of dynamo-electric motors by means of a separate brake [H02P 29/04](#), vector control [H02P 21/00](#) {see provisionally also [H02K 49/00](#) and [H02P 29/0022](#)})**

WARNING

Not complete, see also [H02K 49/00](#) and [H02P 29/0022](#)

**U H02P 21/00 Arrangements or methods for the control of electric machines by vector control, e.g. by control of field orientation**

NOTES

1. Groups [H02P 21/06](#) to [H02P 21/12](#) cover vector control arrangements or methods involving the use of rotor position or speed sensors.
2. Vector control arrangements or methods not involving the use of rotor position or speed sensors are classified in groups [H02P 21/0039](#) and subgroups
3. When classifying in this group, it is desirable to also classify in groups [H02P 25/00](#) to [H02P 27/00](#) if the kind of AC motor, structural details, or the kind of supply voltage are of interest.

H02P 21/06 · Rotor flux based control {involving the use of rotor position or speed sensor}

H02P 21/08 · · Indirect field-oriented control, e.g. field phase angle calculation based on rotor voltage equation by adding slip frequency and speed proportional frequency; {Rotor flux feed-forward control}

H02P 21/10 · · Direct field-oriented control; {Rotor flux feed-back control}

H02P 21/12 · Stator flux based control, {involving the use of rotor position or speed sensor}

**Project: N/A (H03B)**

**H03B GENERATION OF OSCILLATIONS, DIRECTLY OR BY FREQUENCY-CHANGING, BY CIRCUITS EMPLOYING ACTIVE ELEMENTS WHICH OPERATE IN A NON-SWITCHING MANNER; GENERATION OF NOISE BY SUCH CIRCUITS (measuring, testing [G01R](#)-; generators adapted for electrophonic musical instruments [G10H](#)-; Speech synthesis [G10L](#)-; masers, lasers [H01S](#)-; dynamo-electric machines [H02K](#)-; power inverter circuits [H02M](#)-; by using pulse techniques [H03K](#)-; automatic control of generators [H03L](#)-; starting, synchronisation or stabilisation of generators where the type of generator is irrelevant or unspecified [H03L](#)-; generation of oscillations in plasma [H05H](#))**

**U H03B 1/00 Details**

H03B 1/02 · Structural details of power oscillators, e.g. for heating {(construction of transmitters [H04B](#)-; features of generators for heating by electromagnetic fields [H05B 6/00](#))}

**H03B 5/00 Generation of oscillations using amplifier with regenerative feedback from output to input ([H03B 9/00](#)-, [H03B 15/00](#) take precedence)**

U H03B 5/18 · with frequency-determining element comprising distributed inductance and capacitance

- H03B 5/1841 · · {the frequency-determining element being a strip line resonator ([H03B 5/1805](#), [H03B 5/1817](#), [H03B 5/1864](#) and [H03B 5/1882](#) take precedence)}
- U H03B 5/30 · with frequency-determining element being electromechanical resonator
- U H03B 5/32 · · being a piezo-electric resonator (selection of piezo-electric material [H01L 41/00](#))
- H03B 5/36 · · · active element in amplifier being semiconductor device ({[H03B 5/323](#), [H03B 5/326](#)}, [H03B 5/38](#) take precedence)
- H03B 9/00** **Generation of oscillations using transit-time effects {(construction of tube and circuit arrangements not adapted to a particular application [H01J](#); construction of the semiconductor devices [H01L](#))}**
- U H03B 9/12 · using solid state devices, e.g. Gunn-effect devices
- U H03B 9/14 · · and elements comprising distributed inductance and capacitance
- H03B 9/145 · · · {the frequency being determined by a cavity resonator, e.g. a hollow waveguide cavity or a coaxial cavity ([H03B 9/141](#) to [H03B 9/143](#), [H03B 9/147](#), [H03B 9/148](#) take precedence)}
- H03B 9/147 · · · {the frequency being determined by a stripline resonator ([H03B 9/141](#) to [H03B 9/143](#), [H03B 9/148](#) take precedence)}
- U H03B 21/00** **Generation of oscillations by combining unmodulated signals of different frequencies ([H03B 19/00](#) takes precedence; frequency changing circuits in general [H03D](#))**
- U H03B 21/01 · by beating unmodulated signals of different frequencies
- H03B 21/02 · · by plural beating, i.e. for frequency synthesis; {Beating in combination with multiplication or division of frequency (digital frequency synthesis using a ROM [G06F 1/02](#); digital frequency synthesis in general [H03K](#); indirect frequency synthesis using a PLL [H03L 7/16](#))}
- H03B 28/00** **Generation of oscillations by methods not covered by groups [H03B 5/00](#) to [H03B 27/00](#), including modification of the waveform to produce sinusoidal oscillations (analogue function generators for performing computing operations [G06G 7/26](#); use of transformers for conversion of waveform in ac-ac converters [H02M 5/18](#))**

**Project: N/A (H03F)**

- U H03F 1/00** **Details of amplifiers with only discharge tubes, only semiconductor devices or only unspecified devices as amplifying elements**
- H03F 1/30 · Modifications of amplifiers to reduce influence of variations of temperature or supply voltage {-or other physical parameters (in differential amplifiers [H03F 3/45479](#))}
- H03F 1/34 · Negative-feedback-circuit arrangements with or without positive feedback ([H03F 1/02](#) to [H03F 1/30](#), [H03F 1/38](#) to [H03F 1/50](#), [H03F 3/50](#) take precedence; {-for rejection of common mode signals [H03F 3/45479](#))}
- H03F 21/00** **{Amplifiers not covered by groups [H03F 3/00](#) to [H03F 19/00](#) (dynamo-electric amplifiers [H02K](#))}**

**Project: N/A (H03G)**

- U H03G 1/00** **Details of arrangements for controlling amplification {(for arrangements combined with means for generating a controlling signal, or these means per se, see the other main groups of [H03G](#))}**
- H03G 1/02 · Remote control of amplification, tone, or bandwidth (remote control in general [G05](#), [G08](#); combined with remote tuning or selection of resonant circuits [H03J](#))

- H03G 3/00**      **Gain control in amplifiers or frequency changers {without distortion of the input signal} (gated amplifiers [H03F 3/72](#); peculiar to television receivers [H04N](#))**
- U    H03G 3/20      · Automatic control ({[H03G 3/005](#) takes precedence } ; combined with volume compression or expansion [H03G 7/00](#))
- U    H03G 3/30      · · in amplifiers having semiconductor devices
- H03G 3/3005      · · · {in amplifiers suitable for low-frequencies, e.g. audio amplifiers ([H03G 3/32](#), [H03G 3/34](#) take precedence)}
- H03G 3/3036      · · · {in high-frequency amplifiers or in frequency-changers ([H03G 3/3052](#), [H03G 3/32](#), [H03G 3/34](#) take precedence)}
- H03G 3/3052      · · · {in bandpass amplifiers (H.F. or I.F.) or in frequency-changers used in a (super)heterodyne receiver ([H03G 3/32](#), [H03G 3/34](#) take precedence)}
- H03G 3/3084      · · · {in receivers or transmitters for electromagnetic waves other than radiowaves, e.g. lightwaves ([H03G 3/32](#), [H03G 3/34](#) take precedence)}
- H03G 3/3094      · · · {in parametric amplifiers ([H03G 3/32](#), [H03G 3/34](#) take precedence)}
- U    H03G 3/34      · · · Muting amplifier when no signal is present {or when only weak signals are present, or caused by the presence of noise signals, e.g. squelch systems}
- H03G 3/341      · · · · {Muting when no signals or only weak signals are present ([H03G 3/344](#), [H03G 3/345](#) take precedence)}
- H03G 3/342      · · · · {Muting when some special characteristic of the signal is sensed which distinguishes it from noise, e.g. using speech detector ([H03G 3/344](#), [H03G 3/345](#) take precedence)}
- U    H03G 7/00**      **Volume compression or expansion in amplifiers {(frequency dependent [H03G 9/00](#))}**
- H03G 7/001      · {without controlling loop ([H03G 7/007](#), [H03G 7/02](#), [H03G 7/06](#) take precedence)}
- H03G 7/002      · {in untuned or low-frequency amplifiers e.g. audio amplifiers ([H03G 7/007](#), [H03G 7/001](#), [H03G 7/008](#), [H03G 7/02](#), [H03G 7/06](#) take precedence)}
- H03G 7/008      · {Control by a pilot signal ([H03G 7/007](#), [H03G 7/02](#), [H03G 7/06](#) take precedence)}
- U    H03G 9/00**      **Combinations of two or more types of control, e.g. gain control and tone control**
- H03G 9/02      · in untuned amplifiers (combined tone controls for low and high frequencies [H03G 5/00](#){compression or expansion combined with volume control [H03G 7/00](#)})
- H03G 9/025      · · {frequency-dependent volume compression or expansion, e.g. multiple-band systems ([H03G 9/10](#), [H03G 9/18](#) take precedence)}
- H03G 9/26      · in untuned amplifying stages as well as in frequency-selective amplifying stages (gain control in both stages [H03G 3/00](#); tone control or bandwidth control [H03G 5/00](#){compression or expansion combined with volume control [H03G 7/00](#)})
- U    H03G 11/00**      **Limiting amplitude; Limiting rate of change of amplitude; {Clipping in general}**
- H03G 11/002      · {without controlling loop ([H03G 11/004](#), [H03G 11/006](#), [H03G 11/008](#), [H03G 11/02](#), [H03G 11/04](#), [H03G 11/06](#), [H03G 11/08](#) take precedence; see provisional also [H03G 11/00](#))}
- H03G 11/008      · {of digital or coded signals (see provis. also [H03G 11/00](#), [H03G 11/02](#))}
- H03G 11/02      · by means of diodes ({[H03G 11/008](#), } [H03G 11/04](#), [H03G 11/06](#), [H03G 11/08](#) take precedence)

**Project: N/A (H03H)****H03H**

**IMPEDANCE NETWORKS, e.g. RESONANT CIRCUITS; RESONATORS (measuring, testing [G01R](#); arrangements for producing a reverberation or echo sound [G10K 15/08](#); impedance networks or resonators consisting of distributed impedances, e.g. of the waveguide type, [H01P](#); control of amplification, e.g. bandwidth control of amplifiers, [H03G](#); tuning resonant circuits, e.g. tuning coupled resonant circuits, [H03J](#); networks for modifying the frequency characteristics of communication systems [H04B](#))**

NOTES

1. This subclass covers :
  - networks comprising lumped impedance elements;
  - networks comprising distributed impedance elements together with lumped impedance elements;
  - networks comprising electromechanical or electro-acoustic elements;
  - networks simulating reactances and comprising discharge tubes or semiconductor devices;
  - constructions of electromechanical resonators.
2. In this subclass, the following expression is used with the meaning indicated: "passive elements" means resistors, capacitors, inductors, mutual inductors or diodes.
3. Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "micro-structural devices" and "micro-structural systems".
4. In this subclass, main groups with a higher number take precedence.

**U H03H 2/00**

**Networks using elements or techniques not provided for in groups [H03H 3/00](#) to [H03H 21/00](#)**

## H03H 2/003

- {comprising optical fibre network elements (optical elements per se [G02B](#)-, [G02F](#)-, transmission systems using light waves [H04B 10/00](#))}

**U H03H 3/00**

**Apparatus or processes specially adapted for the manufacture of impedance networks, resonating circuits, resonators**

## U H03H 3/007

- for the manufacture of electromechanical resonators or networks

## H03H 3/0072

- {of micro-electro-mechanical resonators or networks (micro-membranes or micro-beams [B81B 2203/01](#)-, manufacture of micro-structural devices in general [B81C](#))}

## H03H 3/013

- {for obtaining desired frequency or temperature coefficient ({[H03H 3/0076](#)} [H03H 3/04](#)-, [H03H 3/10](#) take precedence)}

**H03H 7/00**

**Multiple-port networks comprising only passive electrical elements as network components (receiver input circuits [H04B 1/18](#)-, networks simulating a length of communication cable [H04B 3/40](#))**

## U H03H 7/01

- Frequency selective two-port networks

## H03H 7/0115

- {comprising only inductors and capacitors ([H03H 7/075](#)-, [H03H 7/09](#)-, [H03H 7/12](#)-, [H03H 7/13](#) take precedence)}

## H03H 7/06

- {including resistors ([H03H 7/075](#)-, [H03H 7/09](#)-, [H03H 7/12](#)-, [H03H 7/13](#) take precedence)}

## H03H 7/17

- {Structural details of sub-circuits of frequency selective networks}

WARNING

not complete, pending reorganisation, see provisionally also [H03H 7/0107](#), [H03H 7/0123](#) to [H03H 7/07](#)-, [H03H 7/09](#) to [H03H 7/13](#) and [H03H 7/42](#)

## U H03H 7/42

- Balance/unbalance networks

- H03H 7/425
- • {Balance-balance networks}
- WARNING  
not complete, pending reorganisation, see provisionally also [H03H 1/00](#) to [H03H 1/0007](#), [H03H 7/0107](#), [H03H 7/0123](#) to [H03H 7/07](#)-, [H03H 7/09](#) to [H03H 7/13](#)-, [H03H 7/42](#) and [H03H 7/422](#)
- H03H 7/427
- • • {Common-mode filters ([H02J 3/01](#) and [H02M 1/126](#) takes precedence)}
- WARNING  
not complete, pending reorganisation, see provisionally also [H03H 1/00](#) to [H03H 1/0007](#), [H03H 7/0107](#), [H03H 7/0123](#) to [H03H 7/07](#)-, [H03H 7/09](#) to [H03H 7/13](#) and [H03H 7/42](#)
- H03H 9/00**
- Networks comprising electromechanical or electro-acoustic devices; Electromechanical resonators (making single crystals [C30B](#); selection of materials thereof [H01L](#); piezo-electric, electrostrictive or magnetostrictive devices per se [H01L 41/00](#); electromechanical transducers [H04R](#))**
- U H03H 9/0023
- {Balance-unbalance or balance-balance networks}
- U H03H 9/0028
- • {using surface acoustic wave devices}
- H03H 9/0047
- • • {having two acoustic tracks ([H03H 9/008](#)-, [H03H 9/0085](#) take precedence)}
- U H03H 9/02
- Details
- U H03H 9/125
- • Driving means, e.g. electrodes, coils
- U H03H 9/145
- • • for networks using surface acoustic waves
- U H03H 9/14544
- • • • {Transducers of particular shape or position (weighting [H03H 9/14517](#))}
- H03H 9/14558
- • • • • {Slanted, tapered or fan shaped transducers ([H03H 9/14561](#)-, [H03H 9/14564](#) take precedence)}
- U H03H 9/15
- Constructional features of resonators consisting of piezo-electric or electrostrictive material ([H03H 9/25](#) takes precedence)
- U H03H 9/17
- • having a single resonator (crystal tuning forks [H03H 9/21](#))
- H03H 9/176
- • • {consisting of ceramic material ([H03H 9/177](#)-, [H03H 9/178](#) take precedence)}
- U H03H 9/30
- Time-delay networks
- H03H 9/36
- • with non-adjustable delay time ([H03H 9/40](#)-, [H03H 9/42](#) take precedence)
- H03H 9/38
- • with adjustable delay time ([H03H 9/40](#)-, [H03H 9/42](#) take precedence)
- U H03H 9/46
- Filters (multiple-port electromechanical filters [H03H 9/70](#))
- U H03H 9/64
- • using surface acoustic waves
- U H03H 9/6406
- • • {Filters characterised by a particular frequency characteristic}
- U H03H 9/6416
- • • • {SAW matched filters, e.g. surface acoustic wave compressors, chirped or coded surface acoustic wave filters}
- H03H 9/642
- • • • • {SAW transducers details for remote interrogation systems, e.g. surface acoustic wave transducers details for ID-tags (remote interrogation systems per se [G06K 7/10009](#)-, [G01S 13/74](#))}
- U H03H 9/6423
- • • {Means for obtaining a particular transfer characteristic}
- U H03H 9/6433
- • • • {Coupled resonator filters}
- U H03H 9/644
- • • • • {having two acoustic tracks}
- U H03H 9/6443
- • • • • • {being acoustically coupled}
- H03H 9/6446
- • • • • • • {by floating multistrip couplers ([H03H 9/645](#)-, [H03H 9/6453](#) take precedence)}

**U H03H 11/00 Networks using active elements****WARNING**

Group [H03H 11/11](#) does not correspond to former or current IPC groups.  
Concordance CPC : IPC for these groups is as follows: - [H03H 11/11](#) - [H03H 11/04](#)

- U H03H 11/02 · Multiple-port networks
- U H03H 11/04 · · Frequency selective two-port networks
- H03H 11/12 · · · using amplifiers with feedback ([H03H 11/0422](#)), [H03H 11/08](#), [H03H 11/10](#) take precedence)

**H03H 15/00 Transversal filters (electromechanical filters [H03H 9/46](#), [H03H 9/70](#))****U H03H 17/00 Networks using digital techniques**

- U H03H 17/02 · Frequency selective networks {(digital computers for complex mathematical operations [G06F 17/10](#))}
- U H03H 17/0223 · · {Computation saving measures; Accelerating measures (computations per se [G06F](#))}
- H03H 2017/0245 · · · {Measures to reduce power consumption ([H03H 17/0223](#) takes preference [H03H 17/0223](#) takes precedence)}
- H03H 17/0283 · · {Filters characterised by the filter structure ([H03H 17/0202](#), [H03H 17/0219](#) to [H03H 17/0248](#) take precedence)}

**U H03H 21/00 Adaptive networks**

- U H03H 21/0012 · {Digital adaptive filters}
- U H03H 2021/007 · · {Computation saving measures; Accelerating measures}
- H03H 2021/0076 · · · {Measures relating to the convergence time ([H03H 2021/0072](#) takes preference [H03H 2021/0072](#) takes precedence)}

**Project: N/A (H03K)****U H03K 17/00 Electronic switching or gating, i.e. not by contact-making or -braking (selection of the stylus or auxiliary electrode in electric printing [B41J 2/405](#); sample-and-hold arrangements [G11C 27/02](#); switching or interrupting devices in waveguides [H01P](#); gated amplifiers [H03F 3/72](#); switching arrangements for exchange systems using static devices [H04Q 3/52](#))**

- U H03K 17/08 · Modifications for protecting switching circuit against overcurrent or overvoltage
- U H03K 17/081 · · without feedback from the output circuit to the control circuit
- H03K 17/08108 · · · {in thyristor switches ([H03K 17/0812](#), [H03K 17/0814](#) take precedence)}
- H03K 17/08116 · · · {in composite switches ([H03K 17/0812](#), [H03K 17/0814](#) take precedence)}

**Project: N/A (H03M)****H03M**

**CODING; DECODING; CODE CONVERSION IN GENERAL (using fluidic means [F15C 4/00](#); optical analogue/digital converters [G02F 7/00](#); coding, decoding or code conversion, specially adapted for particular applications, see the relevant subclasses, e.g. [G01D](#), [G01R](#), [G06F](#), [G06T](#), [G09G](#), [G10L](#), [G11B](#), [G11C](#), [H04B](#), [H04L](#), [H04M](#), [H04N](#); ciphering or deciphering for cryptography or other purposes involving the need for secrecy [G09C](#))**

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

[H03M 7/32](#) covered by [H03M 7/3004](#),  
[H03M 7/3048](#)

[H03M 7/34](#) covered by [H03M 7/3004](#),  
[H03M 7/3051](#)  
[H03M 7/36](#) covered by [H03M 7/3004](#),  
[H03M 7/3044](#)  
[H03M 7/38](#) covered by [H03M 7/3004](#),  
[H03M 7/3046](#)

**U H03M 1/00** **Analogue/digital conversion; Digital/analogue conversion (conversion of analogue values to or from differential modulation [H03M 3/00](#))**

- U H03M 1/10
  - Calibration or testing
- H03M 1/1004
  - {without interrupting normal operation, e.g. by providing an additional component for temporarily replacing components to be tested or calibrated ([H03M 1/1009](#), [H03M 1/1071](#) take precedence)}
- H03M 1/12
  - Analogue/digital converters ({[H03M 1/001](#) to [H03M 1/004](#) as well as } [H03M 1/02](#) to [H03M 1/10](#) take precedence)
- H03M 1/124
  - {Sampling or signal conditioning arrangements specially adapted for A/D converters (S/H circuits [G11C 27/02](#); sample rate conversion [H03H 17/0416](#), [H03H 17/0621](#))}
- U H03M 1/14
  - • Conversion in steps with each step involving the same or a different conversion means and delivering more than one bit
- H03M 1/144
  - • {the steps being performed sequentially in a single stage, i.e. recirculation type ([H03M 1/141](#), [H03M 1/143](#), [H03M 1/16](#) take precedence)}
- H03M 1/145
  - • {the steps being performed sequentially in series-connected stages ([H03M 1/141](#), [H03M 1/143](#), [H03M 1/16](#) take precedence)}
- H03M 1/66
  - Digital/analogue converters ({[H03M 1/001](#) to [H03M 1/004](#) as well as } [H03M 1/02](#) to [H03M 1/10](#) take precedence)

**U H03M 3/00** **Conversion of analogue values to or from differential modulation**

- U H03M 3/30
  - {Delta-sigma modulation}
  - NOTE  
In this group branch, in the absence of an indication of the contrary, classification is made in the first appropriate place
- U H03M 3/458
  - • {Analogue/digital converters using delta-sigma modulation as an intermediate step}
- H03M 3/462
  - • {Details relating to the decimation process (decimation filters in general [H03H 17/0416](#), [H03H 17/0621](#))}
- H03M 3/494
  - • {Sampling or signal conditioning arrangements specially adapted for delta-sigma type analogue/digital conversion systems (sample/hold circuits [G11C 27/02](#); sample rate conversion [H03H 17/0416](#), [H03H 17/0621](#))}
- U H03M 3/50
  - • {Digital/analogue converters using delta-sigma modulation as an intermediate step (digital delta-sigma modulators per se [H03M 7/3004](#))}
- H03M 3/508
  - • {Details relating to the interpolation process (interpolation filters in general [H03H 17/0416](#), [H03H 17/0621](#))}

**H03M 5/00** **Conversion of the form of the representation of individual digits**

NOTE

In groups [H03M 5/02](#) to [H03M 5/22](#), in the absence of an indication to the contrary, an invention is classified in the last appropriate place.

- U H03M 7/00** Conversion of a code where information is represented by a given sequence or number of digits to a code where the same information {or similar information or a subset of information} is represented by a different sequence or number of digits
- U H03M 7/001 · {characterised by the elements used}
- H03M 7/008 · · {using opto-electronic devices}
- NOTE  
In groups [H03M 7/02](#) to [H03M 7/50](#), in the absence of an indication to the contrary, an invention is classified in the last appropriate place.
- H03M 7/30 · Compression (speech analysis-synthesis for redundancy reduction [G10L 19/00](#); for image communication [H04N](#)); Expansion; Suppression of unnecessary data, e.g. redundancy reduction {(for data acquisition [G06F 17/40](#); for image data processing [G06T 9/00](#); redundancy reduction in data recording [G11B 20/14](#); for transmission [H04B 1/66](#))}
- U H03M 7/3002 · · {Conversion to or from differential modulation}
- U H03M 7/3004 · · · {Digital delta-sigma modulation}
- H03M 7/3015 · · · · {Structural details of digital delta-sigma modulators ([H03M 7/3006](#), [H03M 7/3013](#) take precedence)}
- H03M 11/00** Coding in connection with keyboards or like devices, i.e. coding of the position of operated keys (keyboard switch arrangements, structural association of coders and keyboards [H01H 13/70](#), [H03K 17/94](#))
- H03M 13/00** Coding, decoding or code conversion, for error detection or error correction; Coding theory basic assumptions; Coding bounds; Error probability evaluation methods; Channel models; Simulation or testing of codes (error detection or error correction for analogue/digital, digital/analogue or code conversion [H03M 1/00](#) to [H03M 11/00](#); specially adapted for digital computers [G06F 11/08](#), for information storage based on relative movement between record carrier and transducer [G11B](#), e.g. [G11B 20/18](#), for static stores [G11C](#); {-use of error detection or error correction in transmission systems [H04L 1/004](#), in television systems [H04N 7/0357](#)})
- U H03M 13/03 · Error detection or forward error correction by redundancy in data representation, i.e. code words containing more digits than the source words
- U H03M 13/05 · · using block codes, i.e. a predetermined number of check bits joined to a predetermined number of information bits {([H03M 13/2906](#) takes precedence)}
- U H03M 13/11 · · · using multiple parity bits
- U H03M 13/1102 · · · · {Codes on graphs and decoding on graphs, e.g. low-density parity check [LDPC] codes}
- U H03M 13/1148 · · · · · {Structural properties of the code parity-check or generator matrix}
- H03M 13/1151 · · · · · · {Algebraically constructed LDPC codes, e.g. LDPC codes derived from Euclidean geometries [EG-LDPC codes] ([H03M 13/116](#), [H03M 13/1174](#) take precedence)}
- H03M 13/31 · combining coding for error detection or correction and efficient use of the spectrum (without error detection or correction [H03M 5/14](#), {[H03M 5/145](#)})
- H03M 13/61 · {Aspects and characteristics of methods and arrangements for error correction or error detection, not provided for otherwise}
- WARNING  
[H03M 13/61](#) - [H03M 13/6597](#) are not complete, see provisionally also [H03M 13/61](#), [H03M 13/63](#) and [H03M 13/65](#)

- U H03M 13/63      · {Joint error correction and other techniques ([H03M 13/31](#) and [H03M 13/33](#) take precedence)}
- H03M 13/6306      · · {Error control coding in combination with Automatic Repeat reQuest [ARQ] and diversity transmission, e.g. coding schemes for the multiple transmission of the same information or the transmission of incremental redundancy ([H03M 13/3761](#)-, [H03M 13/3769](#) and [H03M 13/635](#) take precedence; ARQ schemes in general [H04L 1/18](#))}

**H03M 2201/00****Indexing scheme relating to A/D or D/A conversion**NOTE

As this scheme is obtained by conversion from the former deep indexing system RM03 it reflects the several editions of that system in the following way:

- code symbols added at subsequent editions are indicated by numbers [2] or [3] in square brackets, the code symbols present from the first edition on having no indication;
- headers which did not have a code symbol in the RM03 system and thus could not be assigned to documents, but which need a code symbol in the ICO system for the purpose of a correct hierarchical order, are indicated by the symbol [H];
- the edition according to which a document has been indexed is indicated by the assignment of one of code symbols [H03M 2201/01](#) through [H03M 2201/03](#) to that document. In principle, therefore, a search should include a separate combination of appropriate code symbols for each edition, each combination including one of codes [H03M 2201/01](#) through [H03M 2201/03](#)-. On an incidental base, however, code symbols from later editions have been assigned to documents indexed according to an earlier edition.

WARNING

The use of this indexing scheme has been discontinued for all documents published later than 1989.

- U H03M 2201/60      · Fidelity improvement
- U H03M 2201/61      · · Adjustment or control means [H]
- U H03M 2201/6142      · · · Means used [H]
- H03M 2201/6185      · · · · Interpolation (for fine conversions [H03M 2201/1172](#)-, [H03M 2201/162](#))[3]
- U H03M 2201/80      · Components, circuits or devices used with or within A/D or D/A converters but not disclosed in detail and not provided for elsewhere [H]

NOTE

The codes of this subgroup should be assigned only insofar as the component, circuit or device concerned is not usual for the type of converter concerned, e.g. an intermediate time interval type A/D converter usually has a counter which therefore need not be indexed in this subgroup.

- U H03M 2201/83      · · Basic logic components [H]
- H03M 2201/838      · · · Microprocessors (as an application system [H03M 2201/198](#)-, for fidelity improvement [H03M 2201/6171](#)-, for computing as part of the conversion process [H03M 2201/72](#)-, for testing [H03M 2201/657](#) [3])

## Project: N/A (H04B)

- U H04B 1/00**      **Details of transmission systems, not covered by a single one of groups [H04B 3/00](#) to [H04B 13/00](#); Details of transmission systems not characterised by the medium used for transmission (tuning resonant circuits [H03J](#))**
- NOTE  
In this group, group [H04B 1/0003](#) takes precedence over groups [H04B 1/005](#) to [H04B 1/76](#)
- H04B 1/0003      • {Software-defined radio [SDR] systems, i.e. systems wherein components typically implemented in hardware, e.g. filters or modulators/demodulators, are implemented using software, e.g. by involving an AD or DA conversion stage such that at least part of the signal processing is performed in the digital domain (digital baseband systems [H04L 25/00](#); digital modulation/demodulation [H04L 27/00](#); CDMA [H04B 1/707](#); TDMA [H04B 7/2643](#); image transmission [H04N 5/00](#))}
- WARNING  
Groups [H04B 1/0003](#) and subgroups are not complete pending a reorganisation. See also group [H04B 1/406](#)
- U H04B 1/0007**      • • {wherein the AD/DA conversion occurs at radiofrequency or intermediate frequency stage}
- H04B 1/001      • • • {Channel filtering, i.e. selecting a frequency channel within the SDR system (multiplexing of multicarrier modulation signals being represented by different frequencies [H04L 5/06](#); multiplexing of multicarrier modulation signals [H04L 5/023](#))}
- U H04B 1/0028**      • • {wherein the AD/DA conversion occurs at baseband stage}
- H04B 1/0032      • • • {with analogue quadrature frequency conversion to and from the baseband (quadrature modulators and demodulators per se [H03D 3/007](#)-, [H03C 3/40](#))}
- H04B 1/0035      • • • {Channel filtering, i.e. selecting a frequency channel within a software radio system (multiplexing of multicarrier modulation signals being represented by different frequencies [H04L 5/06](#)-, multiplexing of multicarrier modulation signals [H04L 5/023](#))}
- U H04B 1/005**      • {adapting radio receivers, transmitters and transceivers for operation on two or more bands, i.e. frequency ranges}
- U H04B 1/0053**      • • {with common antenna for more than one band}
- H04B 1/006      • • • {using switches for selecting the desired band (~~H04B 1/0057 takes preference~~ [H04B 1/0057 takes precedence](#))}
- U H04B 1/02**      • Transmitters (spatial arrangements of component circuits in radio pills for living beings [A61B 5/07](#))
- U H04B 1/03**      • • Constructional details, e.g. casings, housings {(adapted for airplanes [B64D](#))}
- H04B 1/034      • • • Portable transmitters {(distress beacons [G01S 1/68](#)-, means for indicating the location of accidentally buried persons [A63B 29/021](#))}
- H04B 1/036      • • • Cooling arrangements (cooling transformers [H01F 27/08](#)-, cooling discharge tubes [H01J 7/24](#)-, [H01J 19/74](#))}
- H04B 1/04      • • Circuits (of television transmitters [H04N 5/38](#); {-oscillators [H03B](#)-, modulators [H03C 1/00](#)-, [H03C 3/00](#)-, [H03C 5/00](#)-, amplifiers [H03F](#)-, power supplies [H04B 1/1607](#))}
- H04B 1/06      • Receivers (control of amplification [H03G](#)-, television receivers [H04N 5/44](#)-, [H04N 5/64](#))

- H04B 1/10
- Means associated with receiver for limiting or suppressing noise or interference {induced by transmission (interference reduction in spread spectrum systems [H04B 1/7097](#); equalising on HF or IF [H04B 7/005](#); diversity systems [H04B 7/02](#); elimination of image frequencies [H03D 7/18](#); noise suppression by control of amplification [H03G 3/00](#), [H03G 5/00](#), [H03G 7/00](#); squelching [H03G 3/26](#), [H03G 3/34](#)}
- H04B 1/1009
- • {Placing the antenna at a place where the noise level is low and using a noise-free transmission line between the antenna and the receivers (screened aerials [H01Q 7/04](#); feeders for aerials [H01Q 9/00](#))}
- H04B 1/1018
- • {noise filters connected between the power supply and the receiver (suppression or limitation of noise from electric apparatus [H04B 15/00](#); demodulation [H03D](#); ripple filters [H02M 1/14](#); filters in general [95G](#), [H03H](#); power supplies [H04B 1/1607](#))}
- H04B 1/12
- • Neutralising, balancing, or compensation arrangements {(balancing ripple filters [H04B 15/005](#), [H02M 1/143](#))}
- U H04B 1/16
- Circuits {(demodulators [H03D](#))}
- H04B 1/1607
- • {Supply circuits (converters [H02M](#); filters therefor [H02M 1/14](#); voltage stabilisers [G05F 1/46](#))}
- H04B 1/1615
- • • {Switching on; Switching off, e.g. remotely (battery saving circuits associated with selective call operation [H04W 52/00](#); details of power consumption reduction in a PLL, [H03L 7/0802](#), [H03L 7/14](#), [H03L 2207/08](#), [H03L 2207/18](#); muting amplifiers by gain control see [H03G 3/34](#))}
- H04B 1/163
- • {Special arrangements for the reduction of the damping of resonant circuits of receivers (amplifiers [H03F](#); negative impedance networks for line transmission systems [H04B 3/16](#))}
- H04B 1/18
- • Input circuits, e.g. for coupling to an aerial or a transmission line (input circuits for amplifiers in general [H03F](#); coupling networks between aerials or lines and receivers independent of the nature of the receiver [H03H](#))
- H04B 1/20
- • for coupling gramophone pick-up, recorder output, or microphone to receiver, {e.g. for Hi-Fi systems or audio/video combinations (constructional details for associated working of receivers and recording devices [G11B 31/003](#); for television signals only [H04N 5/00](#))}
- H04B 1/68
- for wholly or partially suppressing the carrier or one side band {or by using special modulation methods (modulator circuits [H03C 1/52](#), [H03C 1/60](#); single sideband receivers [H04B 1/302](#); for data transmission [H04L 27/02](#))}
- H04B 1/72
- Circuits or components for simulating aerials, e.g. dummy aerial (dissipative waveguide terminations [H01P 1/26](#))
- WARNING  
contains no documents, see [H03H](#), e.g. [H03H 7/38](#), [H03H 11/28](#)
- H04B 1/74
- for increasing reliability, e.g. using redundant or spare channels or apparatus {(replacing by standby devices for amplifiers [H03F 1/52](#), [H03F 1/542](#))}
- H04B 3/00** **Line transmission systems (combined with near-field transmission systems [H04B 5/00](#); constructional features of cables [H01B 11/00](#))**
- U H04B 3/02
- Details
- H04B 3/03
- • Hybrid circuits (for transceivers [H04B 1/52](#), [H04B 1/58](#); hybrid junctions of the waveguide type [H01P 5/16](#))
- WARNING  
not used, see [H04B 1/52](#), [H04B 1/58](#)
- U H04B 3/54
- Systems for transmission via power distribution lines

- H04B 3/548
- · {the power on the line being DC (arrangements for feeding power [H04L 12/10](#); extracting feeding power from signals [H04L 25/02](#))}
- U H04B 5/00**      **Near-field transmission systems, e.g. inductive loop type**
- H04B 5/0018
- {using leaky or radiating cables, e.g. leaky coaxial cables or power lines for inductive transmission (leaky cables per se [H01Q 13/20](#); for railways [B61L 3/22](#))}
- H04B 5/0056
- {for use in interrogation, identification or read/write systems (record carriers [G06K 7/00](#), [G06K 19/00](#); for railways [B61L 3/12](#))}
- H04B 7/00**      **Radio transmission systems, i.e. using radiation field ([H04B 10/00](#), [H04B 15/00](#) take precedence)**
- H04B 7/02
- Diversity systems (for direction finding [G01S 3/72](#); aerial arrays or systems [H01Q](#); {-reducing multipath interference in spread spectrum systems [H04B 1/7115](#); specially adapted for satellite systems [H04B 7/18534](#); for telegraphy or data transmission [H04L 1/02](#))}
- U H04B 7/022**
- · {Site diversity, e.g. macro-diversity (for co-located independent aerials [H04B 7/04](#))}
- H04B 7/026
- · · {Cooperative diversity, e.g. using fixed or mobile stations as relays (cooperative coding [H04L 1/0077](#); relays per se in CoMP [H04B 7/15592](#))}
- U H04B 7/04**
- · using a plurality of spaced independent aerials
- U H04B 7/06**
- · · at transmitting station, e.g. time diversity
- U H04B 7/0613**
- · · · {using simultaneous transmission ([H04B 7/0686](#) takes precedence)}
- U H04B 7/0615**
- · · · · {of weighted versions of same signal}
- U H04B 7/0619**
- · · · · {using feedback from receiving side (feedback signaling for adaptive modulation/coding [H04L 1/0001](#))}
- U H04B 7/0621**
- · · · · · {Feedback content}
- H04B 7/063
- · · · · · · {Parameters other than those covered in groups [H04B 7/0623](#) - [H04B 7/0634](#), e.g. channel matrix rank or transmit mode selection}
- U H04B 7/08**
- · · at receiving station, e.g. space diversity
- U H04B 7/0837**
- · · · {using pre-detection combining ([H04B 7/0868](#) takes precedence)}
- H04B 7/084
- · · · · {Equal gain combining, only phase adjustments (antenna beam scanning or forming by phase or amplitude control [H01Q 3/26](#), e.g. phased arrays)}
- H04B 7/0891
- · · · {Space-time diversity (rake receivers [H04B 1/7115](#); space-time decoding [H04L 1/0631](#))}
- H04B 7/14
- Relay systems (interrogator-responder radar systems [G01S 13/74](#); {CATV [community antenna television] systems [H04H 20/78](#); adapted for television [H04N 7/20](#))}
- U H04B 7/15**
- · Active relay systems
- H04B 7/155
- · · Ground-based stations ([H04B 7/204](#) takes precedence; {-for satellite systems [H04B 7/18517](#))}
- H04B 7/15507
- · · · {Relay station based processing for cell extension or control of coverage area, (network planning with network coordinated processing with regard to cell extension [H04W 16/26](#); network topologies using dedicated repeater stations [H04W 84/047](#); terminal devices adapted for relaying to or from an other terminal [H04W 88/04](#))}

- H04B 7/15521 . . . . {combining by calculations packets received from different stations before transmitting the combined packets as part of network coding (network coding aspects for detection or prevention of errors in the information received [H04L 1/0076](#); network traffic management with optimizing of information sizing, e.g. header compression, by using assembly and disassembly of packets [H04W 28/065](#))}
- U H04B 7/15528 . . . . {Control of operation parameters of a relay station to exploit the physical medium}
- H04B 7/15535 . . . . . {Control of relay amplifier gain (amplifier gain control in general [H03G 3/00](#); gain control reducing self - or loop interference [H04B 7/15578](#))}
- H04B 7/15542 . . . . . {Selecting at relay station its transmit and receive resources (selection of wireless resources by user or terminal [H04W 72/02](#); arrangements affording multiple use of the transmission path by two-dimensional division of the resources [H04L 5/0003](#), or by allocating sub-channels [H04L 5/003](#))}
- U H04B 7/185 . . . . Space-based or airborne stations; {Stations for satellite systems} ([H04B 7/204](#) takes precedence)
- H04B 7/1851 . . . . {Systems using a satellite or space-based relay ([H04B 7/18508](#), [H04B 7/18521](#) take precedence; providing specific services [H04B 7/18523](#) to [H04B 7/18576](#))}
- H04B 7/18523 . . . . {Satellite systems for providing broadcast service to terrestrial stations, i.e. broadcast satellite service (arrangements specially adapted for satellite broadcast receiving [H04H 40/90](#); picture transmission via satellite [H04N 1/00103](#); television transmission via satellite [H04N 7/20](#))}
- H04B 7/18578 . . . . {Satellite systems for providing broadband data service to individual earth stations (for selecting [H04W](#); provisions for broadband connection, [H04Q 11/0478](#))}
- H04B 7/24 . . . . for communication between two or more posts (for selecting [H04W](#); {wireless communication networks [H04W](#)})
- U H04B 7/26 . . . . at least one of which is mobile
- H04B 7/2643 . . . . {using time-division multiple access [TDMA] ([H04B 7/2615](#), [H04B 7/2618](#) take precedence)}
- U H04B 7/2662 . . . . {Arrangements for Wireless System Synchronisation}
- H04B 7/2668 . . . . . {Arrangements for Wireless Code-Division Multiple Access [CDMA] System Synchronisation, for code acquisition [H04B 1/7075](#), for code tracking [H04B 1/7085](#)}
- U H04B 7/2671 . . . . . {Arrangements for Wireless Time-Division Multiple Access [TDMA] System Synchronisation}
- U H04B 7/2678 . . . . . {Time synchronisation}
- U H04B 7/2687 . . . . . {Inter base stations synchronisation}
- H04B 7/2696 . . . . . {Over the air autonomous synchronisation, e.g. by monitoring network activity (~~H04B 7/2693 takes preference~~[H04B 7/2693 takes precedence](#))}

- H04B 10/00**      **Transmission systems employing electromagnetic waves other than radio-waves, e.g. infrared, visible or ultraviolet light, or employing corpuscular radiation, e.g. quantum communication**
- NOTE  
Groups [H04B 10/03](#)-, [H04B 10/07](#)-, [H04B 10/11](#)-, [H04B 10/25](#)-, [H04B 10/27](#)-, [H04B 10/29](#) and [H04B 10/40](#) to [H04B 10/90](#)-, and their subgroups are based on IPC2013.01
- WARNING  
Group [H04B 10/2572](#) does not correspond to former or current IPC groups. Concordance CPC:IPC for this group is as follows: - [H04B 10/2572](#) : [H04B 10/2507](#)
- H04B 10/12      · {Transmission through light guides, e.g. optical fibres} ([H04B 10/25](#) takes precedence)}
- WARNING  
This group and its subgroups is no longer used for classification of new documents as from March 1, 2012. If not indicated differently for a particular subgroup, the backlog of its subgroups is being continuously reclassified to [H04B 10/25](#) - [H04B 10/2587](#)
- U    H04B 10/25      · Arrangements specific to fibre transmission {(optical fibres per se, structural details of arrangements comprising optical fibres or other optical elements [G02B 6/00](#))}
- WARNING  
This group and its subgroups are not complete pending reclassification; see also [H04B 10/12](#) and its subgroups
- U    H04B 10/2507      · · for the reduction or elimination of distortion or dispersion
- U    H04B 10/2513      · · · due to chromatic dispersion
- H04B 10/25133      · · · · {including a lumped electrical or optical dispersion compensator ([H04B 10/2519](#)-, [H04B 10/2525](#) take precedence) ; optical dispersion compensators involving optical fibres per se [G02B 6/293](#)}
- H04B 10/2519      · · · · using Bragg gratings {(Bragg gratings per se [G02B 6/02076](#)-, devices using fibre gratings for dispersion control per se [G02B 6/29316](#))}
- H04B 10/27      · Arrangements for networking {(free-space networks [H04B 10/11](#)-, WDM networks [H04J 14/0278](#)-, specific to radio-over-fibre [H04B 10/25753](#))}
- U    H04B 10/60      · Receivers
- U    H04B 10/61      · · Coherent receivers {i.e., optical receivers using an optical local oscillator (delay line interferometer based DPSK optical receivers [H04B 10/677](#))}
- H04B 10/615      · · · {Arrangements affecting the optical part of the receiver (adjustment of the frequency or phase of the local oscillator in homodyne receivers [H04B 10/63](#)-, use of polarization beam splitters [H04B 10/614](#))}
- H04B 10/80      · Optical aspects relating to the use of optical transmission for specific applications, not provided for in groups [H04B 10/03](#) - [H04B 10/70](#)-, e.g. optical power feeding or optical transmission through water
- U    **H04B 13/00**      **Transmission systems characterised by the medium used for transmission, not provided for in groups [H04B 3/00](#) to [H04B 11/00](#)**

- H04B 13/02
- Transmission systems in which the medium consists of the earth or a large mass of water thereon, e.g. earth telegraphy (line transmission systems with earth or water return [H04B 3/00](#); {-geophysics, detecting hidden masses [G01H](#), [G01V 1/16](#), [G01V 1/18](#), [G01V 3/00](#); sonars [G01S 1/72](#); applications of earth currents [G01S 1/72](#), [H05F 7/00](#); direction and distance determination with lead cables [G01S 13/00](#)})

**U H04B 14/00** **Transmission systems not characterised by the medium used for transmission (details thereof [H04B 1/00](#))**

- H04B 14/02
- characterised by the use of pulse modulation (in radio transmission relays [H04B 7/17](#); transmission of digital information per se [H04L](#))
- H04B 14/04
- using pulse code modulation (analogue/digital or digital/analogue conversion per se [H03M 1/00](#); {-for TV signals [H04N 7/24](#)})

**Project: N/A (H04H)**

**U H04H 60/00** **Arrangements for broadcast applications with a direct linking to broadcast information or broadcast space-time; Broadcast-related systems**

- U H04H 60/68
- Systems specially adapted for using specific information, e.g. geographical or meteorological information
- H04H 60/72
- using EPGs [Electronic Programme Guides] (focusing on identifying broadcast space-time [H04H 60/39](#); {-menu type display of EPG in television receivers [H04N 5/44543](#)})

**Project: N/A (H04J)**

**H04J** **MULTIPLEX COMMUNICATION (transmission in general [H04B](#); peculiar to transmission of digital information [H04L 5/00](#); systems for the simultaneous or sequential transmission of more than one television signal [H04N 7/08](#); in exchanges [H04Q 11/00](#); stereophonic systems [H04S](#))**

**NOTE**

This subclass covers

- circuits or apparatus for combining or dividing signals for the purpose of transmitting them simultaneously or sequentially over the same transmission path;
- monitoring arrangements therefor.

**U H04J 1/00** **Frequency-division multiplex systems ([H04J 14/00](#) takes precedence)**

- U H04J 1/02
- Details
- H04J 1/04
- Frequency-transposition arrangements {(modulation with carrier or side-band suppression [H03C 1/52](#), [H03C 1/60](#); single-band suppression [H04B 1/00](#), [H04B 15/00](#); telegraphic communication [H04L 27/02](#), [H04L 25/49](#); transference of modulation from one carrier to another, e.g. frequency-changing [H03D 7/00](#); demodulation or transference of modulation of modulated electromagnetic waves [H03D 9/00](#)})
- H04J 1/06
- Arrangements for supplying the carrier waves {Arrangements for supplying synchronisation signals (carrier supply [H04L 5/10](#); frequency multiplication [H03B 19/00](#), [H03B 21/00](#); mixing [H03D 7/00](#), [H03D 9/00](#); synchronisation in general [H03B](#))}
- H04J 1/08
- Arrangements for combining channels {(branching filters [H01P 1/213](#), [H03H 7/46](#))}
- H04J 1/10
- Intermediate station arrangements, e.g. for branching, for tapping-off {(repeater circuits [H04B 3/36](#), [H04B 3/58](#); two-way amplifiers [H03F 3/62](#))}
- H04J 1/12
- Arrangements for reducing cross-talk between channels {(in line transmission systems [H04B 3/32](#); in cables or lines [H04B 3/26](#) to [H04B 3/30](#))}

- H04J 1/16
  - • Monitoring arrangements {(for transmission in general [H04B 17/00](#); for amplifiers [H03F 1/52](#), [H03F 1/523](#))}
- H04J 1/18
  - in which all the carriers are amplitude-modulated ([H04J 1/02](#) takes precedence; {in telephony [H04Q 11/02](#), [H04Q 11/023](#); in stereophony [H04H](#); in telegraphy [H04L 5/06](#); in telemetry [G08C 15/02](#), [G08C 15/04](#))}
- H04J 1/20
  - in which at least one carrier is angle-modulated ([H04J 1/02](#) takes precedence; FM without multiplex [H04B 1/00](#), [H04B 14/006](#), [H04B 15/00](#); PSK [H04L 5/12](#); impulse-modulation without multiplex [H04B 14/02](#); time-division multiplexing for data transmission [H04L 5/22](#); telemetry [G08C 15/06](#) to [G08C 15/12](#); telephony [H04Q 11/00](#), [H04Q 11/04](#), [H04Q 11/0407](#))}
- H04J 3/00**
  - Time-division multiplex systems ([H04J 14/00](#) takes precedence; relay systems [H04B 7/14](#); selecting techniques [H04Q](#))**
- U H04J 3/02
  - Details (electronic switching or gating [H03K 17/00](#))
- H04J 3/025
  - • {Filter arrangements ([H04J 3/08](#) takes precedence; filters per se [H03H 7/00](#), [H03H 9/00](#))}
- H04J 3/04
  - • Distributors combined with modulators or demodulators {(pulse distributors in general [H03K 5/15](#); pulse counters [H03K 21/00](#) to [H03K 29/06](#); for telegraphy [H04L 5/22](#), [H04L 13/00](#) to [H04L 23/00](#), [H04L 25/45](#); for telephony [H04Q 11/04](#))}
- H04J 3/06
  - • Synchronising arrangements {(for television systems [H04N 5/04](#); bit-synchronisation [H04L 7/00](#))}
- H04J 3/062
  - • • {Synchronisation of signals having the same nominal but fluctuating bit rates, e.g. using buffers (pulse-stuffing [H04J 3/07](#); asynchronous-synchronous conversion [H04L 5/24](#); speed conversion [H04L 25/05](#); speed conversion in computers [G06F 5/06](#))}
- U H04J 3/0635
  - • • {Clock or time synchronisation in a network (timer in protocols [H04L 69/28](#))}
- H04J 3/0638
  - • • • {Clock or time synchronisation among nodes; Internode synchronisation (synchronization for ring networks [H04L 12/422](#); data switching networks with synchronous transmission [H04L 12/43](#))}
- H04J 3/16
  - in which the time allocation to individual channels within a transmission cycle is variable, e.g. to accommodate varying complexity of signals, to vary number of channels transmitted ([H04J 3/17](#), [H04J 3/24](#) take precedence)
- U H04J 3/1682
  - • {Allocation of channels according to the instantaneous demands of the users, e.g. concentrated multiplexers, statistical multiplexers}
- H04J 3/1688
  - • • {the demands of the users being taken into account after redundancy removal, e.g. by predictive coding, by variable sampling (reducing bandwidth of signals in general [H04B 1/66](#); in PCM-systems [H04B 14/046](#); removal of redundancy in telegraph communication [H03M 7/30](#))}
- H04J 3/22
  - in which the sources have different rates or codes {(simultaneous speech and digital data or video transmission [H04M 11/06](#); see provisional also [H04J 3/16](#))}
- H04J 3/24
  - in which the allocation is indicated by an address {the different channels being transmitted sequentially} ([H04J 3/17](#) takes precedence; in computers [G06F 12/00](#), [G06F 13/00](#){code multiplex systems [H04J 13/00](#); selecting techniques [H04Q](#); relay systems [H04B 7/14](#))}
- H04J 4/00**
  - Combined time-division and frequency-division multiplex systems ([H04J 13/00](#) takes precedence; {data transmission [H04L 5/26](#); telemetry [G08C 15/00](#))}**
- U H04J 11/00
  - Orthogonal multiplex systems, {e.g. using WALSH codes}([H04J 13/00](#) takes precedence)**

- H04J 11/0023
- {Interference mitigation or co-ordination (traffic scheduling [H04W 72/082](#)-, [H04W 72/1226](#)-,; power management [H04W 52/00](#)-,; allocation criteria for ingress interference avoidance [H04L 5/0062](#)-,; frequency allocation criteria for requirements on out-of-channel emissions [H04L 5/0066](#)-,; peak power aspects in multicarrier modulation [H04L 27/2614](#)-,; arrangements for removing intersymbol interference or baseband equalisers [H04L 25/03006](#)-,; direct sequence spread spectrum [DSSS] systems [H04B 1/7097](#)-,; frequency hopping [H04B 1/713](#))}
- U H04J 11/0026
- • {of multi-user interference}
- H04J 11/003
- • • {at the transmitter (transmission to multiple receive units in multiple input multiple output [MIMO] [H04B 7/0452](#)-,; transmit antenna weighting [H04B 7/0615](#))}
- H04J 11/0069
- {Cell search, i.e. determining cell identity [cell-ID] (design of multiplexing codes [H04J 13/00](#)-,; processing access restriction or access information [H04W 48/16](#)-,; discovery of network devices for network data management [H04W 8/005](#)-,; sounding signals for channel estimation [H04L 25/0226](#)-,; structure of reference signals in multicarrier modulation systems [H04L 27/2613](#)-,; frame, time or carrier synchronisation in multicarrier modulation systems [H04L 27/2655](#))}
- H04J 13/00**
- Code division multiplex systems (for frequency hopping [H04B 1/713](#))**
- NOTE
- When classifying in this group, any aspect of spread spectrum techniques not specific to frequency hopping, and which is considered to represent information of interest for search, may also be classified in group [H04B 1/69](#)-.
- H04J 13/0007
- {Code type}
- NOTE
- Code type information should be classified in addition to other relevant aspects. This should also be done in cases where the other relevant symbol refers to code type, e.g. [H04J 13/14](#)-, [H04J 13/20](#) )

**Project: N/A (H04K)**

H04K 3/00

**Jamming of communication; Counter-measures (counter-measures used in radar or analogous systems [G01S 7/00](#); {in radar [G01S 7/36](#), [G01S 7/38](#); in lidar [G01S 7/495](#); in sonar [G01S 7/537](#))}**

NOTES

1. This group covers: "Jamming", only when it means purposefully trying to interfere with the physical transmission and reception of communication. Provided this condition is met, this group covers devices and methods for:
  - a. jamming of communication:
    - i. jamming by intentionally decreasing the signal to noise ratio
    - ii. deceptive jamming
    - iii. passive jamming
    - iv. destructive jamming
  - b. countermeasures against jamming
  - c. countermeasures against undesired self-jamming resulting from jamming
  - d. countermeasures against surveillance, interception or detection
  - e. other electronic countermeasures using or against electromagnetic or acoustic waves
  - f. signal detection techniques used in relation to
    - i. jamming: for interception and monitoring of the jamming target signal
    - ii. anti-jamming: for jamming detection,
    - iii. anti-surveillance: for surveillance detection
  - g. jamming for testing or assessing countermeasures
  - h. jamming used to prevent:

- cellular phone communication
    - i. in a vehicle during motion
    - ii. in particular areas, including prisons, hospitals, planes, petrol stations, theatres
    - iii. to trigger RCIEDs - reception of positioning data using GPS
  - wireless communication in ad hoc networks or in sensor networks
  - exchange of data between wirelessly connected devices or device units, on Bluetooth, infrared or near field links
  - unauthorized access to network, service or information, including:
    - i. access to a WLAN network
    - ii. access to information stored in contactless carriers, including RFID carriers
  - transmission of an alarm, against burglary or vehicle theft
  - remote control of devices
  - surveillance
    - i. of speech in meeting rooms
    - ii. of electromagnetic emissions from a computer screen
  - interception or detection of a wirelessly transmitted signal]
2. In this group, the following acronyms are used:  
GPS = global positioning system  
RCIED = remote controlled improvised explosive device  
RFID = radio frequency identification  
WLAN= wireless local area network

**WARNING**

Groups [H04K 3/00](#) -[H04K 3/94](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04K 3/00](#) - [H04K 3/94](#) : [H04K 3/00](#)

**Project: N/A (H04L)**

H04L 1/00	<b>Arrangements for detecting or preventing errors in the information received (correcting synchronisation <a href="#">H04L 7/00</a>; {-for digital computers <a href="#">G06F 11/00</a>} ; arrangements in the transmission path <a href="#">H04B</a>)</b>
H04L 1/0001	• {Systems modifying transmission characteristics according to link quality, e.g. power backoff (adaptive data allocation for multicarrier modulation <a href="#">H04L 5/0044</a> ; controlling transmission power for radio systems <a href="#">H04W 52/04</a> )}
U H04L 1/0023	• • {characterised by the signalling}
U H04L 1/0028	• • • {Formatting}
H04L 1/0031	• • • • {Multiple signaling transmission ( <a href="#">H04L 1/1664</a> , <a href="#">F15</a> take precedence)}
U H04L 1/0036	• • {arrangements specific to the receiver}
H04L 1/0039	• • • {other detection of signalling, e.g. detection of TFCI explicit signalling ( <a href="#">H04L 1/0046</a> , <a href="#">H04L 27/0012</a> and <a href="#">H04L 25/0262</a> take precedence)}
U H04L 1/004	• {by using forward error control ( <a href="#">H04L 1/0618</a> takes precedence; coding, decoding or code conversion, for error detection or correction <a href="#">H03M 13/00</a> )}
U H04L 1/0045	• • {Arrangements at the receiver end}
H04L 1/0046	• • • {Code rate detection or code type detection ( <a href="#">H04L 1/0038</a> takes precedence; detection of the data rate <a href="#">H04L 25/0262</a> ; for packet format <a href="#">H04L 1/0091</a> )}
U H04L 1/0056	• • {Systems characterized by the type of code used ( <a href="#">H04L 1/08</a> takes precedence)}
H04L 1/0057	• • • {Block codes ( <a href="#">H04L 1/0061</a> , <a href="#">H04L 1/0064</a> take precedence)}
H04L 1/007	• • • {Unequal error protection (for format <a href="#">H04L 1/0078</a> ; for codes per se <a href="#">H03M 13/35</a> )}

- H04L 1/0076
  - {Distributed coding, e.g. network coding, involving channel coding (coding in both space and time [H04L 1/0618](#); cooperative diversity [H04B 7/022](#))}
- H04L 1/0078
  - {Avoidance of errors by organising the transmitted data in a format specifically designed to deal with errors, e.g. location (forward error control, e.g. FEC, CRC [H04L 1/004](#); adaptive formatting [H04L 1/0006](#); mappings [H04L 27/00](#))}
- H04L 1/0091
  - {arrangements specific to receivers, e.g. format detection (detection of data rate [H04L 25/0262](#); detection of coding rate [H04L 1/0046](#))}
- U H04L 1/24
  - Testing correct operation
- H04L 1/248
  - {Distortion measuring systems (measurement of non-linear distortion [G01R 23/20](#); measuring characteristics of individual pulses, e.g. deviation from pulse flatness, rise time, duration [G01R 29/02](#))}
- H04L 5/00**

**Arrangements affording multiple use of the transmission path (multiplex communication in general [H04J](#); {orthogonal multiplex systems [H04J 11/00](#)})**
- H04L 5/0001
  - {Arrangements for dividing the transmission path (duplexing [H04L 5/14](#); multiplexing of different sources on one path [H04J](#))}
- H04L 5/0003
  - {Two-dimensional division (time-code division [H04J 11/00](#), [H04J 13/00](#); for time-space division [H04B 7/0413](#), [H04B 7/0697](#))}
- H04L 5/0014
  - {Three-dimensional division (time-code-space division [H04B 7/0413](#), [H04B 7/0697](#))}
- H04L 5/14
  - Two-way operation using the same type of signal, i.e. duplex ((duplex repeaters [H04L 25/22](#)); conditioning for two-way transmission in general [H04B 3/20](#); {for interconnection between telephone switching centres [H04Q 3/00](#)})
- H04L 5/20
  - using different combinations of lines, e.g. phantom working {(phantom interconnection between telephone switching centres [H04M 7/08](#); coupling arrangements therefor [H04L 25/0272](#))}
- U H04L 5/22
  - using time-division multiplexing {(in general [H04J 3/00](#))}
- U H04L 5/24
  - with start-stop synchronous converters
- H04L 5/245
  - {with a number of discharge tubes or semiconductor elements which successively connect the different channels to the transmission channels (see: [H04L 13/00](#) to [H04L 23/00](#), [H03K 5/15](#), [H03K 17/62](#), [H04J 3/047](#))}
- H04L 7/00**

**Arrangements for synchronising receiver with transmitter {(synchronisation of electronic time-pieces [G04G 7/00](#); synchronisation of generators of electric oscillations or pulses [H03L](#); synchronising in TV system [H04N 5/04](#); regeneration of clock signals for television systems [H04N 7/0352](#))}**
- H04L 7/02
  - Speed or phase control by the received code signals, the signals containing no special synchronisation information {([H04L 7/0075](#) takes precedence; tuning or selecting resonant circuits [H03J](#); using the properties of error detecting or correcting codes [H04L 7/048](#))}
- U H04L 7/04
  - Speed or phase control by synchronisation signals {([H04L 7/0075](#) takes precedence)}
- H04L 7/10
  - Arrangements for initial synchronisation

**NOTE**

In group [H04L 9/00](#) to [H04L 9/32](#), in the absence of an indication to the contrary, an invention is classified in the last appropriate place.

## H04L 9/00

**{Cryptographic mechanisms or cryptographic} arrangements for secret or secure communication {(network architectures or network communication protocols for network security [H04L 63/00](#) or for wireless network security [H04W 12/00](#); security arrangements for protecting computers or computer systems against unauthorized activity [G06F 21/00](#))}**

NOTES

## 1. This group covers:

1.1 Cryptographic mechanisms including cryptographic protocols and cryptographic algorithms, whereby a cryptographic protocol is a distributed cryptographic algorithm defined by a sequence of steps precisely specifying the actions required of two or more entities to achieve specific security objectives (e.g. cryptographic protocol for key agreement), and whereby a cryptographic algorithm is specifying the steps followed by a single entity to achieve specific security objectives (e.g. cryptographic algorithm for symmetric key encryption).

1.2 [H04L 9/00](#) focuses on cryptographic mechanisms such as encryption schemes, digital signatures, hash functions, random number generation, key management, said cryptographic mechanisms providing information security such as privacy or confidentiality, data integrity, message authentication, entity authentication, authorization, validation, certification, time-stamping, anonymity, revocation, non-repudiation.

1.3 [H04L 9/00](#) covers also countermeasures against attacks on cryptographic mechanisms.

## 2. This group does not cover:

2.1 Networking architectures or network communication protocols for securing the traffic flowing through data packet networks and providing secure exchanges among applications communicating through data packet networks, which are covered by [H04L 63/00](#). Attention is drawn to the Note 1. after group [H04L 63/00](#)

2.2 Security arrangements for protecting computers or computer systems against unauthorised activity, which are covered by [G06F 21/00](#)

## H04L 9/08

- Key distribution {or management, e.g. generation, sharing or updating, of cryptographic keys or passwords (network architectures or network communication protocols for supporting key management in a packet data network [H04L 63/06](#))}

WARNING

The former subgroup [H04L 9/08](#) was a 2-dot subgroup placed under [H04L 9/06](#). However since the former subgroup [H04L 9/08](#) comprises both symmetric and asymmetric key distribution the subgroup [H04L 9/08](#) was promoted to one-dot-level, unlike the corresponding IPC subgroup

## H04L 9/30

- Public key, i.e. encryption algorithm being computationally infeasible to invert or user's encryption keys not requiring secrecy

WARNING

the former [H04L 9/30](#) was a 2-dot subgroup under [H04L 9/28](#); however since the subgroup [H04L 9/28](#) is not used the subgroup [H04L 9/30](#) need to be promoted to one-dot-level

## H04L 9/32

- including means for verifying the identity or authority of a user of the system {or for message authentication, e.g. authorization, entity authentication, data integrity or data verification, non-repudiation, key authentication or verification of credentials} {(network architectures or network communication protocols for supporting entities authentication in a packet data network [H04L 63/08](#); applying verification of the received information [H04L 63/12](#); } computer systems [G06F](#); coin-freed or like apparatus with coded identity card or credit card [G07F 7/08](#))}

- U H04L 12/00** **Data switching networks (interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units [G06F 13/00](#))**
- U H04L 12/02 · Details
- U H04L 12/16 · · Arrangements for providing special services to substations {contains provisionally no documents}
- U H04L 12/18 · · · for broadcast or conference {, e.g. multicast (multicast or broadcast switches [H04L 49/201](#))}
- H04L 12/1813 · · · · {for computer conferences, e.g. chat rooms (protocols for multimedia communication [H04L 29/06027](#); signaling and real-time protocols for multimedia conference [H04L 29/06414](#); instant messaging [H04L 12/581](#); telephonic conference arrangements [H04M 3/56](#); television conference systems [H04N 7/15](#))}
- H04L 12/1845 · · · · {broadcast or multicast in a specific location, e.g. geocast (protocols for adapting network applications to user terminal location [H04L 29/08657](#); services specially adapted for wireless communication networks making use of the location of users or terminals [H04W 4/02](#))}
- U H04L 12/24 · · Arrangements for maintenance or administration
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/00](#)
- H04L 12/2424 · · · {Configuration management of network or network elements (management of devices network applications for proprietary or special purpose network environments [H04L 29/08567](#); automatic configuration in wireless networks [H04W 24/02](#))}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/08](#)
- H04L 12/2455 · · · {Hardware and software tools for network management}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/14](#), [H04L 41/20](#), [H04L 41/22](#), [H04L 41/24](#), [H04L 41/26](#)
- U H04L 12/2464 · · · {Network service management, ensuring proper service fulfilment according to an agreement or contract between two parties, e.g. between an IT-provider and a customer}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/50](#)

- H04L 12/2484 . . . . {Service discovery by the Service Manager (automatically determining the actual topology of a network [H04L 12/2416](#); topology discovery in routers [H04L 45/02](#); arrangements for service discovery, e.g. Service Location Protocol [SLP] [H04L 29/08648](#))}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/5058](#)
- U H04L 12/2491 . . . . {based on type of value added network service under agreement}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/508](#)
- H04L 12/2492 . . . . {wherein the managed service relates to web hosting (web hosting as such [H04L 29/0809](#), web-browsers [G06F 17/30861](#), video-hosting [H04N 21/2743](#))}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/5083](#)
- H04L 12/2493 . . . . {wherein the managed service relates to voice services (protocols for real-time multimedia communications [H04L 29/06176](#); management of telephonic communication services [H04M 3/22](#); management of VoIP services [H04M 7/0081](#))}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/5087](#)
- H04L 12/2494 . . . . {wherein the managed service relates to audio / video / TV (protocols for real-time multimedia communications [H04L 29/06176](#); interactive television or VoD [H04N 21/00](#))}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/509](#)
- H04L 12/2496 . . . . {wherein the managed service relates to chat services (conducting a computer conference [H04L 12/1822](#); instant messaging [H04L 12/581](#))}
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/5093](#)
- U H04L 12/26 . . Monitoring arrangements; Testing arrangements
- WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 43/00](#)

- U H04L 12/2602
  - • • {Monitoring arrangements}
  - WARNING  
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 43/00](#)
- U H04L 12/2634
  - • • • {Monitoring using or based on specific metrics}
- U H04L 12/2636
  - • • • • {based on availability}
- H04L 12/2642
  - • • • • {based on functioning (monitoring the activity of the application user [H04L 29/08675](#); monitoring appliance functionality of home appliances [H04L 12/2803](#))}
- U H04L 12/28
  - characterised by path configuration, e.g. local area networks [LAN], wide area networks [WAN]
- U H04L 12/2803
  - • {Home automation networks}
- H04L 12/2807
  - • • {Exchanging configuration information on appliance services in a home automation network (address allocation [H04L 29/12207](#); arrangements for maintenance or administration involving network analysis for automatically determining the actual topology of a network [H04L 12/2416](#); hardware or software tools for network management using graphical user interfaces [H04L 12/2458](#))}
- H04L 12/2809
  - • • • {indicating that an appliance service is present in a home automation network (monitoring functionality [H04L 12/2642](#); arrangements for service discovery [H04L 29/08648](#))}
- U H04L 12/2816
  - • • {Controlling appliance services of a home automation network by calling their functionalities (arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station; in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom [H04Q 9/00](#))}
- H04L 12/2818
  - • • • {from a device located outside both the home and the home network (access arrangements [H04L 12/2856](#); protocols for network applications involving the use of web-based technology for remote control or remote monitoring [H04L 29/08099](#); telephonic communication systems adapted for combination with remote control systems [H04M 11/007](#); arrangements for transmitting signals characterised by the use of a wireless electrical link [G08C 17/00](#))}
- H04L 12/2823
  - • • • {Reporting information sensed by appliance or service execution status of appliance services in a home automation network (device-related reporting [H04L 43/065](#); arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom [H04Q 9/00](#))}
- H04L 12/2825
  - • • • {Reporting to a device located outside the home and the home network (access arrangements [H04L 12/2856](#); protocols for network applications involving the use of web-based technology for remote control or remote monitoring [H04L 29/08099](#); telephonic communication systems adapted for combination with telemetering systems [H04M 11/002](#))}
- U H04L 12/283
  - • • {Processing of data at an internetworking point of a home automation network}
- H04L 12/2836
  - • • • {Protocol conversion between an external network and a home network (protocol conversion [H04L 29/06068](#); adaptation of digital video signals for transport over a specific home network [H04N 7/24](#); controlling appliance services of a home automation network from a device located outside the home and the home network [H04L 12/2818](#))}
- U H04L 12/2854
  - • {Wide area networks, e.g. public data networks}

H04L 12/2856

- • • {Access arrangements, e.g. Internet access (asynchronous transfer mode networks [H04L 12/5601](#); broadband local area networks [H04L 12/2801](#); optical access or distribution networks [H04Q 11/0067](#); access to open networks [H04L 12/5691](#); digital subscriber line end-user equipment and bit-level processing of data on a PSTN-based network [H04M 11/00](#); home network gateways [H04L 12/2834](#); wireless access networks [H04W](#))}

NOTES

## 1. This group covers:

- access to a public data network, such as an IP network, for subscribers, i.e. customers of a network service provider, over a wired network.
- communication of generic types of data between end-user equipments, located typically at the subscriber premises, and an access server, which acts as interface between the access network and the public data network.

## 2. This group does not cover:

- wireless access networks, which are covered by [H04W](#)
- optical distribution networks, which are covered by [H04Q 11/0067](#)
- bit-level, or PHY layer, processing of data between digital subscriber line equipments, which is covered by [H04M 11/06](#)
- design of DSL, digital subscriber line, modems, which is covered by [H04M 11/06](#)
- exchange of data related to functionalities of home network appliances between a home network and an external network, which is covered by [H04L 12/2803](#)
- management of WDM parameters in optical multiplex systems, which is covered by [H04J 14/02](#)
- circuit-switched access networks, which are covered by [H04M 7/1205](#)
- access arrangements for providing telephone service in networks other than PSTN/ISDN, which are covered by [H04M 7/0066](#)

## 3. In this group the following terms or expressions are used with the meaning indicated:

- ATM means Asynchronous Transfer Mode
- LAN means Local Area Network
- BRAS means Broadband Remote Access Server
- DSLAM means Digital Subscriber Line Access Multiplexer
- MSAN means MultiService Access Node
- DSL means Digital Subscriber Line
- IP means Internet Protocol
- WDM means Wavelength Division Multiplexing
- SDH means Synchronous Digital Hierarchy
- OTN means Optical Transport Network
- PSTN means Public Switched Telephone Network
- ISDN means Integrated Services Digital Network
- TDM means Time-Division Multiplexing
- TDMA means Time Division Multiple Access

WARNING

Subgroups of [H04L 12/2856](#) are not complete pending reorganisation. See also [H04L 12/5691](#)

U H04L 12/2858

- • • • {Access network architectures}

H04L 12/2859

- • • • • {Point-to-point connection between the data network and the subscribers (encapsulation [H04L 12/4633](#); virtual LANs [H04L 12/4641](#); routing of packets [H04L 12/5689](#))}

- H04L 12/2863 . . . . {Arrangements for combining access network resources elements, e.g. channel bonding (multichannel protocols [H04L 29/06088](#); routing of packets [H04L 12/5689](#); modem pooling [H04L 25/14](#))}
  - U H04L 12/2869 . . . . {Operational details of access network equipments (admission control or resource allocation in access networks [H04L 12/5692](#))}
  - U H04L 12/2878 . . . . {Access multiplexer, e.g. DSLAM (generic distributed time multiplexers, e.g. TDM/TDMA [H04J 3/1694](#))}
  - U H04L 12/2879 . . . . . {characterised by the network type on the uplink side, i.e. towards the service provider network}
  - H04L 12/2885 . . . . . {Arrangements interfacing with optical systems (optical network equipment [H04B 10/00](#); optical multiplexers [H04J 14/00](#))}
  - H04L 12/2898 . . . . . {Subscriber equipments (DSL modems [H04M 11/062](#); cable modems [H04L 12/2801](#))}
  - U H04L 12/40 . . . Bus networks
  - H04L 12/40006 . . . {Architecture of a communication node (intermediate storage or scheduling [H04L 12/5694](#); current supply arrangements [H04L 12/10](#))}
- NOTE**
- In this group the following terms or expressions are used with the meaning indicated:
- a bus controller is a microprocessor dedicated to input and output of data by a node on a bus;
  - a bus master is a device controlling which node accesses the bus at a particular time;
  - a bus guardian is a device monitoring the timing of node accesses on the bus;
  - a bus interface enhancer is a hardware or software arrangement managing the bus controller or the bus interface to modify its behaviour or providing a transparent interface to the bus controller
- U H04L 12/40052 . . . {High-speed IEEE 1394 serial bus (bus transfer protocol on a daisy chain bus using an embedded synchronisation [G06F 13/426](#))}
  - H04L 12/40091 . . . . {Bus bridging (LAN interconnection over a bridge based backbone [H04L 12/462](#); single bridge functionality [H04L 12/462](#))}
  - H04L 12/40097 . . . . {Interconnection with other networks (LAN interconnection over a bridge based backbone [H04L 12/462](#); single bridge functionality [H04L 12/462](#))}
  - H04L 12/4013 . . . . {Management of data rate on the bus (systems modifying transmission characteristics according to link quality [H04L 1/0001](#); negotiation of transmission parameters of transmission speed prior to communication [H04L 5/1446](#); adaptive data allocation for multicarrier modulation [H04L 27/2608](#))}
  - H04L 12/40143 . . . . {involving priority mechanisms (intermediate storage or scheduling [H04L 12/5694](#); hybrid switching fabrics [H04L 12/6402](#); time-division multiplex systems [H04J 3/00](#))}
  - H04L 12/40169 . . . . {Flexible bus arrangements (arrangements for maintenance or administration involving management of faults; events, alarms [H04L 12/2419](#); automatic restoration of network faults [H04L 12/2422](#))}
  - H04L 12/40176 . . . . {involving redundancy (error detection or correction of the data by redundancy in hardware using active fault-masking in interconnections [G06F 11/2002](#); error detection or correction of the data by redundancy in hardware using active fault-masking in storage systems using spares or by reconfiguring [G06F 11/2053](#))}
  - U H04L 12/46 . . . Interconnection of networks

H04L 12/4641

- • • {Virtual LANs, VLANs, e.g. virtual private networks [VPN] (virtual private networks for security [H04L 29/06612](#); routing of packets [H04L 12/5689](#); encapsulation techniques [H04L 12/4633](#); LAN interconnection over a bridge based backbone [H04L 12/462](#); packet switches [H04L 12/5696](#))}

NOTES

1. This group covers:

- a group of hosts with a common set of requirements that communicate as if they were attached to the same broadcast domain, regardless of their physical location.

2. This group does not cover:

- group multicasting, which is covered by [H04L 12/18](#)
- configuration of switches supporting VLANs, which is covered by [H04L 12/2424](#)
- multiprotocol label switching [MPLS], which is covered by [H04L 12/5689](#)
- spanning tree protocol [STP], which is covered by [H04L 12/462](#)
- arrangements for network security, which is covered by [H04L 29/06612](#)
- encapsulation techniques, which is covered by [H04L 12/4633](#)
- access arrangements, which is covered by [H04L 12/2856](#)

3. In this group the following terms or expressions are used with the meaning indicated:

- B-Tag means Backbone VLAN Tag
- C-Tag means Customer VLAN Tag
- GARP means Generic Attribute Registration Protocol
- GVRP means GARP VLAN Registration Protocol
- I-SID means Service Instance Identifier
- MVRP means Multiple VLAN Registration Protocol
- PBB means Provider Backbone Bridges
- S-Tag means Service VLAN Tag
- VLAN means Virtual Local Area Network
- VPN means Virtual Private Network
- VTP means VLAN Trunking Protocol]

H04L 12/4645

- • • • {Details on frame tagging (routing of packets [H04L 12/5689](#); support for virtual LAN [H04L 49/354](#))}

U H04L 12/54

- Store-and-forward switching systems (packet switching systems [H04L 12/56](#))

U H04L 12/58

- • Message switching systems, {e.g. electronic mail systems}

WARNING

This subgroup and all its subgroups are no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 51/00](#)

H04L 12/5845

- • • {messages including multimedia information (protocols for multimedia communication [H04L 29/06176](#); voice messaging in telephonic communication using automatic or semi-automatic exchanges with non-audio components [H04M 3/5307](#))}

H04L 12/5865

- • • {messaging using geographical location information (protocols for adapting network applications to user terminal location [H04L 29/08657](#); services specially adapted for wireless communication networks making use of the location of users or terminals [H04W 4/02](#))}

- H04L 15/00** Apparatus or local circuits for transmitting or receiving dot-and-dash codes, e.g. Morse code (teaching apparatus therefor [G09B](#); keyboard switches in general [H01H 13/70](#), [H03K 17/94](#); telegraph tapping keys [H01H 21/86](#); coding in connection with keyboards or like devices, in general [H03M 11/00](#))
- H04L 17/00** Apparatus or local circuits for transmitting or receiving codes wherein each character is represented by the same number of equal-length code elements, e.g. Baudot code (keyboard switches in general [H01H 13/70](#), [H03K 17/94](#); coding in connection with keyboards or like devices, in general [H03M 11/00](#))
- U H04L 25/00** **Baseband systems**
- H04L 25/02
- Details (circuits in general for handling pulses [H03K](#); in line transmission systems in general [H04B 3/02](#)); {Arrangements for supplying electrical power along data transmission lines (systems for transmitting signals via power distribution lines [H04B 3/54](#))}
- U H04L 25/03
- • Shaping networks in transmitter or receiver, e.g. adaptive shaping networks (impedance networks per se [H03H](#)); {Receiver end arrangements for processing baseband signals}
- U H04L 25/03006
- • • {Arrangements for removing intersymbol interference}
- H04L 25/03012
- • • • {operating in the time domain ([H04L 25/03165](#), [H04L 25/03178](#) take precedence)}
- H04L 25/03159
- • • • {operating in the frequency domain ([H04L 25/03165](#), [H04L 25/03178](#) take precedence)}
- U H04L 25/03178
- • • • {Arrangements involving sequence estimation techniques}
- U H04L 25/03248
- • • • • {Arrangements for operating in conjunction with other apparatus}
- NOTE**
- This group covers arrangements in which the sequence estimator is specially adapted to provide signals to, or receive signals from, the other apparatus. The group does not cover the mere juxtaposition of elements
- H04L 25/0328
- • • • • • {with interference cancellation circuitry (adaptations for interference cancellation within a sequence estimator [H04L 25/03305](#); interference related aspects of direct sequence spread spectrum [H04B 1/7097](#); interference related aspects of frequency hopping spread spectrum [H04B 1/715](#); see also [H04B 1/10](#))}
- U H04L 25/03891
- • • {Spatial equalizers (MIMO diversity systems [H04B 7/0413](#))}
- H04L 25/03949
- • • • {equalizer selection or adaptation based on feedback (multiple signaling inclusive of a precoding command for adapting the transmitter [H04L 1/0031](#); feedback for transmit diversity systems [H04B 7/0619](#); selection of codebook or precoding matrix for MIMO diversity systems [H04B 7/0456](#))}
- H04L 25/06
- • Dc level restoring means; Bias distortion correction {decision circuits providing symbol by symbol detection (detection of unique words or other known elements [H04L 7/00](#), [H04J 3/0602](#))}
- H04L 25/061
- • • {providing hard decisions only; arrangements for tracking or suppressing unwanted low frequency components, e.g. removal of dc offset (removal of dc offset in coupling arrangements [H04L 25/029](#), [H04L 25/0296](#))}
- U H04L 25/38
- Synchronous or start-stop systems, e.g. for Baudot code
- U H04L 25/40
- • Transmitting circuits; Receiving circuits (repeater circuits, relay circuits {[H04L 25/20](#)})

- U H04L 25/49
  - • • using code conversion at the transmitter; using predistortion; using insertion of idle bits for obtaining a desired frequency spectrum; using three or more amplitude levels; {Baseband coding techniques specific to data transmission systems (spectral shaping [H04L 25/03828](#))}
- H04L 25/497
  - • • • by correlative coding, e.g. partial response coding or echo modulation coding {transmitters and receivers for partial response systems (transversal equalizers [H04L 25/03](#); partial response continuous phase modulation systems [H04L 27/18](#))}
- H04L 27/00**

**Modulated-carrier systems {(code shift keying in combination with frequency multiplexing [H04L 5/06](#); simultaneous bidirectional transmission of ac signals [H04L 5/143](#); code shift keying [H04L 23/02](#); polarisation shift keying [H04B 14/008](#); transmission of data during the active part of a television frame [H04N 7/025](#))}**
- H04L 27/0014
  - {Carrier regulation (of chaotic carriers [H04L 27/001](#); for multicarrier receivers [H04L 27/2657](#))}
- H04L 27/01
  - Equalisers {(baseband equalisers [H04L 25/03](#); control of amplification [H03G](#); in analogue transmission systems [H04B 3/04](#), [H04B 7/005](#))}
- H04L 27/10
  - Frequency-modulated carrier systems, i.e. using frequency-shift keying ([H04L 27/32](#) takes precedence; {-continuous phase systems [H04L 27/18](#))}
- H04L 27/103
  - • {Chirp modulation (for spread spectrum techniques [H04B 1/69](#); for spread spectrum using chirp [H04B 2001/6912](#))}
- U H04L 27/12
  - • Modulator circuits (in general [H03C](#) {[H03K 7/06](#)}); Transmitter circuits {(continuous phase modulation [H04L 27/20](#))}
- H04L 27/122
  - • • {using digital generation of carrier signals (digital function generators [G06F 1/02](#), [H04L 17/10](#); generating pulses having stepped portions using digital techniques [H03K 4/026](#))}
- U H04L 27/26
  - Systems using multi-frequency codes ([H04L 27/32](#) takes precedence)
- U H04L 27/2601
  - • {Multicarrier modulation systems}
- U H04L 27/2602
  - • • {Signal structure}
- H04L 27/2604
  - • • • {Multiresolution systems (by means of multiresolution subcarriers [H04L 27/183](#), [H04L 27/3488](#))}
- U H04L 27/2626
  - • • {Arrangements specific to the transmitter}
- U H04L 27/2627
  - • • • {Modulators}
- H04L 27/2642
  - • • • • {Wavelet transform modulators (wavelets in general [H04L 27/0004](#); wavelet-division [H04L 5/0008](#))}
- H04L 27/2647
  - • • {Arrangements specific to the receiver (equalisation [H04L 25/03006](#), [H04L 27/01](#))}
- U H04L 27/2655
  - • • • {Synchronisation arrangements}
- U H04L 27/2668
  - • • • • {Details of algorithms}
- U H04L 27/2673
  - • • • • • {characterised by synchronisation parameters}
- H04L 27/2675
  - • • • • • • {Pilot or known symbols (structure of pilot symbols [H04L 27/2613](#); cell search in orthogonal multiplex systems [H04J 11/0069](#); allocation of pilot signals [H04L 5/0048](#))}
- H04L 27/32
  - Carrier systems characterised by combinations of two or more of the types covered by groups [H04L 27/02](#), [H04L 27/10](#), [H04L 27/18](#) or [H04L 27/26](#)
- H04L 29/00**

**Arrangements, apparatus, circuits or systems, not covered by a single one of groups [H04L 1/00](#) to [H04L 27/00](#) (interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units [G06F 13/00](#) ){contains provisionally no documents}**

- H04L 29/02
- Communication control (in satellite networks [H04B 7/185](#)); Communication processing ([H04L 29/12](#)-, [H04L 29/14](#) take precedence){contains provisionally no documents}
- U H04L 29/06
- • characterised by a protocol
- U H04L 29/06095
- • • {Special adaptations or provisions of the transmission control protocol/internet protocol [TCP/IP] or the user datagram protocol [UDP] (network layer protocol adaptations for supporting mobility, e.g. mobile IP [H04W 80/04](#); flow control in data switching networks in general [H04L 12/569](#); adapting video multiplex streams to a specific network [H04N 21/2381](#))}
- H04L 29/06102
- • • • {Implementation details of TCP/IP or UDP/IP stack architecture; specification of modified or new header fields (protocols engines in general [H04L 29/06081](#)-, OSI stack based layering aspects [H04L 29/08009](#)-, protocol header analysis in general [H04L 29/0653](#))}
- H04L 29/06115
- • • • {Adaptation of TCP data exchange control procedures (generic OSI layer 4 protocols, e.g. SCTP [H04L 29/08045](#)-, TCP or UDP flow control procedures [H04L 47/19](#)-, error control procedures in general [H04L 1/18](#))}
- H04L 29/06129
- • • • {involving combined use or selection criteria between TCP and UDP protocols (multi-protocol arrangements in general [H04L 29/06163](#)-, multilink protocols in general [H04L 29/06088](#))}
- H04L 29/06136
- • • • {IP fragmentation or TCP segmentation aspects (evaluation of maximum transfer unit [H04L 47/36](#)-, assembly or disassembly of packets in wireless networks [H04W 28/065](#))}
- H04L 29/06142
- • • • {Transitional provisions between IPv4 and IPv6 (address translation between IPv4 and IPv6 [H04L 29/12358](#)-, involvement of different protocol versions in wireless network layer protocols, e.g. MIPv4 and MIPv6, [H04W 80/045](#))}
- H04L 29/06149
- • • • {Special adaptations of TCP, UDP or IP to match specific link layer protocols, e.g. ATM, SONET or PPP (IP over ATM [H04Q 11/0478](#)-, special adaptation of TCP protocol for wireless media [H04W 80/06](#))}
- H04L 29/06176
- • • {Arrangements for real-time multimedia communications (data switching systems for broadcast or conference [H04L 12/18](#)-, message switching systems [H04L 12/58](#)-, television systems [H04N 7/00](#)-, interconnection arrangements between switching centres for working between exchanges having different types of switching equipment where the types of switching equipment comprise PSTN/ISDN equipment and equipment of networks other than PSTN/ISDN [H04M 7/1205](#)-, systems providing special services to telephonic subscribers [H04M 3/42](#)-, network applications in general [H04L 29/08081](#))}

#### NOTES

1. [N: This group covers:
  - only communications which fulfil the following two conditions:
    1. they are based on packet data;
    2. there is real-time or pseudo-real-time temporal association between source and destination, or source and network, or destination and network;
  - provided that the above two conditions are met, this group covers arrangements relating to
    1. the transmission of the multimedia data itself,
    2. the user-to-user, user-to-network, inter-network or intra-network signalling supporting:
      - a. the establishment of a session for the subsequent transmission of the multimedia data, or
      - b. the maintenance of the session or

- c. the application services available to the user during the session (unless explicitly excluded in certain cases).
2. This group does not cover:
- non-real-time multimedia file transfer, which is covered by [H04L 29/08117](#).
  - multimedia store or forward messaging as in e-mail, MMS or the like, which is covered by [H04L 12/58](#)
  - analogue multimedia streaming, as in analogue television systems, which is covered by [H04N 7/00](#) and [H04N 5/00](#)
  - bit streaming, i.e. not packet-based, as in ISDN which is covered by [H04Q 11/04](#)
  - instant messaging, which is covered by [H04L 12/581](#)
  - any other multimodal data communications which do not meet the conditions of being packet-based and real-time or pseudo-real-time.
3. In this group the following terms or expressions are used with the meaning indicated:
- H.323 means International Telecommunication Union Recommendation no. 323, series H, entitled "Packet-based multimedia communications systems"
  - IP means Internet Protocol
  - IMS means IP Multimedia Subsystem
  - ISDN means Integrated Services Digital Network
  - MGC means Media Gateway Control/Controller
  - MGCP means Media Gateway Control Protocol
  - MMS means Multimedia Messaging Service
  - PBX means Private Branch Exchange
  - PSTN means Public Switched Telephone Network
  - QoS means Quality of Service
  - RTP means Real Time Protocol
  - RTCP means Real Time Control Protocol
  - SIP means Session Initiation Protocol
  - SPAM means unsolicited electronic mail
  - SPIT means SPAM Prevention in IP Telephony

]

#### WARNING

Group [H04L 29/06176](#) or subgroups are not complete pending reorganisation. See also [H04L 29/06027](#)

- |                 |  |
|-----------------|--|
| H04L 29/06183   | . . . . {Signalling, control or architecture (selecting or control in telephonic networks <a href="#">H04Q 3/00</a> ; data network management <a href="#">H04L 12/24</a> ; data network testing or monitoring <a href="#">H04L 12/26</a> )}  |
| U H04L 29/0621  | . . . . {Network architectures, gateways, control or user entities}  |
| H04L 29/06224   | . . . . {Gateways (protocols for interworking or protocol conversion <a href="#">H04L 29/06068</a> ; interconnection between PSTN/ISDN networks and networks other than PSTN/ISDN <a href="#">H04M 7/1205</a> ; arrangements for connecting between networks having differing types of switching systems <a href="#">H04L 12/66</a> )} |
| H04L 29/06292   | . . . . {Arrangements providing PBX functionality, e.g. IP PBX (circuit switched PBXs <a href="#">H04M 3/42314</a> ; PBX networks <a href="#">H04M 7/009</a> )}  |
| H04L 29/06306   | . . . . {End-user terminal functionality (substation equipment for use by subscribers <a href="#">H04M 1/00</a> ; terminal profiles <a href="#">H04L 29/08927</a> ; terminal emulation <a href="#">H04L 29/08126</a> ; adaptation for terminals with limited resources or for terminal portability <a href="#">H04L 29/08108</a> )}    |
| U H04L 29/06319 | . . . . {Session control}  |

- H04L 29/06326 . . . . . {Setup (connection or session management in network applications [H04L 29/08576](#); arrangements for peer-to-peer networking in network applications [H04L 29/08306](#); negotiation of communication capabilities [H04L 29/06537](#))}
- H04L 29/0634 . . . . . {Screening (arrangements for screening incoming telephone calls [H04M 3/436](#); arrangements for network security [H04L 29/06551](#))}
- H04L 29/06387 . . . . . {Services or applications (systems providing special services to telephonic subscribers [H04M 3/42](#); contact center services [H04M 3/51](#); information services comprising voice [H04M 3/487](#))}
- H04L 29/06394 . . . . . {Services involving a main real time session and one or more additional parallel sessions (multichannel or multilink protocols [H04L 29/06088](#); services and arrangements where telephone services are combined with data services [H04M 7/0024](#))}
- H04L 29/06408 . . . . . {where none of the additional parallel sessions is real time or time sensitive, e.g. downloading a file in a parallel FTP session, initiating an email, combinational services (file transfer [H04L 29/08117](#); WEB based applications [H04L 29/0809](#); message switching systems [H04L 12/58](#); instant messaging [H04L 12/581](#))}
- H04L 29/06414 . . . . . {Arrangements for multiparty communication e.g. conference (television conferencing systems [H04N 7/15](#); telephonic conference systems [H04M 3/56](#); data switching systems for broadcast or conference [H04L 12/18](#))}
- U H04L 29/06448 . . . . . {Services related to one way streaming}
- H04L 29/06455 . . . . . {Multicast or broadcast (data switching systems for broadcast or conference [H04L 12/18](#); television systems in general [H04N 5/00](#), [H04N 7/00](#); arrangements for broadcast or distribution combined with broadcast [H04H 20/00](#); arrangements for broadcast applications with a direct linkage of broadcast information [H04H 60/00](#); arrangements for push based network services [H04L 29/08693](#))}
- U H04L 29/06476 . . . . . {Media handling, encoding, streaming or conversion}
- H04L 29/06482 . . . . . {Media manipulation, adaptation or conversion (transmission of television signals using pulse code modulation [H04N 7/24](#); adaptation for terminals or networks with limited resources or for terminal portability [H04L 29/08108](#); data reduction or adaptation [H04L 29/08792](#); network application being adapted for the location of the user terminal [H04L 29/08657](#))}
- H04L 29/0651 . . . . . {Stream encoding details (transmission of television signals using pulse code modulation [H04N 7/24](#); protocols for data compression [H04L 29/0604](#); header parsing or analysis [H04L 29/0653](#))}
- H04L 29/06523 . . . . . {Quality of Service (QoS) aspects (arrangements for scheduling or organising the servicing of requests whereby quality of service or priority requirements are taken into account [H04L 29/08954](#); adaptation for terminals and/or networks with limited resources or for terminal portability [H04L 29/08108](#); data reduction and/or adaptation [H04L 29/08792](#); network application is adapted for the location of the user terminal [H04L 29/08657](#))}
- H04L 29/06551 . . . . . {Arrangements for network security (security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#); arrangements for secret or secure communication [H04L 9/00](#); security arrangements specially adapted for wireless communication networks [H04W 12/00](#))}
- U H04L 29/08 . . . . . Transmission control procedure, e.g. data link level control procedure

- H04L 29/08081 . . . . {Protocols for network applications (message switching systems [H04L 12/58](#); protocols for multimedia communication [H04L 29/06027](#); protocols for telewriting [H04L 29/06034](#))}
  - U H04L 29/0809 . . . . {involving the use of web-based technology, e.g. Hyper Text Transfer Protocol [HTTP], (information retrieval from the Internet [G06F 17/30861](#))}
  - H04L 29/08099 . . . . {for remote control or remote monitoring (Network management using Internet technology [H04L 12/2408](#); Network monitoring [H04L 12/2602](#))}
  - U H04L 29/08135 . . . . {in which application tasks are distributed across nodes in the network (multiprogramming arrangements [G06F 9/46](#))}
  - H04L 29/08144 . . . . {Network arrangements or communication protocol arrangements for accessing one among a plurality of replicated servers, e.g. load balancing (rebalancing the processing load in a distributed system [G06F 9/5083](#); arrangements for peer-to-peer networking [H04L 29/08306](#); wireless network traffic load balancing [H04W 28/08](#); network load balancing, traffic engineering [H04L 47/125](#); video servers using load balancing strategies [H04N 21/23103](#))}
- NOTE
- In this group and its subgroups, the term "servers" includes non-dedicated servers, such as peer nodes in a peer-to-peer architecture
- H04L 29/08306 . . . . {Arrangements for peer-to-peer networking [P2P]; functionalities, architectural details or applications of P2P networks (provisions for file transfer, upload, download [H04L 29/08117](#); provisions for accessing replicated servers [H04L 29/08144](#); security provisions [H04L 29/06551](#); addressing provisions [H04L 29/12009](#); scheduling provisions [H04L 29/08945](#); presence management provisions [H04L 29/08684](#); multimedia provisions [H04L 29/06176](#); information retrieval provisions, file indexing, file systems [G06F 17/30](#); wireless interfaces between terminal devices [H04W 92/18](#); small scale hierarchical wireless network topologies [H04W 84/10](#); peer-to-peer connection between video clients [H04N 21/632](#); peer-to-peer connection between video game machines [A63F 13/34](#))}
  - H04L 29/08396 . . . . {involving resource based peer discovery mechanisms (access to replicated servers [H04L 29/08144](#); arrangements for service discovery [H04L 29/08648](#); topology discovery for routing [H04L 45/02](#))}
  - H04L 29/08558 . . . . {adapted for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car (digital computing or data processing equipment or methods, specially adapted for specific applications [G06F 19/00](#); home automation networks [H04L 12/2803](#); total factory control characterised by the network communication [G05B 19/4185](#); games involving transmission [A63F 13/30](#))}
  - H04L 29/08567 . . . . {involving the management of devices over a network (network management [H04L 12/24](#); device management using web-based technology [H04L 29/08099](#))}

- H04L 29/08576 . . . . {Arrangements for session management (real-time session management for multimedia connections [H04L 29/06176](#); negotiation of communication capabilities [H04L 29/06537](#); packet switching or routing [H04L 12/56](#); connection management in wireless networks, e.g. connection set-up, manipulation or release [H04W 76/00](#); session management for telephonic communication and services [H04M 7/00](#); intertask communications in multiprogramming arrangements [G06F 9/54](#))}
- NOTE  
This group covers session signaling at higher OSI layers to support networked applications.
- H04L 29/08621 . . . . . {markers provided for unambiguous identification of a particular session, e.g. session identifier, session cookie or URL-encoding (verifying the identity or authority of a user or a system, ID-based authentication [H04L 9/32](#); ID-based key exchange [H04L 9/08](#))}
- H04L 29/08702 . . . . {involving intermediate processing or storage in the network, e.g. proxy (billing provisions [H04L 12/14](#); network management provisions [H04L 12/24](#); monitoring provisions [H04L 12/2602](#); multimedia network architectures; gateways and control entities [H04L 29/0621](#); multimedia handling; encoding and conversion [H04L 29/06476](#); security provisions [H04L 29/06551](#); addressing provisions [H04L 29/12009](#))}
- WARNING  
The subgroups [H04L 29/08711](#), [H04L 29/08738](#) to [H04L 29/08783](#), and [H04L 29/08801](#) to [H04L 29/08855](#) are not complete pending reorganisation. See also [H04L 29/0872](#), [H04L 29/08729](#) and [H04L 29/08792](#) )
- H04L 29/0872 . . . . . m {Arrangements for brokering (protocols for client-server architecture [H04L 29/06047](#); negotiation of communication capabilities [H04L 29/06537](#); e-commerce [G06Q 30/00](#))}
- WARNING  
This group is no longer used for the classification of new documents as from December 1, 2009. The backlog of this group is being continuously reclassified to the subgroups [H04L 29/08711](#) to [H04L 29/08909](#)
- H04L 29/08738 . . . . . {Arrangements for data redirection (load balancing [H04L 29/08144](#); access network selection [H04L 12/5691](#); routing path selection [H04L 12/5689](#); context based routing [H04L 29/08972](#); addressing aspects [H04L 29/12009](#))}
- H04L 29/0899 . . . . {involving the display to the application user of network conditions affecting the network application (graphical user interfaces for network management [H04L 12/2458](#); terminal emulation [H04L 29/08126](#))}
- U H04L 29/12 . characterised by the data terminal {contains provisionally no documents}
- H04L 29/12009 . . {Arrangements for addressing and naming in data networks}
- NOTES
- [H04L 61/00](#) covers aspects of data networks, excluding pure telephone solutions ( [H04M 7/00](#) ) or addressing within a device, e.g. process, memory etc. ( [G06F 13/42](#) or [G06F 12/00](#) ) .
  - Aspects relating to switching and routing are classified in [H04L 12/56](#).
  - Main aspects covered by this groups are:  
address resolution;  
directories and name-to-address resolution;  
allocation of addresses;

conversion of addresses;  
logical names and non-standard use of addresses

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/00](#)

- U H04L 29/12047 . . . {Directories; name-to-address mapping (telephone directories in user terminals [H04M 1/27](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/15](#)

- H04L 29/12132 . . . {Mechanisms for table lookup, also between directories; Directory data structures; Synchronization of directories (information retrieval in file systems [G06F 17/30067](#); information retrieval in structured data stores [G06F 17/30286](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/1552](#)

- U H04L 29/12207 . . . {Address allocation}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/20](#)

- H04L 29/12311 . . . {involving portability aspects (mobility data transfer in wireless communication networks [H04W 8/26](#); mobile IP, network layer protocols in wireless communication networks [H04W 80/04](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/2084](#)

- H04L 29/12594 . . . {Arrangements for managing names, e.g. use of aliases or nicknames (retrieval from the Internet by using information identifiers, e.g. URLs [G06F 17/30876](#); name-to-address mapping [H04L 29/12047](#))}

WARNING

This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/30](#)

- U H04L 41/00 **{Arrangements for maintenance or administration or management of packet switching networks}**

WARNING

Groups [H04L 41/00](#) - [H04L 41/5096](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows:- [H04L 41/00](#) - [H04L 41/5096](#) : [H04L 12/24](#)

- U H04L 41/02 . {involving integration or standardization}

- H04L 41/0246
  - {exchanging or transporting network management information using Internet , e.g. aspects relating to embedding network management web servers in network elements, web service for network management purposes, aspects related to Internet applications or services or web-based protocols, simple object access protocol [SOAP] (web-based network application protocols [H04L 67/02](#); web-based network application protocols for remote control of end-devices or monitoring of remote application data [H04L 67/025](#); proprietary application protocols for remote control of end-devices in special networking environments [H04L 67/125](#); retrieval from the Internet [G06F 17/30861](#))}
- U H04L 41/06
  - {involving management of faults or events or alarms}
- H04L 41/0654
  - {Network fault recovery (backup route selection [H04L 45/22](#); route fault recovery [H04L 45/28](#); techniques for recovering from a failure of a protocol instance or entity [H04L 69/40](#))}
- H04L 41/08
  - {Configuration management of network or network elements (proprietary application protocols for remote control of end-devices in special networking environments [H04L 67/125](#); automatic configuration specially adapted for wireless networks [H04W 24/02](#))}
- H04L 41/28
  - {Security in network management, e.g. restricting network management access (network architectures or network communication protocols for network security [H04L 63/00](#); cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#); network architectures or network communication protocols for wireless network security [H04W 12/00](#); security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#))}
- U H04L 41/50
  - {Network service management, i.e. ensuring proper service fulfillment according to an agreement or contract between two parties, e.g. between an IT-provider and a customer}
- H04L 41/5058
  - {Service discovery by the service manager (automatically determining the actual topology of a network [H04L 41/12](#); topology discovery for routing [H04L 45/02](#); arrangements for service discovery, e.g. service location protocol [H04L 67/16](#))}
- U H04L 41/508
  - {based on type of value added network service under agreement}
- H04L 41/5083
  - • {wherein the managed service relates to web hosting (web-based network application protocols [H04L 67/02](#); web site content organization and management [G06F 17/3089](#); video-hosting [H04N 21/2743](#))}
- H04L 41/5087
  - • {wherein the managed service relates to voice services (protocols for real-time multimedia communications [H04L 65/00](#); management of telephonic communication services [H04M 3/22](#); management of VoIP services [H04M 7/0081](#))}
- H04L 41/509
  - • {wherein the managed service relates to media content delivery, e.g. audio / video / TV (protocols for real-time multimedia communications [H04L 65/00](#); interactive television or VoD [H04N 21/00](#))}
- H04L 41/5093
  - • {wherein the managed service relates to messaging or chat services (messaging, such as e-mail in packet-switching networks [H04L 12/58](#); conducting a computer conference [H04L 12/1822](#); instant messaging [H04L 12/581](#))}
- H04L 41/5096
  - • {wherein the managed service relates to distributed or central networked applications (management of file systems [G06F 17/30067](#); management of structured data stores [G06F 17/30286](#))}

- H04L 43/00** {Arrangements for monitoring or testing packet switching networks (networking arrangements or communications protocols for supporting networked applications for tracking the activity of the application user [H04L 67/22](#); monitoring of computing systems [G06F 11/30](#); monitoring of computer activity [G06F 11/34](#))}
- WARNING  
Groups [H04L 43/00](#) - [H04L 43/50](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows:- [H04L 43/00](#) - [H04L 43/50](#) : [H04L 12/26](#)
- U H04L 43/04      • {Processing of captured monitoring data}
- H04L 43/045     • • {for graphical visualization of monitoring data (graphical user interfaces [H04L 41/22](#); display of network or application conditions affecting the network application to the application user [H04L 67/36](#); visual indication of the functioning of a computing machine [G06F 11/32](#))}
- U H04L 43/08     • {Monitoring based on specific metrics}
- U H04L 43/0805   • • {Availability}
- H04L 43/0817   • • • {functioning (networked applications tracking the activity of users [H04L 67/22](#); monitoring appliance functionality of home appliances [H04L 12/2803](#))}
- U H04L 45/00** {Routing or path finding of packets in data switching networks (specially adapted for wireless routing [H04W 40/00](#))}
- WARNING  
Groups [H04L 45/00](#) - [H04L 45/74](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for this groups is as follows: - [H04L 45/00](#) - [H04L 45/74](#) : [H04L 12/56](#)
- H04L 45/02     • {Topology update or discovery (topology discovery for network management [H04L 41/12](#); LAN interconnection over a backbone network [H04L 12/4604](#); node-based peer discovery mechanisms in peer-to-peer networks [H04L 67/1061](#))}
- U H04L 47/00** {Traffic regulation in packet switching networks (arrangements for detecting or correcting errors in the information received [H04L 1/00](#))}
- NOTE  
This group covers:
1. Flow control or congestion control
  2. Queue scheduling
  3. Admission control or resource allocation
- WARNING  
Groups [H04L 47/00](#) -[H04L 47/829](#) do not correspond to former or current IPC groups.  
Concordance CPC : IPC for this groups is as follows:  
- [H04L 47/00](#) - [H04L 47/829](#) : [H04L 12/56](#)
- U H04L 47/10     • {Flow control or congestion control}
- H04L 47/19     • • {at layers above network layer (general aspects of TCP [H04L 69/16](#); network arrangements for networked applications for scheduling or organising the servicing of application requests [H04L 67/32](#))}
- U H04L 47/50     • {Queue scheduling}
- U H04L 47/62     • • {General aspects}
- U H04L 47/622   • • • {Queue service order}



- H04L 61/2084
- {involving portability aspects (network addressing or numbering for mobility support [H04W 8/26](#); wireless network layer protocols, e.g. mobile IP [H04W 80/04](#))}
- H04L 61/30
- {Arrangements for managing names, e.g. use of aliases or nicknames (retrieval from the Internet by using information identifiers, e.g. uniform resource locators [URLs] [G06F 17/30876](#); name-to-address mapping [H04L 61/15](#))}

**H04L 63/00** {**Network architectures or network communication protocols for network security (cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#); network architectures or network communication protocols for wireless network security [H04W 12/00](#); security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#))**}

WARNING

[N: WARNING Groups [H04L 63/00](#) - [H04L 63/20](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 63/00](#) - [H04L 63/20](#) : [H04L 29/06](#)

- H04L 63/18
- {using different networks or paths for security, e.g. using out of band channels (cryptographic mechanisms or cryptographic arrangements for key distribution involving distinctive intermediate devices or communication paths [H04L 9/0827](#); cryptographic mechanisms or cryptographic arrangements for authentication using a plurality of channels [H04L 9/3215](#))}

**H04L 65/00** {**Network arrangements or protocols for real-time communications (computer conference [H04L 12/1813](#); real time or near real time messaging in message switching systems e.g. instant messaging [H04L 12/581](#); television systems [H04N 7/00](#); selective video distribution [H04N 21/00](#); interconnection arrangements between switching centres for working between exchanges having different types of switching equipment where the types of switching equipment comprise PSTN/ISDN equipment and equipment of networks other than PSTN/ISDN [H04M 7/1205](#); systems providing special services to telephonic subscribers [H04M 3/42](#); network applications in general [H04L 67/00](#))**}

NOTES

1. This group covers:

- only communications which fulfill the following two conditions:
  - i. they are based on packet data;
  - ii. there is real-time or pseudo-real-time temporal association between source and destination, or source and network, or destination and network;
- provided that the above two conditions are met, this group covers arrangements relating to
  - a. the transmission of the multimedia data itself,
  - b. the user-to-user, user-to-network, inter-network or intra-network signalling supporting:
    - b1. the establishment of a session for the subsequent transmission of the multimedia data, or
    - b2. the maintenance of the session or
    - b3. the application services available to the user during the session (unless explicitly excluded in certain cases).

2. This group does not cover:

- non-real-time multimedia file transfer, which is covered by [H04L 67/06](#)
- multimedia store or forward messaging as in e-mail, MMS or the like, which is covered by [H04L 12/58](#)
- analogue video streaming, as in analogue television systems, which is covered by [H04N 7/00](#)

- selective distribution of MPEG elementary or transport streams, containing video and additional data, which is covered by [H04N 21/00](#)
- bit streaming, i.e. not packet-based, as in ISDN which is covered by [H04Q 11/0428](#)
- instant messaging, which is covered by [H04L 12/581](#)
- any other multimodal data communications which do not meet the conditions of being packet-based and real-time or pseudo-real-time - flow control in packet switching networks, which is covered by [H04L 12/569](#).

3. In this group the following terms or expressions are used with the meaning indicated:

- H.323 means International Telecommunication Union Recommendation no. 323, series H, entitled "Packet-based multimedia communications systems"
- IP means Internet Protocol
- IMS means IP Multimedia Subsystem
- ISDN means Integrated Services Digital Network
- MGC means Media Gateway Control/Controller
- MGCP means Media Gateway Control Protocol
- MMS means Multimedia Messaging Service
- PBX means Private Branch Exchange
- PSTN means Public Switched Telephone Network
- QoS means Quality of Service
- RTP means Real Time Protocol
- RTCP means Real Time Control Protocol
- RTSP means Real Time Streaming Protocol.
- SIP means Session Initiation Protocol
- SPAM means unsolicited electronic mail
- SPIT means SPAM Prevention in IP Telephony]

#### WARNING

Groups [H04L 65/00](#) - [H04L 65/80](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 65/00](#) - [H04L 65/80](#) : [H04L 29/06](#) ]

- |                |   |
|----------------|---|
| H04L 65/10     | • {Signalling, control or architecture (selecting or control in telephonic networks <a href="#">H04Q 3/00</a> ; data network management <a href="#">H04L 12/24</a> ; data network testing or monitoring <a href="#">H04L 12/26</a> ; admission control or resource reservation in packet switching networks <a href="#">H04L 12/5695</a> ; control signalling related to video distribution <a href="#">H04N 21/63</a> )}         |
| U H04L 65/1013 | • • {Network architectures, gateways, control or user entities}   |
| H04L 65/1053   | • • • {Arrangements providing PBX functionality, e.g. IP PBX (circuit switched PBXs <a href="#">H04M 3/42314</a> ; PBX networks <a href="#">H04M 7/009</a> )}   |
| H04L 65/1059   | • • • {End-user terminal functionality (substation equipment for use by subscribers <a href="#">H04M 1/00</a> ; terminal profiles <a href="#">H04L 67/303</a> ; terminal emulation <a href="#">H04L 67/08</a> ; adaptation for terminals with limited resources or for terminal portability <a href="#">H04L 67/04</a> ; management of video client characteristics <a href="#">H04N 21/258</a> ; <a href="#">H04N 21/4516</a> )} |
| H04L 65/1066   | • • {Session control (conducting a computer conference e.g. admission, detection, selection or grouping of participants, correlating users to one or more conference session or prioritising transmission <a href="#">H04L 12/1822</a> ; admission control/resource reservation in packet switching networks <a href="#">H04L 12/5695</a> )}  |

- H04L 65/1069
  - • • {Setup (computer conference organisation arrangements, e.g. handling schedules, setting up parameters needed by nodes to attend a conference, booking network resources or notifying involved parties [H04L 12/1818](#); session management in network applications [H04L 67/14](#); arrangements for peer-to-peer networking in network applications [H04L 67/104](#); negotiation of communication capabilities [H04L 69/24](#); admission control or resource reservation in packet switching networks [H04L 12/5695](#))}
- H04L 65/1076
  - • • {Screening (arrangements for screening incoming telephone calls [H04M 3/436](#); arrangements for network security [H04L 63/00](#))}
- H04L 65/1083
  - • • {In-session procedures (computer conferences, network arrangements for conference optimisation or adaptation [H04L 12/1827](#); reactions to resource unavailability in packet switching networks [H04L 47/74](#); reallocation or renegotiation of resources in packet switching networks [H04L 47/76](#))}
- H04L 65/40
  - {Services or applications (systems providing special services to telephonic subscribers [H04M 3/42](#); contact center services [H04M 3/51](#); information services comprising voice [H04M 3/487](#); network service management for ensuring proper service fulfilment [H04L 12/2464](#))}
- H04L 65/4007
  - • {Services involving a main real-time session and one or more additional parallel sessions (real time messaging, e.g. instant messaging, interacting with other applications or services [H04L 12/582](#); multichannel or multilink protocols [H04L 69/14](#); services and arrangements where telephone services are combined with data services [H04M 7/0024](#))}
- H04L 65/4023
  - • • {where none of the additional parallel sessions is real time or time sensitive, e.g. downloading a file in a parallel FTP session, initiating an email or combinational services (file transfer [H04L 67/06](#); WEB based applications [H04L 67/02](#); message switching systems [H04L 12/58](#); instant messaging [H04L 12/581](#))}
- H04L 65/403
  - • {Arrangements for multiparty communication, e.g. conference (television conferencing systems [H04N 7/15](#); telephonic conference systems [H04M 3/56](#); data switching systems for computer conference [H04L 12/1813](#))}
- H04L 65/4061
  - • {"Push-to-X" services (push-to-talk services in wireless networks [H04W 4/10](#); connection management, e.g. connection set-up, manipulation or release for push-to-talk or push-on-call services in wireless communication networks [H04W 76/005](#))}
- U H04L 65/4069
  - • {Services related to one way streaming}
- H04L 65/4076
  - • • {Multicast or broadcast (data switching systems for broadcast or conference [H04L 12/18](#); analog television systems in general [H04N 7/00](#); creating video channels for a dedicated end-user group [H04N 21/2668](#); arrangements for broadcast or distribution combined with broadcast [H04H 20/00](#); arrangements for broadcast applications with a direct linkage of broadcast information [H04H 60/00](#); arrangements for push based network services [H04L 67/26](#))}
- H04L 65/4084
  - • • {Content on demand (analog television systems using two way working [H04N 7/173](#); end-user applications for requesting content, additional data or services [H04N 21/472](#))}
- H04L 65/4092
  - • • {Control of source by destination, e.g. user controlling streaming rate of server (explicit feedback from the destination to the source to modify data rate for flow control or congestion control in packet switching networks, e.g. choke packet [H04L 47/26](#); end-to-end flow control in packet switching networks [H04L 47/18](#); analog television systems using two way working [H04N 7/173](#); control signals to video servers issued by video clients [H04N 21/6377](#))}
- U H04L 65/60
  - {Media handling, encoding, streaming or conversion}

- H04L 65/601
- • {Media manipulation, adaptation or conversion (transmission of television signals using pulse code modulation [H04N 7/24](#); adaptation for terminals or networks with limited resources or for terminal portability [H04L 67/04](#); involving intermediate processing or storage in the network [H04L 67/28](#); network application being adapted for the location of the user terminal [H04L 67/18](#); computer conferences, network arrangements for conference optimisation or adaptation [H04L 12/1827](#); message switching systems, e.g. electronic mail systems, with message adaptation based on network or terminal capabilities [H04L 12/5825](#); flow control or congestion control in packet switching networks [H04L 12/569](#))}
- H04L 65/602
- • • {at the source (reformatting of video signals in video distribution servers [H04N 21/2343](#); reformatting of additional data in video distribution servers [H04N 21/2355](#))}
- H04L 65/604
- • • {at the destination (reformatting of video signals in video clients [H04N 21/4402](#); reformatting of additional data in video clients [H04N 21/4355](#))}
- H04L 65/607
- • {Stream encoding details (interfacing the downstream path of a video distribution network [H04N 21/238](#), [H04N 21/438](#); controlling the complexity of a video stream [H04N 21/2662](#), [H04N 21/4621](#), [H04N 21/64792](#); protocols for data compression [H04L 69/04](#); header parsing or analysis [H04L 69/22](#))}
- H04L 65/80
- {QoS aspects (traffic-type related flow control in packet switching networks, e.g. priorities or QoS [H04L 47/24](#); admission control/resource reservation in packet switching networks based on QoS or priority awareness [H04L 47/805](#), monitoring arrangements, testing arrangements, with monitoring of QoS metrics [H04L 12/2634](#); arrangements for scheduling or organising the servicing of requests whereby quality of service or priority requirements are taken into account [H04L 67/322](#); network service management, ensuring proper service fulfillment according to an agreement or contract between two parties, e.g. between an IT-provider and a customer [H04L 12/2464](#); adaptation for terminals or networks with limited resources, or for terminal portability [H04L 67/04](#); reducing the amount or size of exchanged application data [H04L 67/2828](#); network application adapted for the location of the user terminal [H04L 67/18](#); monitoring of the downstream path of a video distribution network [H04N 21/2402](#), [H04N 21/44209](#))}
- H04L 67/00
- {Network-specific arrangements or communication protocols supporting networked applications (message switching systems [H04L 51/00](#); network management protocols [H04L 41/00](#); routing or path finding of packets in data switching networks [H04L 45/00](#); protocols for real-time multimedia communication [H04L 65/00](#); information retrieval [G06F 17/30](#); services or facilities specially adapted for wireless communication networks [H04W 4/00](#); network structures or processes for video distribution between server and client or between remote clients [H04N 21/00](#); exchange systems providing special services or facilities to subscribers involving telephonic communications [H04M 3/42](#); distributed information systems [G06F 9/00](#), [G06F 17/00](#); lower layer network functionalities which support application layer provisions [H04L 12/00](#))}**

#### NOTES

1. This group covers:

1. Networking arrangements or communication protocols to support networked applications which occur at the abstract network layers 5 to 7 of the OSI layer model. The higher layers constitute the interface between the network and the computer applications that use the network to communicate.
2. Network-specific aspects of client-server applications as well as of networking arrangements supporting networked/distributed applications,

e.g. data transport, scheduling. This group also covers specific networked application layer protocols, e.g. FTP, WAP, HTTP.

2. This group does not cover:

1. Distributed applications which are network-agnostic, i.e. distributed information systems for which the network functions are transparent. These field are covered, e.g. by [G06F 9/00](#), [G06F 17/00](#). Data switching network provisions in general and the lower layer network functionalities which support application layer provisions are covered by [H04L 12/00](#) ]

WARNING

Groups [H04L 67/00](#) - [H04L 67/42](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 67/00](#) - [H04L 67/36](#) : [H04L 29/08](#) - [H04L 67/38](#) - [H04L 67/42](#) : [H04L 29/06](#) ]

- U H04L 67/02
  - {involving the use of web-based technology, e.g. hyper text transfer protocol [HTTP] (information retrieval from the Internet [G06F 17/30861](#))}
- H04L 67/025
  - • {for remote control or remote monitoring of the application (management of end-device applications over a special purpose or proprietor network [H04L 67/125](#); network management using Internet technology [H04L 12/2408](#); network monitoring [H04L 12/2602](#))}
- H04L 67/08
  - {adapted for terminal emulation, e.g. telnet (protocols for telewriting or protocols for networked simulations, virtual reality or games [H04L 67/38](#); emulation or software simulation [G06F 9/455](#))}
- U H04L 67/10
  - {in which an application is distributed across nodes in the network (multiprogramming arrangements [G06F 9/46](#))}
- U H04L 67/1002
  - • {for accessing one among a plurality of replicated servers, e.g. load balancing (arrangements or protocols for peer-to-peer networking [H04L 67/104](#); protocols for client-server architectures [H04L 67/42](#); allocation of processing resources to service requests in a distributed system [G06F 9/5027](#); rebalancing the processing load in a distributed system [G06F 9/5083](#); wireless network traffic load balancing [H04W 28/08](#); network load balancing, traffic engineering [H04L 47/125](#); video servers using load balancing strategies [H04N 21/23103](#); error detection or correction of the data by redundancy in hardware [G06F 11/16](#))}
- H04L 67/1029
  - • • {using data related to the state of servers by a load balancer (server selection based on server parameters [H04L 67/1008](#); performance measurement for load balancing [G06F 11/3433](#); information retrieval in structured data stores [G06F 17/30286](#))}
- H04L 67/1034
  - • • {Reaction to server failures by a load balancer (techniques for recovering from a failure of a protocol instance or entity [H04L 69/40](#); departure or maintenance mechanisms in Peer-to-Peer networks [H04L 67/1048](#); intermediate processing providing operational support to end devices by emulation or by off-loading in the network [H04L 67/2861](#); network fault restoration [H04L 12/2422](#); error detection or correction of the data by redundancy in hardware [G06F 11/16](#); failing over workload from one server to another one [G06F 11/202](#))}
- H04L 67/104
  - • {for peer-to-peer [P2P] networking; Functionalities or architectural details of P2P networks (file transfer, upload, download [H04L 67/06](#); accessing replicated servers [H04L 67/1002](#); presence management [H04L 67/24](#); scheduling provisions [H04L 67/32](#); real-time communications [H04L 65/00](#); information retrieval using distributed database systems [G06F 17/30283](#); small scale hierarchical wireless network topologies [H04W 84/10](#); wireless interfaces between terminal devices [H04W 92/18](#); P2P connections between video clients [H04N 21/632](#); P2P connections between video game machines [A63F 13/34](#))}
- U H04L 67/1042
  - • • {involving topology management mechanisms}

- H04L 67/1044
  - • • {Group management mechanisms (user group management in wireless communication networks [H04W 4/08](#); management of multicast group membership [H04L 12/185](#); reconfiguring of node membership in a computing system to eliminate errors [G06F 11/1425](#))}
- H04L 67/1048
  - • • • {Departure or maintenance mechanisms (methods for recovering from a failure of a protocol instance or entity [H04L 69/40](#); intermediate processing providing operational support to end devices by emulation or by off-loading in the network [H04L 67/2861](#); reactions to server failures by a load balancer [H04L 67/1034](#); error detection or correction of the data by redundancy in operation [G06F 11/14](#))}
- H04L 67/1061
  - • • {involving node-based peer discovery mechanisms (access to replicated servers [H04L 67/1002](#); service discovery [H04L 67/16](#); topology discovery for routing [H04L 45/02](#); information retrieval in distributed file systems [G06F 17/30067](#); information retrieval in structured data stores, indexing, querying [G06F 17/30286](#))}
- H04L 67/1074
  - • • {for supporting resource transmission mechanisms (routing over an overlay routing layer [H04L 45/64](#); file transfer [H04L 67/06](#))}
- H04L 67/1095
  - • • {for supporting replication or mirroring of data, e.g. scheduling or transport for data synchronisation between network nodes or user terminals or syncML (synchronisation in information retrieval in file systems [G06F 17/30067](#); synchronisation in structured data stores [G06F 17/30575](#); mass storage redundancy by mirroring for error detection or correction of data [G06F 11/2056](#))}
- H04L 67/1097
  - • • {for distributed storage of data in a network, e.g. network file system [NFS], transport mechanisms for storage area networks [SAN] or network attached storage [NAS] (temporary storage of data at an intermediate stage [H04L 67/2842](#); dedicated interfaces to storage systems [G06F 3/0601](#))}
- H04L 67/12
  - • • {adapted for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car or remote metering networks (digital computing or data processing equipment or methods, specially adapted for specific applications in healthcare or life sciences [G06F 19/00](#); home automation networks [H04L 12/2803](#); total factory control characterised by the network communication [G05B 19/4185](#); games involving transmission systems [A63F 13/30](#))}
- H04L 67/125
  - • • {involving the control of end-device applications over a network (end-device control or monitoring using web-based technology [H04L 67/025](#); network management of network elements [H04L 12/24](#))}
- H04L 67/14
  - • • {for session management (session control for real-time communications [H04L 65/1066](#); session initiation protocol [H04L 65/1006](#); negotiation of communication capabilities [H04L 69/24](#); computer conference arrangements [H04L 12/1813](#); connection management in wireless networks [H04W 76/00](#); session management for telephonic communication and services [H04M 7/00](#); intertask communications in multiprogramming arrangements [G06F 9/54](#))}
- H04L 67/146
  - • • {Markers provided for unambiguous identification of a particular session, e.g. session identifier, session cookie or URL-encoding (IP multimedia subsystem [H04L 65/1016](#); cryptographic mechanisms for verifying the identity or authority of a user or a system, ID based authentication [H04L 9/32](#); cryptographic mechanisms for ID based key exchange [H04L 9/08](#))}
- H04L 67/148
  - • • {provided for migration or transfer of sessions (in-session procedures in real-time communications [H04L 65/1083](#); control or signalling for completing the hand-off in wireless networks [H04W 36/0005](#))}

- H04L 67/16
  - {Service discovery or service management, e.g. service location protocol [SLP] or Web services (address allocation to terminals or nodes connected to a network [H04L 61/30](#); mobile application services specially adapted for wireless communication networks [H04W 4/00](#); network service management for ensuring proper service fulfilment according to an agreement or contract between two parties [H04L 12/2464](#))}
- H04L 67/22
  - {Tracking the activity of the user (recording of computer activity [G06F 11/34](#); network monitoring arrangements [H04L 12/2602](#); e-commerce [G06Q 30/00](#))}
- H04L 67/28
  - {for the provision of proxy services, e.g. intermediate processing or storage in the network (network management provisions [H04L 12/24](#); network monitoring provisions [H04L 12/2602](#); media manipulation, adaptation or conversion in real-time communications [H04L 65/601](#); protocol conversion [H04L 69/08](#); proxies for network security [H04L 63/0281](#))}
- H04L 67/2809
  - {for brokering (negotiation of communication capabilities [H04L 69/24](#); e-commerce [G06Q 30/00](#))}
- H04L 67/2814
  - {for data redirection (load balancing of replicated servers [H04L 67/1002](#); access network selection [H04L 12/5691](#); routing or path finding of packets [H04L 45/00](#); content or context based routing [H04L 67/327](#); network addressing or naming provisions [H04L 61/00](#))}
- H04L 67/2823
  - {for conversion or adaptation of application content or format (protocol conversion [H04L 69/08](#); media manipulation, adaptation or conversion in real-time communications [H04L 65/601](#); message adaptation based on network or terminal capabilities [H04L 12/5825](#); optimising visualization of content for web browsing [G06F 17/30905](#))}
- H04L 67/2842
  - {for storing data temporarily at an intermediate stage, e.g. caching (distributed storage of data in a network [H04L 67/1097](#); browsing optimization of access to content by caching [G06F 17/30902](#); addressing of a cache within a hierarchically structured memory system [G06F 12/0802](#); disk caching [G06F 12/0866](#))}
- H04L 67/2861
  - {for providing operational support to end devices by emulation, e.g. when they are unavailable, or by off-loading in the network (techniques for recovering from a failure of a protocol instance or entity [H04L 69/40](#); reactions to server failures by a load balancer [H04L 67/1034](#); departure or maintenance mechanisms in peer-to-peer networks [H04L 67/1048](#); terminal emulation [H04L 67/08](#); disconnected operation in file systems [G06F 17/30067](#); emulation or software simulation [G06F 9/455](#); input/output emulation function for peripheral devices [G06F 13/105](#))}
- U H04L 67/30
  - {involving profiles}
- H04L 67/306
  - {User profiles (configuring for programme initiating [G06F 9/44505](#); information retrieval by personalized querying [G06F 17/30867](#))}
- H04L 67/32
  - {for scheduling or organising the servicing of application requests, e.g. requests for application data transmissions involving the analysis and optimisation of the required network resources (intermediate grouping or aggregating of service requests [H04L 67/2833](#); broadcast or conference with schedule organisation [H04L 12/1881](#); computer conference arrangements [H04L 12/1813](#); network service management, ensuring proper service fulfilment according to an agreement or contract between two parties [H04L 12/2464](#))}
- H04L 67/322
  - {whereby quality of service [QoS] or priority requirements are taken into account (QoS aspects in real-time communications [H04L 65/80](#); monitoring of QoS metrics [H04L 12/2634](#))}
- H04L 67/34
  - {involving the movement of software or configuration parameters (programme loading or initiating [G06F 9/445](#); remote booting [G06F 9/4416](#); configuration management of network or network elements [H04L 12/2424](#))}

- H04L 67/38
- {Protocols for telewriting; Protocols for networked simulations, virtual reality or games (games using an electronically generated display [A63F 13/00](#); remote windowing or X-Windows [G06F 9/4445](#))}
- H04L 69/00**
- {Application independent communication protocol aspects or techniques in packet data networks (interconnection arrangements between CPUs, memories, or peripherals within a single computer [G06F 13/00](#); data switching networks [H04L 12/00](#); flow control [H04L 12/569](#); routing of packets [H04L 12/5689](#); network management [H04L 12/24](#); network monitoring or testing [H04L 12/26](#); network topologies, i.e. networks characterized by the path configuration, media access control [H04L 12/28](#); intermediate storage or scheduling [H04L 12/5694](#); packet switches and switching fabrics [H04L 12/5696](#); message switching systems, e.g. email, [H04L 12/58](#); broadcast or multicast [H04L 12/18](#); hybrid switching systems [H04L 12/64](#); gateways [H04L 12/66](#); networks specially adapted for wireless communication [H04W](#); transmission systems [H04B](#))}**
- WARNING**
- Groups [H04L 69/00](#) - [H04L 69/40](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 69/00](#) -
- |                            |                             |                            |                            |                            |
|----------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|
| <a href="#">H04L 69/28</a> | :                           | <a href="#">H04L 29/06</a> | -                          | <a href="#">H04L 69/30</a> |
| -                          | <a href="#">H04L 69/329</a> | :                          | <a href="#">H04L 29/08</a> | -                          |
| <a href="#">H04L 69/40</a> | :                           | <a href="#">H04L 29/14</a> | ]                          |                            |
- H04L 69/03
- {Protocol definition or specification (protocol conformance testing [H04L 1/244](#); specification techniques [G06F 8/10](#))}
- H04L 69/04
- {Protocols for data compression (compression in general [H03M 7/30](#); reduction of the amount or size of exchanged application data at an intermediate network processing stage [H04L 67/2828](#); optimizing, e.g. header compression, information sizing in wireless communication networks [H04W 28/06](#))}
- H04L 69/08
- {Protocols for interworking or protocol conversion (arrangements for connecting between networks having differing types of switching systems, e.g. gateways, [H04L 12/66](#); network management protocols conversion [H04L 12/2405](#))}
- H04L 69/16
- {Transmission control protocol/internet protocol [TCP/IP] or user datagram protocol [UDP] (transport layer addressing aspects [H04L 61/6063](#); network layer protocol adaptations for supporting mobility, e.g. mobile IP, [H04W 80/04](#); flow control or congestion control in data switching networks [H04L 12/569](#); adapting video multiplex streams to a specific network [H04N 21/2381](#); special adaptations of TCP, UDP or IP for interworking of IP based networks with other networks [H04L 69/169](#))}
- H04L 69/161
- {Implementation details of TCP/IP or UDP/IP stack architecture; Specification of modified or new header fields (protocols engines in general [H04L 69/12](#); OSI stack based layering aspects [H04L 69/32](#); protocol header analysis in general [H04L 69/22](#); addressing aspects in multiple interfaces involving dual-stack hosts [H04L 61/6086](#))}
- H04L 69/163
- {Adaptation of TCP data exchange control procedures (generic OSI layer 4 protocols, e.g. SCTP [H04L 69/326](#); TCP or UDP flow control procedures [H04L 47/19](#); error control procedures in general [H04L 1/18](#))}
- H04L 69/165
- {involving combined use or selection criteria between TCP and UDP protocols (multi-protocol arrangements in general [H04L 69/18](#); multilink protocols in general [H04L 69/14](#))}
- H04L 69/166
- {IP fragmentation or TCP segmentation aspects (evaluation of maximum transfer unit [MTU] [H04L 47/36](#); assembly or disassembly of packets in wireless networks [H04W 28/065](#))}

- H04L 69/167
  - {Transitional provisions between IPv4 and IPv6 (address translation between IPv4 and IPv6 [H04L 61/251](#); involvement of different protocol versions in wireless network layer protocols, e.g. MIPv4 and MIPv6 [H04W 80/045](#))}
- H04L 69/168
  - {Special adaptations of TCP, UDP or IP to match specific link layer protocols, e.g. ATM, SONET or PPP (IP over ATM [H04L 2012/5667](#); special adaptation of TCP protocol for wireless media [H04W 80/06](#))}
- H04L 69/22
  - {Header parsing or analysis (traffic monitoring by flow aggregation or filtering [H04L 12/2605](#); flow identification in packet switching networks [H04L 47/2483](#))}
- U H04L 69/30
  - {Definitions, standards or architectural aspects of layered protocol stacks}
- U H04L 69/32
  - {High level architectural aspects of 7-layer open systems interconnection [OSI] type protocol stacks}
- U H04L 69/322
  - • {Aspects of intra-layer communication protocols among peer entities or protocol data unit [PDU] definitions}
- H04L 69/323
  - • • {in the physical layer, i.e. layer one (arrangements for detecting or preventing errors in the information received [H04L 1/00](#); baseband systems [H04L 25/00](#); modulated-carrier systems [H04L 27/00](#))}
- H04L 69/324
  - • • {in the data link layer, i.e. layer two, e.g. HDLC (arrangements for detecting or preventing errors in the information received [H04L 1/00](#); bus networks [H04L 12/40](#))}
- H04L 69/325
  - • • {in the network layer, i.e. layer three, e.g. X.25 (packet switching systems, packet routing [H04L 12/5689](#); TCP/IP [H04L 69/16](#))}
- H04L 69/326
  - • • {in the transport layer, i.e. layer four (TCP/IP [H04L 69/16](#); streaming protocols, e.g. RTP, [H04L 65/608](#))}
- H04L 69/327
  - • • {in the session layer, i.e. layer five (session initiation protocol [H04L 65/1006](#); session control in real time communications [H04L 65/1066](#); arrangements for session management [H04L 67/14](#))}
- H04L 69/328
  - • • {in the presentation layer, i.e. layer six (graphical user interfaces [G06F 3/048](#); terminal emulation, e.g. telnet, [H04L 67/08](#))}
- H04L 69/329
  - • • {in the application layer, i.e. layer seven (network arrangements or network communication protocols for networked applications [H04L 67/00](#); digital computing or data processing equipment or methods, specially adapted for specific applications [G06F 19/00](#); data processing systems and methods specially adapted for administrative, commercial, financial or managerial purposes [G06Q](#))}
- H04L 69/40
  - {Techniques for recovering from a failure of a protocol instance or entity, e.g. failover routines, service redundancy protocols, protocol state redundancy or protocol service redirection in case of a failure or disaster recovery (reactions to failures of replicated servers by a load balancer [H04L 67/1034](#); departure or maintenance mechanisms in peer-to-peer networks [H04L 67/1048](#); intermediate processing of operational support to end devices when they are unavailable, [H04L 67/2861](#); network fault management [H04L 12/2419](#); route fault recovery in network routing [H04L 45/28](#); fault recovery in packet switches [H04L 49/557](#))}
- U H04L 2463/00
 

**Additional details relating to network architectures or network communication protocols for network security covered by [H04L 63/00](#)**
- H04L 2463/103
  - applying security measure for protecting copy right (protecting software against unauthorised usage in a vending or licensing environment, e.g. protection the software providers copyright [G06F 21/10](#); data processing systems or methods, specially adapted for payment schemes, architectures or protocols [G06Q 20/00](#); secrecy systems or subscription systems [H04N 7/16](#))

**Project: N/A (H04M)**

- U H04M 1/00**      **Substation equipment, e.g. for use by subscribers; Analogous equipment at exchanges (prepayment telephone coin boxes [H04M 17/00](#); current supply arrangements [H04M 19/00](#); {telephone sets particularly adapted for data transmission [H04M 11/066](#); network interface devices [H04Q 1/028](#)})**
- U H04M 1/02      • Constructional features of telephone sets
- H04M 1/03      • • Constructional features of telephone transmitters or receivers, e.g. telephone handsets, {-speakers or microphones}(transducers in general [H04R 1/00](#))
- H04M 1/247      • Telephone sets including user guidance or features selection means facilitating their use; {-Fixed telephone terminals for accessing a variety of communication services via the PSTN network}
- U H04M 3/00**      **Automatic or semi-automatic exchanges {(constructional details of telephone exchanges [H04Q 1/02](#)})**
- U H04M 3/42      • Systems providing special services or facilities to subscribers
- H04M 3/436      • • Arrangements for screening incoming calls, {-i.e. evaluating the characteristics of a call before deciding whether to answer it (based on the calling party profile [H04M 3/42059](#); based on location [H04M 3/42348](#); based on presence [H04M 3/42365](#); diversion [H04M 3/54](#))}
- U H04M 3/50      • • Centralised arrangements for answering calls; Centralised arrangements for recording messages for absent or busy subscribers ([H04M 3/487](#) takes precedence; Centralised dictation systems [H04M 11/10](#)); {Centralised arrangements for recording messages}
- H04M 3/51      • • • Centralised call answering arrangements requiring operator intervention, {-e.g. call or contact centers for telemarketing}
- U H04M 3/53      • • • Centralised arrangements for recording incoming messages {i.e. mailbox systems}
- H04M 3/537      • • • • Arrangements for indicating the presence of a recorded message, {-whereby the presence information might include a preview or summary of the message}
- U H04M 3/56      • • Arrangements for connecting several subscribers to a common circuit, i.e. affording conference facilities ({computer conferences [H04L 12/1813](#)}; video conference systems [H04N 7/15](#))
- U H04M 3/568      • • • {audio processing specific to telephonic conferencing, e.g. spatial distribution, mixing of participants (echo suppression in two-way loud-speaking telephone systems [H04M 9/02](#); sound field processing per se [H04S 7/30](#))}
- H04M 3/569      • • • • {using the instant speaker's algorithm}{(speech detection per se [G10L 25/78](#))}
- H04M 7/00**      **Interconnection arrangements between switching centres (transmission arrangements in general [H04B](#); {-interconnection arrangements between PSTN/ISDN switching centres [H04Q 3/00](#)})**
- H04M 7/06      • using auxiliary connections for control or supervision {-, e.g. where the auxiliary connection is a signalling system number 7 link}
- WARNING  
Not complete, see also other subgroups of [H04M 7/00](#)
- H04M 7/12      • for working between exchanges having different types of switching equipment, e.g. power-driven and step by step, decimal and non-decimal, {-circuit-switched and packet-switched, i.e. gateway arrangements}
- WARNING  
Not complete, see also other subgroups of [H04M 7/00](#)

- H04M 15/00 Arrangements for metering, time-control or time indication {-; Metering, charging or billing arrangements for voice wireline or wireless communications, e.g. VoIP}**
- H04M 15/04 · Recording calls {-, or communications} in printed, perforated or other permanent form
- H04M 15/06 · · Recording class or number of calling {-, i.e. A-party} or called party{ {, i.e. B-party}
- H04M 15/08 · Metering calls to called party {-, i.e. B-party charged for the communication}
- H04M 15/10 · Metering calls from calling party; {-, i.e. A-party charged for the communication}
- H04M 15/12 · · Discriminative metering {-, charging or billing}
- H04M 15/18 · · · according to duration of the call {-, or the communication}
- H04M 15/26 · · with a meter {-or performing charging or billing} at the exchange controlled by an operator
- H04M 15/28 · with meter at substation {-or with calculation of charges at terminal}
- H04M 15/30 · · the meter {-or calculation of charges} not being controlled from an exchange
- H04M 17/00 Prepayment {-of wireline communication systems, wireless communication systems or} telephone systems (using a coded card to authorise calls from a telephone set [H04M 1/675](#))**
- H04M 17/02 · Coin-freed or check-freed systems, {-e.g. mobile- or card-operated phones, public telephones or booths}

**Project: N/A (H04N)**

**H04N PICTORIAL COMMUNICATION, e.g. TELEVISION (measuring, testing [G01](#); systems for autographic writing, e.g. writing telegraphy, which involve following an outline {[G08C 21/00](#)}; information storage based on relative movement between record carrier and transducer [G11B](#); coding, decoding or code conversion, in general [H03M](#); broadcast distribution or the recording of use made thereof [H04H](#))**

NOTES

1. This subclass covers :

- {generation, recording or} transmission of pictures or their transient or permanent reproduction either locally or remotely {and the corresponding electronic image capture and reproduction process employing image representative electric signals,} by methods or arrangements {involving at least one of} the following steps:
  - a. the {electronic acquisition or} scanning of a picture {or scene} , i.e. resolving the whole picture-containing area into individual picture-elements and the derivation of picture-representative electric signals related thereto, simultaneously or in sequence {, e.g. by reading an electronic solid-state image sensor [SSIS] pickup device (e.g. CCD or CMOS image sensor) as electronic image sensor converting optical image information into said electrical signals;}
  - b. the reproduction of the whole picture-containing area {or scene} by the reproduction of individual picture-elements into which the picture is resolved by means of picture representative electric signals derived therefrom, simultaneously or in sequence by converting an electric image signal into light e.g. with an electronic spatial light modulator;
- concerning cameras or projectors:
  - video cameras or TV cameras, e.g. in studios, CCTV cameras, surveillance cameras, camcorders; constructional or mechanical details related to such cameras even when not peculiar to the presence of an electronic image sensor [EIS] e.g. housings;

- arrangements or methods for image capture using an EIS or image projection using an electronic spatial light modulator [ESLM], i.e.
  - i. sensor read-out;
  - ii. processing of electrical image signals from the EIS or provided to the ESLM for the generation of respective camera or projector control signals,
    - for controlling the EIS or its read-out for e.g. exposure, scene selection for auto focussing, or electronic image enhancement or processing of the image signals captured by the EIS, e.g. white balance, electronic motion blur correction, noise suppression [H04N 5/00](#);
    - for controlling the ESLM, e.g. control of the light source based on electronic image signal, light conditioning specially adapted for the ESLM, or
    - for controlling other camera functions, e.g. exposure, shaking by influencing optical parts of the camera (generation of control signals for focussing for optical elements [G02B 7/28](#); using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. [G03B](#), [G03F](#), [H04N](#));
- electronic image data storage (data storage in general [G11B](#), [G11C](#));
- in-camera image processing e.g. correction of lens distortion, defect pixel correction, noise suppression, removal of motion blur, improving of the dynamic range of the image, in-projector image processing, electronic image data manipulation, e.g. during display or projection (image processing per se [G06T](#));
- electronic viewfinders e.g. control of image pickup devices based on information indicated by the electronic viewfinder displaying an image signal generated by the EIS ;
- electrical or mechanical aspects of camera modules using electronic image sensors, as well as related constructional details as in webcams or mobile phones (see [H04M 1/0264](#) for mounting structure in mobile phones);
- details of projectors peculiar to the use of an ESLM, e.g. dichroic or polarizing arrangements specially adapted for the ESLM (dichroic or polarizing arrangements in general [G02B](#), [G03B](#));
- remote control of cameras or projectors peculiar to the EIS or the ESLM, e.g. affecting their operation, or based on a generated image signal;
- adaptations peculiar to the use of a EIS or ESLM and/or the display, the transmission, recording or other use of electrical image data and related circuitry, e.g. mounting of EIS or ESLM, integrated cleaning system for the EIS, dust mapping, cooling of the EIS, controlling the operation of the EIS by external input signals;
- systems or apparatus wherein the inventive contribution lies in the interaction between features covered in Notes 1 above, concerning cameras and projectors, when interacting with those covered in Note 1 of [G03B](#), e.g. switch-over between electronic motion-blur correction of electronic viewfinder during focussing and optical motion-blur correction of the lens during exposure, electronic motion blur correction of the electronic image sensor based on output signals of additional sensor, or interaction between mechanical shutter and electronic control of the charge accumulation period of the EIS;]
- (in group [H04N 1/00](#) ) systems for the transmission or the reproduction of arbitrarily composed pictures or patterns in which the local light variations composing a picture are not subject to variation with time, e.g. documents (both written and printed), maps, charts, photographs (other than cinematograph films);

- circuits specially designed for dealing with pictorial communication signals, e.g. television signals, as distinct from merely signals of a particular frequency range.
2. This subclass does not cover :
- circuits or other parts of systems which form the subject of other subclasses, which are covered by the corresponding subclasses, e.g. [H03C](#), [H03F](#), [H03J](#), [H04B](#), [H04H](#);
  - systems in which legible alphanumeric or like character forms are analysed according to step (a) of Note (1) to derive an electric signal from which the character is recognised by comparison with stored information, which are covered by subclass [G06K](#);
  - systems for the direct photographic copying of an original picture in which an electric signal representative of the picture is derived according to the said step (a) of and employed to modify the operation of the system, e.g. to control exposure, which are covered by class [G03](#);
  - systems for the reproduction according to step (b) of Note (1) of pictures comprising alphanumeric or like character forms but involving the production of the equivalent of a signal which would be derived according to the abovementioned step (a), e.g. by cams, punched card or tape, coded control signal, or other means, which are covered by the subclass for the application, e.g. [G01D](#), [G06T](#), [H04L](#);
  - systems for the reproduction to the above-mentioned step (b) of pictures comprising alphanumeric or like character forms and involving the generation according to the abovementioned step (a) of picture-representative electric signals from a pre-arranged assembly of such characters, or records thereof, forming an integral part of the systems, which are covered by the subclass for the application, e.g. [B41B](#), [G06K](#), subject to those applications which are covered by this subclass;
  - printing, duplication or marking methods, or materials or processes therefor, which are covered by the relevant subclasses, e.g. [B41C](#), [B41M](#), [G03C](#), [G03F](#), [G03G](#);
  - apparatus or methods for taking photographs using light sensitive film for image capture, apparatus/methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, and their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;
  - aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus methods for taking photographs using light sensitive film, i.e. insofar as not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, and their related controls insofar as they are not peculiar to the presence or use of the EIS, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake);
  - aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus/ methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, and their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystone correction;
  - (opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;
  - optical viewfinders;
  - remote control of cameras and projectors insofar not peculiar to the EIS or ESLM, e.g. not affecting their operation, or being based on a generated image signal;

- optical aspects of camera modules using electronic image sensors and related constructional details (optical elements or arrangements associated with solid state imager structures [H01L 27/14625](#));
  - constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM;]
3. In this subclass, the following expression is used with the meaning indicated: "television systems" means those systems for the {electronic generation}, transmission and reproduction of arbitrarily composed pictures in which the local light variations composing a picture may change with time, e.g. natural "live" scenes, {electronic} recordings of such scenes such as cinematograph films].
4. In this subclass, as in subclass [G03B](#), the following terms are used with the meaning indicated:
- "camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;
  - "projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an electric image signal into an optical signal using an electronic spatial light modulator;
  - "electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;
  - "additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;
  - "electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.]

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups :

- [H04N 5/31](#) covered by [G01S 7/52](#), [G01S 15/89](#)
- [H04N 5/761](#) covered by [H04N 5/782](#)
- [H04N 5/7613](#) covered by [H04N 5/782](#)
- [H04N 5/7617](#) covered by [H04N 5/782](#)
- [H04N 5/922](#) covered by [H04N 5/92](#)
- [H04N 5/924](#) covered by [H04N 5/92](#)
- [H04N 9/815](#) covered by [H04N 9/81](#)
- [H04N 11/24](#) covered by [H04N 11/002](#)
- [H04N 15/00](#) covered by [H04N 13/00](#)

**H04N 1/00**

**Scanning, transmission or reproduction of documents or the like, e.g. facsimile transmission; Details thereof {(recording arrangements for measuring instruments [G01D](#); sensing record carriers [G06K 7/00](#); character or pattern recognition [G06K 9/00](#); mosaic printer telegraph systems [H04L 21/00](#))}**

- U H04N 1/00002
  - {Diagnosis, testing or measuring; Detecting, analysing or monitoring not otherwise provided for (error detection, error correction or monitoring in digital computers or digital computer components [G06F 11/00](#))}
- U H04N 1/00071
  - • {characterised by the action taken}
- H04N 1/00082
  - • • {Adjusting or controlling (interrupting an operation [H04N 1/00915](#); inhibiting an operation [H04N 1/00925](#))}

- U H04N 1/00127
  - {Connection or combination of a still picture apparatus with another apparatus, e.g. for storage, processing or transmission of still picture signals or of information associated with a still picture}
- H04N 1/00129
  - {with a display device, e.g. CRT or LCD monitor (with a television apparatus [H04N 1/00283](#); arrangements for control of display devices [G09G](#))}
- U H04N 1/00132
  - {in a digital photofinishing system, i.e. a system where digital photographic images undergo typical photofinishing processing, e.g. printing ordering}
- U H04N 1/00169
  - • {Digital image input}
- H04N 1/00175
  - • • {from a still image storage medium ([H04N 1/00172](#); [H04N 1/0018](#) take precedence)}
- U H04N 1/00185
  - • {Image output (for details of particular output arrangements see the relevant sub-class, e.g. [B41J](#), [G03B](#), [G09G](#), [G11B](#))}
- H04N 1/00188
  - • • {Printing, e.g. prints or reprints ([H04N 1/0019](#); [H04N 1/00196](#) take precedence)}
- U H04N 1/00204
  - {with a digital computer or a digital computer system, e.g. an internet server (programmed control between transmitter and receiver or between image input and image output device [H04N 1/32561](#))}
- U H04N 1/00209
  - • {Transmitting or receiving image data, e.g. facsimile data, via a computer, e.g. using e-mail, a computer network, the internet, I-fax}
- U H04N 1/00214
  - • • {details of transmission}
- H04N 1/00217
  - • • • {only involving computer data transmission protocols, e.g. SMTP, WAP or HTTP (communication protocol aspects and techniques in packet data networks [H04L 69/00](#); network-specific arrangements or communication protocols supporting networked applications [H04L 67/00](#))}
- U H04N 1/00222
  - • • {details of image data generation or reproduction, e.g. scan-to-email or network printing}
- H04N 1/00233
  - • • • {details of image data reproduction, e.g. network printing or remote image display (using an image reproducing device as a local output from a computer [H04N 1/00238](#); digital output from computer to printer unit [G06F 3/12](#))}
- H04N 1/00281
  - {with a telecommunication apparatus, e.g. a switched network of teleprinters for the distribution of text-based information, a selective call terminal (details of transmission [H04N 1/00095](#); establishing a communication with one of a facsimile machine or another apparatus sharing a single line [H04N 1/32704](#); interfacing cordless telephone terminals with an accessory to increase the functionality of user interface [H04M 1/72527](#))}
- H04N 1/0031
  - • {with a selective call apparatus, e.g. a paging device (selective call receivers [H04W 88/022](#); selective call encoders [H04W 88/185](#))}
- H04N 1/00312
  - • {with a digital transmission apparatus, e.g. a switched network of teleprinters for the distribution of text-based information, SMS or ISDN device (transmitting or receiving via a computer e.g. using e-mail, a computer network or the internet [H04N 1/00214](#); transmission of digital information [H04L](#))}
- H04N 1/00315
  - • {with a radio transmission apparatus (with a cordless telephone [H04N 1/00305](#); systems or arrangements for the transmission of a picture signal specially adapted for transmission via radio [H04N 1/00103](#); [H04N 1/00307](#) takes precedence; radio transmission systems [H04B 7/00](#); wireless communication networks [H04W](#))}
- U H04N 1/0035
  - {User-machine interface; Control console (input or output arrangements for computers [G06F 3/00](#))}
- U H04N 1/00352
  - {Input means ([H04N 1/00411](#) takes precedence; input arrangements for computers [G06F 3/00](#))}

- H04N 1/00355
  - • • {Mark-sheet input (sensing record carriers [G06K 7/00](#); recognising printed or written characters [G06K 9/00](#))}
- H04N 1/00381
  - • • {Input by recognition or interpretation of visible user gestures (manual input means, e.g. digitisers, writing tablets [H04N 1/00392](#); recognition algorithms [G06K 9/00335](#); gesture input to computers [G06F 3/017](#))}
- H04N 1/00395
  - • • {Arrangements for reducing operator input (input arrangements for job or mode instructions or parameters [H04N 1/00962](#); intelligent menu interfaces [H04N 1/00437](#))}
- U H04N 1/00405
  - • {Output means (output arrangements for computers [G06F 3/00](#))}
- U H04N 1/00408
  - • • {Display of information to the user, e.g. menus}
- U H04N 1/00413
  - • • • {using menus, i.e. presenting the user with a plurality of selectable options ([H04N 1/00464](#) takes precedence)}
- U H04N 1/00416
  - • • • • {Multi-level menus}
- U H04N 1/00419
  - • • • • {Arrangements for navigating between pages or parts of the menu}
- H04N 1/00427
  - • • • • • {using a menu list ([H04N 1/00421](#), [H04N 1/00424](#), [H04N 1/00429](#) take precedence)}
- U H04N 1/00567
  - {Handling of original or reproduction media, e.g. cutting, separating, stacking}
- U H04N 1/0057
  - • {Conveying sheets before or after scanning (arrangements for conveying sheets as part of the scanning operation [H04N 1/04](#) and subgroups)}
- H04N 1/00588
  - • • {to the scanning position ([H04N 1/00572](#), [H04N 1/00594](#) take precedence)}
- U H04N 1/00599
  - • • {Using specific components (details of components related to handling thin or filamentary material [B65H](#))}
- H04N 1/00612
  - • • • {Path switches ([H04N 1/00575](#), [H04N 1/00623](#), [H04N 1/00633](#) take precedence)}
- H04N 1/00655
  - • {Apparatus in common for different handling operations ([H04N 1/00575](#), [H04N 1/00594](#), [H04N 1/00596](#), [H04N 1/00618](#) take precedence)}
- H04N 1/00681
  - {Detecting the presence, position or size of a sheet or correcting its position before scanning ([H04N 1/047](#) takes precedence; mode signalling [H04N 1/333](#); skew detection or correction in image signals [H04N 1/3878](#))}
- H04N 1/00795
  - {Reading arrangements (details of scanning heads [H04N 1/024](#); scanning arrangements therefor [H04N 1/04](#))}
- U H04N 1/00838
  - {Preventing unauthorised reproduction}
- U H04N 1/0084
  - • {Determining the necessity for prevention}
- H04N 1/00843
  - • • {based on recognising a copy prohibited original, e.g. a banknote (recognising characters or patterns [G06K 9/00](#); testing paper currency or similar valuable papers for genuineness [G07D 7/00](#))}
- U H04N 1/00885
  - {Power supply means, e.g. arrangements for the control of power supply to the apparatus or components thereof}
- H04N 1/00901
  - • {Using different supplies or connection to an external supply ([H04N 1/00893](#), [H04N 1/00896](#) take precedence)}
- U H04N 1/00912
  - {Arrangements for controlling a still picture apparatus or components thereof not otherwise provided for}
- H04N 1/00933
  - • {Timing control or synchronising ([H04N 1/00928](#), [H04N 1/00931](#), [H04N 1/00954](#) and [H04N 1/0096](#) take precedence)}
- H04N 1/00954
  - • {Scheduling operations or managing resources ([H04N 1/0096](#) takes precedence; program initiating or switching [G06F 9/48](#); allocation of computer resources [G06F 9/50](#))}

- H04N 1/00962
  - {Input arrangements for operating instructions or parameters, e.g. updating internal software (program loading in general [G06F 9/445](#); network-specific protocols involving the movement of software or configuration parameters [H04L 67/34](#))}
- H04N 1/00968
  - • {by scanning marks on a sheet (mark-sheet input means [H04N 1/00355](#); sensing record carriers [G06K 7/00](#))}
- H04N 1/04
  - Scanning arrangements, {i.e. arrangements for the displacement of active reading or reproducing elements relative to the original or reproducing medium, or vice versa} ([H04N 1/387](#) takes precedence; {-scanning by varying the direction of light in general [G02B 26/10](#))}
- H04N 1/0402
  - • {Scanning different formats; Scanning with different densities of dots per unit length, e.g. different numbers of dots per inch (dpi); Conversion of scanning standards ([H04N 1/00283](#) takes precedence; picture signal circuits for modification of image resolution [H04N 1/3935](#), [H04N 1/40068](#))}
- H04N 1/047
  - • Detection, control or error compensation of scanning velocity or position ({[H04N 1/0402](#) and } [H04N 1/17](#) take precedence)
- H04N 1/10
  - • using flat picture-bearing surfaces ({[H04N 1/113](#), [H04N 1/195](#) take precedence; arrangements for the main-scanning [H04N 1/12](#))}
- H04N 1/12
  - • using the sheet-feed movement {or the medium-advance or the drum-rotation movement} as the slow scanning component, {e.g. arrangements for the main-scanning} ({sheet-feed movement by translatory movement of a flat picture-bearing surface [H04N 1/1008](#); main-scanning using oscillating or rotating mirrors [H04N 1/113](#); } using multi-element arrays [H04N 1/19](#))}
- H04N 1/121
  - • • {Feeding arrangements (transporting sheets to or from the scanning position [H04N 1/0057](#); control or error compensation of sub-scanning velocity [H04N 1/0473](#))}
- U H04N 1/19
  - • using multi-element arrays
- U H04N 1/191
  - • • the array comprising a one-dimensional array, {or a combination of one-dimensional arrays, or a substantially one-dimensional array, e.g. an array of staggered elements}
- H04N 1/192
  - • • Simultaneously {or substantially simultaneously} scanning picture elements on one main scanning line {(details of the sub-scanning [H04N 1/10](#), [H04N 1/12](#))}
- H04N 1/21
  - Intermediate information storage ([H04N 1/387](#), [H04N 1/41](#) take precedence; {-for control between transmitter and receiver or between image input and image output device [H04N 1/32358](#)}; information storage in general [G11](#); {-indexing, editing [G11B 27/00](#))}
- H04N 1/23
  - Reproducing arrangements (details of scanning heads [H04N 1/024](#); scanning arrangements therefor [H04N 1/04](#); {perforating or marking objects by electrical discharge [B26F 1/28](#))}
- H04N 1/2307
  - • {Circuits or arrangements for the control thereof, e.g. using a programmed control device, according to a measured quantity ([H04N 1/27](#), [H04N 1/29](#) take precedence)}
- H04N 1/32
  - Circuits or arrangements for control or supervision between transmitter and receiver {or between image input and image output device ([H04N 1/38](#), [H04N 1/387](#) take precedence)}
- H04N 1/32005
  - • {Automation of particular receiver jobs, e.g. rejecting unwanted calls (requesting a communication from a transmitter [H04N 1/32771](#); with picture signal storage for forwarding messages [H04N 1/32358](#))}
- U H04N 1/32101
  - • {Display, printing, storage or transmission of additional information, e.g. ID code, date and time or title}
- U H04N 1/32144
  - • • {embedded in the image data, i.e. enclosed or integrated in the image, e.g. watermark, super-imposed logo or stamp}

- U H04N 1/32149 . . . . {Methods relating to embedding, encoding, decoding, detection or retrieval operations}
- U H04N 1/32203 . . . . . {Spatial or amplitude domain methods ([H04N 1/32309](#) takes precedence)}
- H04N 1/32208 . . . . . {involving changing the magnitude of selected pixels, e.g. overlay of information or super-imposition ([H04N 1/32219](#)-, [H04N 1/32224](#) take precedence)}
- U H04N 1/32609 . . {Fault detection or counter-measures, e.g. original mis-positioned, shortage of paper}
- H04N 1/32646 . . . {Counter-measures (inhibiting an operation [H04N 1/00925](#)-, interrupting an operation [H04N 1/00915](#))}
- U H04N 1/327 . . . Initiating, continuing or ending a single-mode communication; Handshaking therefor {([H04N 1/32614](#) takes precedence)}
- H04N 1/32702 . . . {using digital control signals ([H04N 1/32704](#)-, [H04N 1/32614](#)-, [H04N 1/32771](#) take precedence)}
- U H04N 1/32765 . . . {Initiating a communication}
- U H04N 1/32771 . . . . {in response to a request, e.g. for a particular document}
- H04N 1/32776 . . . . . {using an interactive, user-operated device, e.g. a computer terminal, mobile telephone ([H04N 1/32782](#)-, [H04N 1/32784](#) take precedence)}
- H04N 1/32789 . . . {Details of handshaking ([H04N 1/32793](#)-, [H04N 1/32795](#) and [H04N 1/32797](#) take precedence)}
- H04N 1/32797 . . . {Systems adapted to communicate over more than one channel, e.g. via ISDN (changing transmission mode according to type of channel [H04N 2201/33364](#)-, multichannel or multilink communication protocols [H04L 69/14](#))}
- H04N 1/34 . . . for coin-freed systems; {pay systems (telephonic metering [H04M 15/00](#)-, coin-freed or like apparatus per se [G07F](#))}
- H04N 1/387 . . Composing, repositioning or otherwise {geometrically} modifying originals (photoelectronic composing of characters [B41B 19/00](#)-, {-image data processing or generation, in general [G06T](#))}
- U H04N 1/40 . . . Picture signal circuits ([H04N 1/387](#) takes precedence)
- H04N 1/40025 . . . {Circuits exciting or modulating particular heads for reproducing continuous tone value scales ([H04N 1/401](#)-, [H04N 1/407](#) take precedence)}
- H04N 1/40056 . . . {Circuits for driving or energising particular reading heads or original illumination means ([H04N 1/401](#)-, [H04N 1/407](#) take precedence)}
- H04N 1/41 . . . Bandwidth or redundancy reduction (by scanning [H04N 1/17](#)-, {[H04N 19/00](#) takes precedence; for data acquisition [G06F 17/40](#)-, coding for image data processing in general [G06T 9/00](#)-, data compression in general [H03M 7/30](#))}
- U H04N 1/46 . . . Colour picture communication systems {(colorimetry [G01J 3/46](#))}
- U H04N 1/56 . . . Processing of colour picture signals ([H04N 1/52](#) takes precedence)
- U H04N 1/60 . . . . Colour correction or control {([H04N 1/54](#) takes precedence)}
- U H04N 1/6083 . . . . . {controlled by factors external to the apparatus}
- H04N 1/6091 . . . . . {by environmental factors, e.g. temperature or humidity ([H04N 1/6086](#)-, [H04N 1/6088](#) take precedence)}
- U H04N 1/64 . . . Systems for the transmission or the storage of the colour picture signal; Details therefor, e.g. coding or decoding means therefor {([H04N 19/00](#) takes precedence)}
- H04N 1/646 . . . {Transmitting or storing colour television type signals, e.g. PAL, Lab; Their conversion into additive or subtractive colour signals or vice versa therefor ([H04N 1/642](#)-, [H04N 1/644](#) take precedence)}

- U H04N 3/00 Scanning details of television systems**
- U H04N 3/10 · by means not exclusively optical-mechanical ([H04N 3/36](#) takes precedence; electro-, magneto- or acousto-optical modulation or deflection of light beams [G02F 1/00](#))
- H04N 3/16 · · by deflecting electron beam in cathode-ray tube {also scanning corrections} (producing saw-tooth wave forms [H03K 4/00](#) {for scanning and focusing devices [H01J](#); cathode ray oscillographs [G01R 13/20](#)})
- H04N 5/00 Details of television systems (scanning details or combination thereof with generation of supply voltages [H04N 3/00](#); specially adapted for colour television [H04N 9/00](#); {servers specially adapted for the distribution of content [H04N 21/20](#); client devices specially adapted for the reception of or interaction with content [H04N 21/40](#)})**
- NOTE**
- Groups [H04N 5/341](#) to [H04N 5/378](#) are based on IPC2012.01
- H04N 5/04 · Synchronising (for television systems using pulse code modulation [H04N 7/24](#); in general [H03L 7/00](#))
- U H04N 5/14 · Picture signal circuitry for video frequency region ([H04N 5/222](#) takes precedence)
- H04N 5/144 · · {Movement detection (for video coding [H04N 19/503](#); analysis of motion in general [G06T 7/20](#)})
- U H04N 5/21 · · Circuitry for suppressing or minimising disturbance, e.g. moirè, halo, {even if the automatic gain control is involved}{suppression of noise in television recording [H04N 5/911](#)}
- U H04N 5/217 · · · in picture signal generation {in cameras comprising an electronic image sensor, e.g. digital cameras, TV cameras, video cameras, camcorders, webcams, to be embedded in other devices, e.g. in mobile phones, computers or vehicles (noise reduction or noise suppression involving solid-state image sensors [H04N 5/357](#)})
- U H04N 5/2173 · · · · {in solid-state picture signal generation}
- H04N 5/2175 · · · · {Suppression of excedentary charges, e.g. blooming, smearing (within the image sensor [H04N 3/1556](#), [H04N 3/1568](#)})
- U H04N 5/222 · Studio circuitry; Studio devices; Studio equipment; {Cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in other devices e.g. mobile phones, computers or vehicles}
- U H04N 5/2224 · · {related to virtual studio applications}
- H04N 5/2226 · · · {Determination of depth image, e.g. for foreground/background separation (determining depth by image analysis in general [G06T 7/0051](#); segmentation by image analysis in general [G06T 7/0079](#)})
- H04N 5/225 · · Television cameras; {Cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, video cameras, camcorders, webcams, camera modules for embedding in other devices e.g. mobile phones, computers or vehicles (optical systems [G02B](#); associated working of recording or reproducing apparatus with TV camera or receiver in which the television signal is not significantly involved [G11B 31/006](#); tubes [H01J](#)})
- H04N 5/2251 · · · {Constructional details (arrangement comprising a plurality of cameras [H04N 5/247](#); stereoscopic cameras having a single image sensor [H04N 13/0207](#)})
- H04N 5/2257 · · · {Mechanical and electrical details of cameras or camera modules for embedding in other devices (mounting structure in mobile phone see [H04M 1/0264](#); optical details [G03B](#)})

- H04N 5/2258
    - • • {Cameras using two or more image sensors, e.g. a CMOS sensor for video and a CCD for still image (cameras having one image sensor for each colour [H04N 9/045](#)-, [H04N 9/09](#))}
  - H04N 5/2259
    - • • {Means for changing the camera field of view without moving the camera body, e.g. rotating or panning optics or image-sensors (picture signal generation using shifting image-sensors [H04N 5/349](#) ; varying magnification e.g. angle of view for cameras using only optical means [G03B](#))}
  - H04N 5/232
    - • • Devices for controlling television cameras, e.g. remote control; {Control of cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in e.g. mobile phones, computers or vehicles} ([H04N 5/235](#) takes precedence; {-varying magnification for cameras, e.g. angle of view, by optical means only [G02B 7/00](#)}, [G03B](#))
  - U H04N 5/23248
    - • • • {for stable pick-up of the scene in spite of camera body vibration (image-sensor selective scanning per se [H04N 3/1562](#))}
  - U H04N 5/23264
    - • • • • {Vibration or motion blur correction}
  - H04N 5/2327
    - • • • • {performed by controlling the image sensor readout, e.g. by controlling the integration time (controlling the image sensor readout in general [H04N 5/345](#)-, [H04N 5/353](#))}
  - H04N 5/2328
    - • • • • {performed by mechanical compensation (stabilization for imaging systems using optical elements in general s [G02B 27/646](#) ; cameras when not peculiar to the use or presence of the EIS [G03B 2205/0007](#))}
  - H04N 5/23296
    - • • • {Control of means for changing angle of the field of view, e.g. optical zoom objective, electronic zooming or combined use of optical and electronic zooming (optical details of zoom lenses [G02B 15/14](#) ; optical zooming only for cameras [G03B 5/00](#))}
  - U H04N 5/235
    - • • Circuitry {or methods} for compensating for variation in the brightness of the object {based on an electric image signals provided by an electronic image sensor (exposure control for film cameras or cameras using an additional sensor [G03B 7/00](#))}
  - H04N 5/2351
    - • • • {Circuitry for evaluating the brightness variations of the object (within the image sensor [H04N 5/351](#) ; photometry in general [G01J 1/00](#))}
  - H04N 5/247
    - • • Arrangements of television cameras {(constructional details of cameras [H04N 5/2251](#) ; stereoscopic picture signal generators [H04N 13/0239](#) ; [H04N 13/0242](#))}
  - H04N 5/253
    - • Picture signal generating by scanning motion picture films or slide opaques, e.g. for telecine (scanning details therefor [H04N 3/36](#) ; {-standard conversion therefor [H04N 7/0112](#))}
  - H04N 5/30
    - Transforming light or analogous information into electric information ([H04N 5/222](#) takes precedence; scanning details [H04N 3/00](#) ; light transforming elements [H01J](#)-, [H01L](#))
  - H04N 5/335
    - • using solid-state image sensors [SSIS] ([H04N 5/32](#)-, [H04N 5/33](#) take precedence)
- NOTE
- In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place  
Groups [H04N 5/341](#) to [H04N 5/378](#) are based on IPC2012.01
- U H04N 5/38
    - Transmitter circuitry ([H04N 5/14](#) takes precedence)
  - H04N 5/40
    - • Modulation circuits {(in general [H03C 1/00](#)-, [H03C 3/00](#)-, [H03C 5/00](#))}
  - U H04N 5/44
    - Receiver circuitry ([H04N 5/14](#) takes precedence)

- H04N 5/4403
  - • {User interfaces for controlling a television receiver or set top box [STB] through a remote control device, e.g. graphical user interfaces [GUI]; Remote control devices therefor (user interfaces for controlling a tuning device of a television receiver through a remote control [H03J 9/00](#); constructive details of casings for the remote control device [H01H 9/0235](#); remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver [H04B 1/205](#); remote control devices in general [G08C](#))}
- U H04N 5/445
  - • for displaying additional information ([H04N 5/50](#) takes precedence)
- H04N 5/44504
  - • • {Circuit details of the additional information generator, e.g. details of the character or graphics signal generator, overlay mixing circuits (graphics pattern generators for visual indicators [G09G 5/36](#); generation of individual character patterns for visual indicators [G09G 5/24](#))}
- H04N 5/44543
  - • • {Menu-type displays ([H04N 5/44582](#), [H04N 5/44591](#) take precedence)}
- H04N 5/63
  - Generation or supply of power specially adapted for television receivers (generation of supply voltages in combination with electron beam deflecting [H04N 3/18](#); regulating of voltage or current in general [G05F](#); transformers [H01F](#); supplying or distributing electric power, in general [H02J](#); static converters [H02M](#))
- H04N 5/64
  - Constructional details of receivers, e.g. cabinets, dust covers (furniture aspects [A47B](#), e.g. [A47B 81/06](#))
- H04N 5/66
  - Transforming electric information into light information (scanning details [H04N 3/00](#); {-electro- or magneto optic devices [G02F 1/00](#); CRT`s [H01J](#))}
- H04N 5/68
  - • Circuit details for cathode-ray display tubes {(deviation circuits [H04N 3/16](#), [H03K 4/00](#))}
- H04N 5/76
  - Television signal recording (diagnosis, testing or measuring for television signal recorders [H04N 17/06](#); recording in connection with measuring [G01D](#); information storage {in which the television signal is not involved, driving, starting, stopping, head switching, editing, indexing} in general [G11](#), e.g. [G11B](#))
- H04N 5/7605
  - • {on discs or drums ([H04N 5/781](#), [H04N 5/805](#), [H04N 5/83](#), [H04N 5/85](#) take precedence)}
- H04N 5/78
  - • using magnetic recording ([H04N 5/91](#) takes precedence; {-mechanical details in so far as non typical for television circuitry [G11B 5/00](#))}
- H04N 5/7805
  - • • {Recording or playback not using inductive heads, e.g. magneto-optical, thermomagnetic, magnetostrictive, galvanomagnetic (electrostatic recording [H04N 5/80](#), photographic recording [H04N 5/84](#))}
- H04N 5/84
  - • using optical recording ([H04N 5/80](#), [H04N 5/89](#), [H04N 5/91](#) take precedence)
- H04N 5/87
  - • • Producing a motion picture film from a television signal (scanning of motion picture films for television signal generation [H04N 3/36](#); television signal generation by scanning a motion picture film [H04N 5/253H04N 9/11](#); {-standard conversion therefor [H04N 7/0112](#))}
- H04N 5/89
  - • using holographic recording ([H04N 5/91](#) takes precedence)
- WARNING
- Not complete, see also [H04N 5/76](#), [H04N 5/7605](#), [H04N 5/84](#), [H04N 5/85](#)
- U H04N 5/91
  - • Television signal processing therefor (of colour signals [H04N 9/79](#))
- H04N 5/917
  - • • for bandwidth reduction (bandwidth reduction [H04N 7/12](#); using pulse code modulation [H04N 7/24](#))
- H04N 5/92
  - • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback {(transmitter circuitry [H04N 5/38](#); receiver circuitry [H04N 5/44](#))}

- U H04N 5/9201      . . . . {involving the multiplexing of an additional signal and the video signal}
- H04N 5/9202      . . . . {the additional signal being a sound signal ([H04N 5/9155](#)-, [H04N 5/92](#) take precedence)}
  
- U H04N 7/00      **Television systems (details [H04N 3/00](#), [H04N 5/00](#); methods or arrangements, for coding, decoding, compressing or decompressing digital video signals [H04N 19/00](#); selective content distribution [H04N 21/00](#))****
- H04N 7/002      . {Special television systems not provided for by [H04N 7/007](#) to [H04N 7/18](#) (still pictures via a television channel [H04N 1/00098](#))}
- H04N 7/01      . Conversion of standards {involving analogue television standards or digital television standards processed at pixel level (video transcoding [H04N 19/40](#)-; image scaling in general [G06T 3/40](#)-; adapting incoming signals to the display format of the display terminal [G09G 5/005](#))}
- H04N 7/0135      . . {involving interpolation processes (interpolation-based image scaling [G06T 3/4007](#)-; interpolation for video coding [H04N 19/587](#),[H04N 19/59](#))}
- H04N 7/0142      . . . {the interpolation being edge adaptive (edge detection in television signals [H04N 5/142](#)-; edge-driven scaling [G06T 3/403](#))}
- H04N 7/04      . Systems for the transmission of one television signal, i.e. both picture and sound, by a single carrier {([H04N 7/084](#)-, [H04N 7/087](#) take precedence)}
- H04N 7/06      . Systems for the simultaneous transmission of one television signal, i.e. both picture and sound, by more than one carrier {([H04N 7/084](#)-, [H04N 7/087](#) take precedence)}
- U H04N 7/08      . Systems for the simultaneous or sequential transmission of more than one television signal, e.g. additional information signals, the signals occupying wholly or partially the same frequency band, {e.g. by time division ([H04N 7/007](#) takes precedence)}
- H04N 7/0806      . . {the signals being two or more video signals ([H04N 7/0803](#)-, [H04N 7/081](#) take precedence)}
- H04N 7/10      . Adaptations for transmission by electric cable ([H04N 7/12](#) takes precedence; {-transmission by lines [H04B 3/00](#)-; wired broadcast systems [H04H 20/76](#)-; CATV [Community Antenna Television] systems [H04H 20/78](#))}
- H04N 7/12      . Systems in which the television signal is transmitted via one channel or a plurality of parallel channels, the bandwidth of each channel being less than the bandwidth of the television signal ([H04N 7/24](#) takes precedence; {-by special scanning [H04N 3/00](#)} ; high definition television systems [H04N 7/015](#))
- H04N 7/14      . Systems for two-way working {([H04N 7/12](#)-, } [H04N 7/173](#) take precedence)
- H04N 7/15      . . Conference systems ({video terminal details [H04N 7/141](#)} ; telephonic conference arrangements [H04M 3/56](#)-; {-computer conferencing [H04L 12/1813](#))}
- H04N 7/18      . Closed circuit television systems, i.e. systems in which the signal is not broadcast {(television transmission of measured quantities [G01D 5/39](#)-; intruder alarm or detection by television surveillance [G08B 13/196](#))}
- U H04N 7/24      . Systems for the transmission of television signals using pulse code modulation ([H04N 21/00](#) takes precedence)
- H04N 7/52      . . Systems for transmission of a pulse code modulated video signal with one or more other pulse code modulated signals, e.g. an audio signal or a synchronizing signal (assembling of a multiplex stream by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetised elementary stream at server side [H04N 21/236](#)-; disassembling of a multiplex stream, remultiplexing of multiplex streams, extraction or processing of Service Information, disassembling of packetised elementary stream at client side [H04N 21/434](#))

- H04N 7/54
- • • the signals being synchronous {([H04N 21/23602](#)-, [H04N 21/23614](#)-, [H04N 21/2365](#)-, [H04N 21/2368](#)-, [H04N 21/4341](#)-, [H04N 21/4342](#)-, [H04N 21/4347](#)-, [H04N 21/4348](#) take precedence)}
- U H04N 9/00**      **Details of colour television systems**
- U H04N 9/12
- Picture reproducers (devices or arrangements for the electro-, magneto- or acousto-optical modulation or deflection of light beams [G02F](#))
- U H04N 9/16
- • using cathode ray tubes ([H04N 9/11](#) takes precedence; cathode-ray tubes [H01J 31/00](#))
- U H04N 9/28
- • • Arrangements for convergence or focusing
- H04N 9/285
- • • • using quadrupole lenses (quadrupole lenses per se [G21K 1/08](#)-, [H01J 3/14](#)-, [H01J 29/58](#)-, [H01J 37/10](#))
- U H04N 9/31
- • Projection devices for colour picture display {e.g. using electronic spatial light modulators [ESLM] (projection devices using film stock, photographic film or slides, [G03B 21/00](#) and subgroups)}
- H04N 9/3102
- • • {using two-dimensional electronic spatial light modulators (micromechanical modulators as such [G02B 26/0833](#)-, liquid crystal modulators as such [G02F 1/13](#))}
- H04N 9/3105
- • • • {for displaying all colours simultaneously, e.g. by using two or more electronic spatial light modulators (simultaneous projection in colour photography [G03B 33/10](#)-, beam splitting or combining systems per se [G02B 27/10](#))}
- H04N 9/312
- • • • {Driving therefor (driving of electronic spatial light modulators in displays other than projection devices [G09G 3/34](#)-, [G09G 3/36](#)-, control of liquid crystal elements [G02F 1/133](#)-, control of micromechanical modulators [G02B 26/08](#))}
- H04N 9/3129
- • • {scanning a light beam on the display screen (scanning a light beam on a screen in displays other than projection devices [G09G 3/02](#)-, scanning systems in general [G02B 26/10](#)-, projectors using laser light sources in general [H04N 9/3161](#))}
- U H04N 9/3141
- • • {Constructional details thereof (details not peculiar to the presence of an electronic spatial light modulator [G03B 21/14](#))}
- H04N 9/3144
- • • • {Cooling systems (cooling of liquid crystal cells in general [G02F 1/133382](#)-, cooling of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/16](#))}
- H04N 9/3147
- • • • {Multi-projection systems (displays in general [H04N 9/12](#)-, video walls [G06F 3/1446](#)-, [G09G 2300/026](#))}
- U H04N 9/315
- • • • {Modulator illumination systems (general applications of lighting devices [F21V](#); general optical systems [G02B](#); lamp houses for projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/20](#))}
- H04N 9/3155
- • • • • {for controlling the light source (light source control per se [H05B 37/00](#)-, [H05B 41/00](#)-, control of an illumination source for displays in general [G09G 3/3406](#))}
- H04N 9/317
- • • • {Convergence or focusing systems (electronic adjustment of convergence [H04N 9/3185](#)-, convergence or focusing arrangements for cathode ray tubes [H04N 9/28](#)-, means for automatic focusing of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/53](#))}
- U H04N 9/3179
- • • {Video signal processing therefor}
- H04N 9/3182
- • • • {Colour adjustment, e.g. white balance, shading or gamut (white balance per se [H04N 9/73](#)-, control of amplitude of colour signals [H04N 9/68](#)-, colour control circuits for displays in general [G09G 5/02](#)-, [G09G 3/2003](#)-, [G09G 3/3607](#))}

- H04N 9/3185
  - • • {Geometric adjustment, e.g. keystone or convergence (optical or mechanical adjustment of convergence [H04N 9/317](#); using scanning means [H04N 3/22](#); optical or mechanical adjustments of projectors not peculiar to the presence of an electronic spatial light modulator [G03B 21/14](#)}
- H04N 9/3188
  - • • {Scale or resolution adjustment (scaling in general [G06T 3/40](#); resolution modifying circuits for displays in general [G09G 5/391](#))}
- U H04N 9/64
  - Circuits for processing colour signals ([H04N 9/77](#) takes precedence)
- H04N 9/68
  - • for controlling the amplitude of colour signals, e.g. automatic chroma control circuits ([H04N 9/71](#), [H04N 9/73](#) take precedence)
- U H04N 9/79
  - Processing of colour television signals in connection with recording
- H04N 9/797
  - • for recording the signal in a plurality of channels, the bandwidth of each channel being less than the bandwidth of the signal ([H04N 9/804](#), [H04N 9/81](#), [H04N 9/82](#) take precedence)
- H04N 9/7973
  - • • {by dividing the luminance or colour component signal samples or frequency bands among a plurality of recording channels ([H04N 9/804](#), [H04N 9/825](#) take precedence)}
- U H04N 9/80
  - • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback
- H04N 9/802
  - • • involving processing of the sound signal ([H04N 9/806](#), [H04N 9/835](#) take precedence)
- U H04N 11/00**      **Colour television systems (details [H04N 9/00](#))**
- H04N 11/02
  - with bandwidth reduction ([H04N 11/002](#), [H04N 11/04](#) takes precedence)
- H04N 11/04
  - using pulse code modulation ([H04N 11/002](#) takes precedence; pulse code modulation in general [H03K](#), [H03M](#))}
- U H04N 13/00**      **Stereoscopic {or multiview} television systems; Details thereof**
- NOTE  
This group covers systems where a three-dimensional effect or different views according to the viewpoint location are provided to one or more viewers by means of electronic signals representing a plurality of images or signals including depth information, e.g. taken from different viewpoint locations representing the interocular distance (optical systems for producing stereoscopic or other three dimensional effects [G02B 27/22](#) )]
- H04N 13/0003
  - {Stereoscopic image signal coding, multiplexing, processing, recording or transmission (television signal bandwidth reduction [H04N 19/00](#); image coding for general purpose image data processing [G06T 9/00](#); transformation of the video signal for recording, including multiplexing of another television signal [H04N 5/9205](#); for colour signals, [H04N 9/8227](#); selective content distribution, e.g. interactive television, VOD [H04N 21/00](#); assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#); disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#))}
- H04N 13/0007
  - • {Processing stereoscopic image signals ([H04N 19/597](#), [H04N 13/004](#) take precedence; image processing as such [G06T](#))}
- U H04N 13/0011
  - • • {Transformation of stereoscopic image signals corresponding to virtual viewpoints, e.g. spatial image interpolation}

- H04N 13/0014
  - • • {the virtual viewpoint location being selected by the observer, e.g. observer tracking with look around effect (~~H04N 13/0278~~ ~~akes precedence~~ *H04N 13/0278 takes precedence*)}
- H04N 13/0029
  - • • {Format conversion of stereoscopic images, e.g. frame-rate or size}; (standards conversion per se [H04N 7/01](#); reformatting operations at client side of video signals for household redistribution, storage or real-time display [H04N 21/4402](#); reformatting operations at server side of video signals for distribution or compliance with end-user requests or end-user device requirements [H04N 21/2343](#));
- H04N 13/0048
  - • {Encoding, multiplexing or demultiplexing different image signal components in stereoscopic image signals}; ([H04N 19/597](#) takes precedence; assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#); disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#); demultiplexing of several video streams [H04N 21/4347](#));
- H04N 13/0051
  - • {Synchronisation or controlling aspects (synchronization processes at server side, e.g. processing of program clock references [H04N 21/242](#); content synchronization processes at client side [H04N 21/4302](#); control signals issued by server directed to the network components or client [H04N 21/633](#); control signals issued by the network directed to the server or the client [H04N 21/64746](#); control signals issued by the client directed to the server or network components [H04N 21/637](#); transmission of management data between client and server [H04N 21/65](#))}
- H04N 13/0059
  - • {Transmission of stereoscopic image signals}; (selective content distribution, e.g. interactive television, VOD [H04N 21/00](#); assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetized elementary stream [H04N 21/236](#); disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream, remultiplexing of multiplex streams, extraction or processing of service information at client side, disassembling of packetized elementary stream [H04N 21/434](#); interfacing the downstream path of the transmission network for selective content distribution at server side [H04N 21/238](#); interfacing the downstream path of the transmission network originating from a server for selective content distribution at client side [H04N 21/438](#));
- H04N 13/0062
  - • {the image signal comprising non-image signal components, e.g. metadata, headers, format information or subtitles}; (multiplexing of additional data and video streams [H04N 21/23614](#); demultiplexing of additional data and video streams [H04N 21/4348](#));
- H04N 13/007
  - • • {subtitles or other OSD information, e.g. menu (data services within selective content distribution, e.g. news ticker [H04N 21/488](#); data services for displaying subtitles [H04N 21/4884](#))}
- U H04N 13/02
  - Picture signal generators
- H04N 13/0203
  - • {using a stereoscopic image camera (endoscopes with stereoscopic vision [A61B 1/00193](#); stereoscopic photography [G03B 35/00](#))}

- H04N 13/0292
- {generating mixed monoscopic/stereoscopic images, e.g. a stereoscopic image overlay window in a monoscopic image background}
- NOTE  
this group provisionally includes documents classified before 6/10/2011 which, in the present scheme, should be classified in [H04N 13/0285](#) and [H04N 13/0289](#).
- H04N 13/0296
- {Synchronisation or controlling aspects (synchronization processes at server side, e.g. processing of program clock references [H04N 21/242](#); content synchronization processes at client side [H04N 21/4302](#))}
- NOTE  
control aspects for eyestrain reduction are classified here in combination with [H04N 2213/002](#)
- U H04N 13/04
- Picture reproducers {(optical systems for producing stereoscopic or other three dimensional effects [G02B 27/22](#))}
- H04N 13/0422
- {Colour aspects} (processing of colour signals per se [H04N 9/64](#))
- H04N 13/0456
- {generating mixed monoscopic or stereoscopic images, e.g. a stereoscopic image overlay window on a monoscopic image background}
- NOTE  
this group provisionally includes documents classified before 6/10/2011 which, in the present scheme, should be classified in [H04N 13/0452](#) and [H04N 13/0454](#).
- H04N 13/0459
- {using an image projection screen ([H04N 13/0493](#), [H04N 13/0495](#) take precedence; projection devices per se [H04N 9/31](#))}
- H04N 13/0497
- {Synchronisation or controlling aspects (synchronization processes at server side, e.g. processing of program clock references [H04N 21/242](#); content synchronization processes at client side [H04N 21/4302](#))}
- NOTE  
control aspects for eyestrain reduction are classified here in combination with [H04N 2213/002](#)
- H04N 21/00**
- Selective content distribution, e.g. interactive television, VOD [Video On Demand] (broadcast communication [H04H](#); arrangements, apparatus, circuits or systems for communication control or processing being characterised by a protocol [H04L 29/06](#); {broadcast or conference over packet-switching networks [H04L 12/18](#), } real-time bi-directional transmission of motion video data [H04N 7/14](#))**
- NOTES
1. This group covers :
- interactive video distribution processes, systems, or elements thereof, which are characterised by point-to-multipoint system configurations, and which are mainly used for motion video data unidirectional distribution or delivery resulting from interactions between systems operators, e.g. access or service providers, or users e.g. subscribers, and system elements.
  - such systems include dedicated communication systems, such as television distribution systems, which primarily distribute or deliver motion video data in the manner indicated, which may, in addition, provide a framework for further, diverse data communications or services in either unidirectional or bi-directional form. However, video will occupy most of the downlink bandwidth in the distribution process.
  - typically, system operators interface with transmitter-side elements or users' interface with receiver-side elements in order to facilitate, through interaction with such elements, the dynamic control of data processing

or data flow at various points in the system. This interaction is typically occasional or intermittent in nature.

- processes, systems or elements thereof specially adapted to the generation, distribution and processing of data, which is either associated with video content, e.g. metadata, ratings, or related to the user or his environment and which has been actively or passively gathered. This data is either used to facilitate interaction or to alter or target the content.

2. In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place

3. In this main group, the following terms and expressions are used with the meaning indicated:

additional data - designates still pictures, textual, graphical or executable data such as software. It is used to convey supplemental information and can be generated prior to or during the distribution process itself, e.g. metadata, keys.

content designates video or audio streams, which may be combined with additional data. Video data will always be present and occupy most of the downlink bandwidth in the distribution process

server - designates an apparatus designed for adapting the content received from the content provider to the distribution network. It also manages the distribution to client devices or intermediate components over a network. Further servers may also be present for gathering or generating additional data, e.g. rights management server

additional data server - designates a server, which sole purpose is the distribution or management of additional data. It is not in charge of the distribution of video or audio data

client - designates an apparatus such as a TV receiver, a set-top-box, a PC-TV, a mobile appliance (e.g. mobile phone or receiver in a vehicle), for receiving video, audio and possibly additional data from one or several servers or intermediate components via a network for further processing, storing or displaying. It can also transmit this data on a home-based local network to further devices, e.g. a home server transmitting video to PCs and set-top-boxes within a home.

local network - pertains to a restricted area, e.g. a home or a vehicle, and designates the link between a client and its peripheral devices

network - is to be distinguished from "local network": "network" designates the link between the server and the clients, or between the server and the intermediate components, or between the intermediate components and the clients, or between remotely located clients

distribution - encompasses broadcasting, multicasting and unicasting techniques for transmitting content from one or more sources to one or more receiving stations. The distribution follows a request by a receiving station to the source, e.g. VOD or from a customization of the content by the source, e.g. targeting advertisements to a demographic group in a unidirectional or bidirectional system. Additionally, distribution encompasses techniques where the client acts as a source and another client acts as a receiving station, e.g. a peer-to-peer system for sharing video among client devices

end-user - designates a physical person, e.g. a TV viewer, who consumes the content using the client device. He is the final recipient of the content distributed by the server

interaction - covers actions occurring between or among two or more objects that have an effect upon one another, wherein objects comprise users, system operators, system elements, or content. The user may interact with content locally at the client device, e.g. for requesting additional data stored within the client device. The user may interact with content remotely through a server e.g. for VOD playback control or for uploading video to a server. The client device may interact with the content e.g. selecting content based upon the user profile. The client device may

interact with a server using a return channel, e.g. for authenticating client or uploading client hardware capabilities. The server may interact with a client device, e.g. to force a client to tune to an advertisement channel  
upstream - designates the direction of data flow towards the source, e.g. a server receiving a request via a mobile phone network  
downstream - designates the direction of data flow towards a client, e.g. a client receiving data originating from a server  
elementary stream An elementary stream (ES) as defined by the MPEG system layer designates the output of an audio or video encoder

- U H04N 21/20 · {Servers specifically adapted for the distribution of content, e.g. VOD servers; Operations thereof}
- U H04N 21/21 · · {Server components or server architectures}
- U H04N 21/214 · · · {Specialised server platform, e.g. server located in an airplane, hotel, hospital (arrangements specially adapted for local area broadcast systems [H04H 20/61](#))}
- H04N 21/2143 · · · · {located in a single building, e.g. hotel, hospital or museum (arrangements specially adapted for plural spots in a confined site in broadcast systems [H04H 20/63](#); adaptations for transmission by electric cable for domestic distribution in television systems [H04N 7/106](#))}
- H04N 21/2146 · · · · {located in mass transportation means, e.g. aircraft, train or bus (flight-deck installations for entertainment or communications [B64D 11/0015](#); arrangements specially adapted for transportation systems in broadcast systems [H04H 20/62](#); moving wireless networks [H04W 84/005](#))}
- U H04N 21/218 · · · Source of audio or video content {, e.g. local disk arrays (details of retrieval in video databases [G06F 17/30843](#))}
- U H04N 21/21815 · · · · {comprising local storage units}
- H04N 21/2182 · · · · · {involving memory arrays, e.g. RAID disk arrays (RAID arrays per se [G06F 3/0689](#); use of parity to protect data in RAID systems [G06F 11/1008](#))}
- H04N 21/2183 · · · · Cache memory {(caches in web servers or browsers [G06F 17/30902](#); intermediate storage and caching in data networks [H04L 29/08801](#))}
- U H04N 21/23 · · {Processing of content or additional data; Elementary server operations; Server middleware}
- U H04N 21/231 · · · {Content storage operation, e.g. caching movies for short term storage, replicating data over plural servers, prioritizing data for deletion}
- H04N 21/23103 · · · · {using load balancing strategies, e.g. by placing or distributing content on different disks, different memories or different servers (storage management [G06F 3/0604](#); allocation of resources considering the load in multiprogramming arrangements [G06F 9/505](#); techniques for rebalancing the load in a distributed system [G06F 9/5083](#); access to distributed or replicated servers, e.g. load balancing, in data networks [H04L 29/08144](#))}
- H04N 21/23106 · · · · {involving caching operations (prefetching while addressing of a memory level in which the access to the desired data or data block requires associative addressing means within memory systems or architectures [G06F 12/0862](#); caching at an intermediate stage in a data network [H04L 29/08801](#))}
- H04N 21/23113 · · · · {involving housekeeping operations for stored content, e.g. prioritizing content for deletion because of storage space restrictions (storage management, e.g. defragmentation [G06F 3/0604](#); unloading stored programs [G06F 9/445](#); housekeeping operations in file systems, e.g. deletion policies [G06F 17/30067](#); buffering arrangements in a network node or in an end terminal in packet networks [H04L 49/90](#))}

- H04N 21/23116
  - • • {involving data replication, e.g. over plural servers (synchronization of replicated data [G06F 11/1658](#); error detection or correction by means of data replication [G06F 11/2053](#); replication in distributed file systems [G06F 17/30067](#); replication in distributed file systems [G06F 17/30283](#); replication or mirroring of data in data networks [H04L 29/0854](#)}
- H04N 21/232
  - • • Content retrieval operation {locally} within server, e.g. reading video streams from disk arrays {(storage management [G06F 3/0604](#); details of querying and searching of video data from a database [G06F 17/30843](#))}
- H04N 21/233
  - • • {Processing of audio elementary streams (details of formatting and decoding of an encoded audio signal representation into a data stream for transmission or storage purposes [G10L 19/167](#); arrangements characterised by components specially adapted for monitoring, identification or recognition of audio in broadcast systems [H04H 60/58](#))}
- U H04N 21/234
  - • • {Processing of video elementary streams, e.g. splicing of content streams, manipulating MPEG-4 scene graphs (video encoding or transcoding processes per se [H04N 19/00](#))}
- H04N 21/23418
  - • • • {involving operations for analysing video streams, e.g. detecting features or characteristics (filtering for image enhancement [G06T 5/00](#); methods or arrangements for recognising scenes [G06K 9/00624](#); arrangements characterised by components specially adapted for monitoring, identification or recognition of video in broadcast systems [H04H 60/59](#); television picture signal circuitry for scene change detection [H04N 5/147](#))}
- H04N 21/2343
  - • • • {involving reformatting operations of video signals for distribution or compliance with end-user requests or end-user device requirements (media manipulation, adaptation or conversion at the source in one way streaming for real-time multimedia communications [H04L 29/06489](#); video transcoding [H04N 19/40](#))}
- H04N 21/2347
  - • • • {involving video stream encryption (arrangements for secret or secure communication [H04L 9/00](#); analogue secrecy systems [H04N 7/16](#); Arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#); arrangements for preventing the taking of data from a data transmission channel without authorisation [H04L 12/22](#); security arrangements in wireless networks [H04W 12/00](#))}
- U H04N 21/235
  - • • {Processing of additional data, e.g. scrambling of additional data, processing content descriptors (arrangements for simultaneous broadcast of plural pieces of information [H04H 20/28](#))}
- H04N 21/2355
  - • • • {involving reformatting operations of additional data, e.g. HTML pages (optimising the visualization of content for information retrieval from the Internet [G06F 17/30905](#); message adaptation based on network or terminal capabilities in stored and forward packet switching [H04L 12/5825](#); media manipulation, adaptation or conversion at the source in one way streaming for real-time multimedia communications [H04L 29/06489](#))}
- H04N 21/236
  - • • Assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, e.g. inserting a Uniform Resource Locator [URL] into a video stream, multiplexing software data into a video stream; Remultiplexing of multiplex streams; Insertion of stuffing bits into the multiplex stream, e.g. to obtain a constant bit-rate; Assembling of a packetized elementary stream {(multiplexing of data packets for data networks, e.g. RTP/UDP [H04L 65/00](#); stereoscopic image multiplexing or transmission [H04N 13/0003](#))}

- H04N 21/238
- • • {Interfacing the downstream path of the transmission network, e.g. adapting the transmission rate of a video stream to network bandwidth; Processing of multiplex streams (hybrid Fiber Coaxial HFC networks for downstream channel allocation for video distribution [H04L 12/2801](#); flow control in packet networks [H04L 12/569](#); formation of RTP packets [H04L 29/06176](#); application layer Quality of Service and content dependent routing [H04L 29/08945](#))}
- H04N 21/2383
- • • Channel coding {or modulation} of digital bit-stream, e.g. QPSK modulation (arrangements for detecting or preventing errors in the information received by adapting the channel coding [H04L 1/0009](#); analogue front ends or means for connecting modulators, demodulators or transceivers to a transmission line [H04L 27/0002](#))
- H04N 21/2385
- • • {Channel allocation ([H04N 21/266](#) takes precedence); Bandwidth allocation ([H04N 21/24](#) takes precedence; allocation of channels according to the instantaneous demands of the users in time-division multiplex systems [H04J 3/1682](#); arrangements for maintenance or administration in data switching networks involving bandwidth and capacity management [H04L 12/2439](#); Admission control, resource allocation in open networks [H04L 12/5692](#); negotiating bandwidth in wireless networks [H04W 28/16](#))}
- H04N 21/239
- • • Interfacing the upstream path of the transmission network, e.g. prioritizing client {content} requests (hybrid Fiber Coaxial [HFC] networks for upstream channel allocation for video distribution [H04L 12/2801](#); flow control in data networks [H04L 12/569](#); formation of RTP packets [H04L 29/06176](#); application layer Quality of Service and content dependent routing of client requests [H04L 29/08945](#))
- U H04N 21/2393
- • • {involving handling client requests (scheduling and organising the servicing of requests in data switching networks [H04L 29/08945](#))}
- H04N 21/2396
- • • {characterized by admission policies (admission control, resource allocation in open networks [H04L 12/5692](#); arrangements for network security using user profiles for access control [H04L 29/06836](#); access security in wireless networks [H04W 12/08](#))}
- H04N 21/24
- • • {Monitoring of processes or resources, e.g. monitoring of server load, available bandwidth, upstream requests (monitoring of server performance or load [G06F 11/34](#); arrangements for observation, testing or troubleshooting for broadcast or for distribution combined with broadcast [H04H 20/12](#))}
- H04N 21/2402
- • • {Monitoring of the downstream path of the transmission network, e.g. bandwidth available (traffic monitoring in data switching networks [H04L 12/2418](#); monitoring data switching networks utilization [H04L 12/2668](#))}
- H04N 21/2404
- • • {Monitoring of server processing errors or hardware failure (error or fault detection [G06F 11/07](#); monitoring in general [G06F 11/30](#))}
- H04N 21/2405
- • • {Monitoring of the internal components or processes of the server, e.g. server load (allocation of resources in multiprogramming arrangements [G06F 9/50](#); performance measurement of computer activity [G06F 11/34](#))}
- H04N 21/2408
- • • {Monitoring of the upstream path of the transmission network, e.g. client requests (monitoring data switching networks utilization [H04L 12/2668](#); protocols for scheduling and organising the servicing of requests in network applications in communication control or processing [H04L 29/08945](#))}
- H04N 21/241
- • • {Operating System [OS] processes, e.g. server setup (arrangements for programme control [G06F 9/00](#); program loading or initiating in general [G06F 9/445](#); multiprogramming arrangements [G06F 9/46](#))}

- H04N 21/242
  - • • {Synchronization processes, e.g. processing of Program Clock References [PCR] (synchronisation arrangements in time-division multiplex systems [H04J 3/06](#); arrangements for synchronising broadcast or distribution via plural systems in broadcast distribution systems [H04H 20/18](#); arrangements for synchronising receiver with transmitter [H04L 7/00](#); synchronising circuits with arrangements for extending range of synchronisation at the transmitter end [H04N 5/067](#))}
- U H04N 21/25
  - • {Management operations performed by the server for facilitating the content distribution or administrating data related to end-users or client devices, e.g. end-user or client device authentication, learning user preferences for recommending movies (maintenance or administration in data networks [H04L 12/24](#))}
- H04N 21/251
  - • • {Learning process for intelligent management, e.g. learning user preferences for recommending movies (details of learning user preferences for the retrieval of video data in a video database [G06F 17/30843](#); computer systems using learning methods [G06N 3/08](#))}
- H04N 21/254
  - • • {Management at additional data server, e.g. shopping server, rights management server (arrangements for maintenance or administration in data networks [H04L 12/24](#); Protocols involving third party service providers for network applications in communication control or processing [H04L 29/08666](#))}
- H04N 21/2541
  - • • • {Rights Management (protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#); security in data switching network management [H04L 12/2461](#); security management or policies for network security [H04L 29/06986](#); access security in wireless networks [H04W 12/08](#))}
- H04N 21/2543
  - • • • Billing {e.g. for subscription services (payment schemes, architectures or protocols [G06Q 20/00](#); e-commerce [G06Q 30/00](#); arrangements for billing for the use of broadcast information or broadcast-related information [H04H 60/21](#); charging arrangements in data networks [H04L 12/14](#))}
- H04N 21/258
  - • • {Client or end-user data management, e.g. managing client capabilities, user preferences or demographics, processing of multiple end-users preferences to derive collaborative data (arrangements for services using the result on the distributing side of broadcast systems [H04H 60/66](#); data switching network applications involving user or terminal profiles [H04L 29/08918](#))}
- U H04N 21/25808
  - • • • {Management of client data (protocols involving terminal profiles for network applications in communication control or processing [H04L 29/08927](#))}
- H04N 21/25816
  - • • • • {involving client authentication (restricting access to computer systems by authenticating users using a predetermined code [G06F 21/33](#); authentication mechanisms for network security in communication control or processing [H04L 29/06755](#); authentication in wireless network security [H04W 12/06](#))}
- H04N 21/25825
  - • • • • {involving client display capabilities, e.g. screen resolution of a mobile phone (optimising the visualisation of content during browsing in the Internet [G06F 17/30905](#); processing of terminal status or physical abilities in wireless networks [H04W 8/22](#); authentication in wireless network security [H04W 12/06](#))}
- H04N 21/25833
  - • • • • {involving client hardware characteristics, e.g. manufacturer, processing or storage capabilities (allocation of resources considering hardware capabilities in multiprogramming arrangements [G06F 9/5044](#); allocation of resources considering software capabilities in multiprogramming arrangements [G06F 9/5055](#))}

- H04N 21/25841
  - . . . . {involving the geographical location of the client (retrieval from the Internet by querying based on geographical locations [G06F 17/3087](#); Arrangements for identifying locations of receiving stations in broadcast systems [H04H 60/51](#); protocols in which the network application is adapted for the location of the user terminal in communication control or processing [H04L 29/08657](#); services making use of the location of users or terminals in wireless networks [H04W 4/02](#); locating users or terminals in wireless networks [H04W 64/00](#))}
- U H04N 21/25866
  - . . . . {Management of end-user data (customer care in data networks [H04L 12/249](#))}
- H04N 21/25875
  - . . . . {involving end-user authentication (restricting access to computer systems by authenticating users using a predetermined code [G06F 21/33](#); arrangements for secret or secure communication including means for verifying the identity or authority of a user of the system [H04L 9/32](#); authentication mechanisms for network security in communication control or processing [H04L 29/06755](#); authentication in wireless network security [H04W 12/06](#))}
- H04N 21/25891
  - . . . . {being end-user preferences (retrieval of video data in a video database based on user preferences [G06F 17/30843](#); arrangements for recognizing users' preferences [H04H 60/46](#); protocols involving user profiles for network applications in communication control or processing [H04L 29/08936](#); processing of user preferences or user profiles in wireless networks [H04W 8/18](#))}
- H04N 21/262
  - . . . {Content or additional data distribution scheduling, e.g. sending additional data at off-peak times, updating software modules, calculating the carousel transmission frequency, delaying a video stream transmission, generating play-lists (scheduling strategies for dispatcher in multiprogramming arrangements [G06F 9/4881](#); arrangements for scheduling broadcast services or broadcast-related services [H04H 60/06](#); flow control in packet networks [H04L 12/569](#); protocols for scheduling and organising the servicing of requests, whereby a time schedule is established for servicing the requests in network applications in communication control or processing [H04L 29/08963](#))}
- U H04N 21/26208
  - . . . . {the scheduling operation being performed under constraints}
- H04N 21/26216
  - . . . . {involving the channel capacity, e.g. network bandwidth (flow control in packet networks [H04L 12/569](#); admission control, resource allocation in open networks [H04L 12/5692](#); protocols for scheduling and organising the servicing of requests, whereby quality of service and priority requirements are taken into account in network applications in communication control or processing [H04L 29/08954](#))}
- H04N 21/26291
  - . . . . {for providing content or additional data updates, e.g. updating software modules, stored at the client (deployment, distribution, installation, update of software [G06F 8/65](#); error detection or correction during software upgrading [G06F 11/1433](#); arrangements for updating broadcast information or broadcast-related information [H04H 60/25](#))}
- U H04N 21/266
  - . . . {Channel or content management, e.g. generation and management of keys and entitlement messages in a conditional access system, merging a VOD unicast channel into a multicast channel}
- H04N 21/26613
  - . . . . {for generating or managing keys in general (key distribution for secret or secure communication, using a key distribution center, a trusted party or a key server [H04L 9/0802](#); key management for security in wireless networks [H04L 29/06707](#); key management for network security in communication control or processing [H04W 12/04](#))}

- H04N 21/2668
  - • • {Creating a channel for a dedicated end-user group, e.g. insertion of targeted commercials based on end-user profiles (information retrieval from the Internet by querying with filtering and personalisation [G06F 17/30867](#); arrangements for replacing or switching information during the broadcast [H04H 20/10](#); push services over packet-switching network [H04L 12/1859](#); adaptation of message content in packet-switching networks [H04L 12/583](#))}
- H04N 21/40
  - Client devices specifically adapted for the reception of or interaction with content, e.g. set-top-box [STB]; Operations thereof {(arrangements for distribution where lower stations, e.g. receivers, interact with the broadcast [H04H 20/38](#); arrangements specially adapted for receiving broadcast information [H04H 40/00](#))}
- U H04N 21/41
  - {Structure of client; Structure of client peripherals}
- U H04N 21/4104
  - • • {using peripherals receiving signals from specially adapted client devices}
- H04N 21/4108
  - • • • {characterized by an identification number or address, e.g. local network address (protecting specific internal or external computer components used for computing or processing information by creating or determining hardware identification [G06F 21/73](#); addressing and naming in data networks [H04L 29/12009](#))}
- H04N 21/4117
  - • • • {for generating hard copies of the content, e.g. printer, electronic paper (interfaces to printers [G06F 3/12](#); printing data [G06K 15/02](#))}
- U H04N 21/414
  - • • {Specialised client platforms, e.g. receiver in car or embedded in a mobile appliance}
- H04N 21/41407
  - • • • {embedded in a portable device, e.g. video client on a mobile phone, PDA, laptop (constructional details of equipment or arrangements specially adapted for portable computer application [G06F 1/1626](#); arrangements specially adapted for mobile receivers in broadcast systems [H04H 20/57](#))}
- U H04N 21/418
  - • • {External card to be used in combination with the client device, e.g. for conditional access}
- H04N 21/4185
  - • • • {for payment (mechanisms actuated by coded identity card or credit card to free or to actuate vending, hiring, coin or paper currency dispensing or refunding apparatus [G07F 7/08](#); payment schemes, architectures or protocols [G06Q 20/00](#); e-commerce [G06Q 30/00](#); charging arrangements in data networks [H04L 12/14](#))}
- U H04N 21/422
  - • • {using} Input-only peripherals {i.e. input devices connected to specially adapted client devices (input devices also receiving signals from specially adapted client devices [H04N 21/4104](#))}, e.g. Global Positioning System [GPS] (input arrangements or combined input and output arrangements for interaction between user and computer [G06F 3/01](#))}
- H04N 21/42204
  - • • • {User interfaces specially adapted for controlling a client device through a remote control device; Remote control devices therefor (interaction techniques for graphical user interfaces in general, see [G06F 3/048](#); computer pointing devices in general, see [G06F 3/033](#); user interfaces for controlling a tuning device of a television receiver through a remote control [H03J 9/00](#); constructive details of casings for the remote control device [H01H 9/0235](#); remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver [H04B 1/205](#); remote control devices in general [G08C](#))}
- U H04N 21/43
  - • {Processing of content or additional data, e.g. demultiplexing additional data from a digital video stream; Elementary client operations, e.g. monitoring of home network, synchronizing decoder's clock; Client middleware (demultiplexing of data packets for data networks, e.g. RTP/UDP [H04L 29/06176](#))}

- U H04N 21/4302      • . . {Content synchronization processes, e.g. decoder synchronization}
- H04N 21/4305      • . . . {Synchronizing client clock from received content stream, e.g. locking decoder clock with encoder clock, extraction of the PCR packets (arrangements for synchronising receiver with transmitter by comparing receiver clock with transmitter clock [H04L 7/0012](#); arrangements for synchronising receiver with transmitter wherein the receiver takes measures against momentary loss of synchronisation [H04L 7/0083](#))}
- H04N 21/431       • . . Generation of visual interfaces {for content selection or interaction}; Content or additional data rendering (receiver circuitry for displaying additional information [H04N 5/445](#); interaction techniques for graphical user interfaces [G06F 3/048](#))
- U H04N 21/432       • . . {Content retrieval operation from a local storage medium, e.g. hard-disk (details of retrieval of video data and associated meta data in video databases [G06F 17/30843](#))}
- H04N 21/4325      • . . . {by playing back content from the storage medium (reproduction of recorded television signals [H04N 5/76](#); reproduction of recorded television signals [H04N 9/79](#))}
- U H04N 21/433       • . . {Content storage operation, e.g. storage operation in response to a pause request, caching operations}
- H04N 21/4332      • . . . {by placing content in organized collections, e.g. local EPG data repository (interfaces, Database management systems or updating for information retrieval [G06F 17/30002](#); details of retrieval of video data and associated meta data in video database [G06F 17/30843](#))}
- H04N 21/4334      • . . . {Recording operations (recording of a television signal [H04N 5/76](#); arrangements for recording or accumulating broadcast information or broadcast-related information [H04H 60/27](#))}
- H04N 21/4335      • . . . {Housekeeping operations, e.g. prioritizing content for deletion because of storage space restrictions (storage management, e.g. defragmentation [G06F 3/0604](#); unloading stored programs [G06F 9/445](#); storage management in file systems [G06F 17/30067](#); buffering arrangements in a network node or in an end terminal in packet networks [H04L 49/90](#))}
- H04N 21/434       • . . Disassembling of a multiplex stream, e.g. demultiplexing audio and video streams, extraction of additional data from a video stream; Remultiplexing of multiplex streams; Extraction or processing of SI; Disassembling of packetized elementary stream {(demultiplexing of data packets for data networks, e.g. RTP/UDP [H04L 65/00](#); stereoscopic image multiplexing or transmission [H04N 13/0003](#))}
- U H04N 21/435       • . . {Processing of additional data, e.g. decrypting of additional data, reconstructing software from modules extracted from the transport stream}
- H04N 21/4355      • . . . {involving reformatting operations of additional data, e.g. HTML pages on a television screen (optimising the visualization of content for information retrieval from the Internet [G06F 17/30905](#); adaptation of message content in packet-switching networks [H04L 12/5835](#); Media manipulation, adaptation or conversion at the destination in one way streaming for real-time multimedia communications [H04L 29/06496](#))}
- U H04N 21/436       • . . Interfacing a local distribution network, e.g. communicating with another STB, inside the home {}; Interfacing an external card to be used in combination with the client device}{arrangements specially adapted plural spots in a confined site in broadcast systems [H04H 20/63](#)}
- U H04N 21/4363     • . . . Adapting the video {or multiplex} stream to a specific local network, e.g. a IEEE 1394 or Bluetooth® network

- H04N 21/43637 . . . . {involving a wireless protocol, e.g. Bluetooth or wireless LAN (IEEE 802.11; arrangements for wireless networking or broadcasting of information in indoor or near-field type systems [H04B 10/114](#); wireless local area data switching networks [H04W](#); flow control in wireless networks [H04W 28/10](#)}}
- H04N 21/4367 . . . . {Establishing a secure communication between the client and a peripheral device or smart card (arrangements for secret or secure communication [H04L 9/00](#); security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#); security arrangements in wireless networks [H04W 12/00](#))}
- H04N 21/437 . . . . {Interfacing the upstream path of the transmission network, e.g. for transmitting client requests to a VOD server (flow control in data networks [H04L 12/569](#); formation of RTP packets [H04L 29/06176](#); application layer Quality of Service and content dependent routing of client requests [H04L 29/08945](#))}
- H04N 21/438 . . . . {Interfacing the downstream path of the transmission network originating from a server, e.g. retrieving MPEG packets from an IP network (transmission of MPEG streams over ATM [H04L 12/5601](#); flow control in data networks [H04L 12/569](#); processing of real-time packets [H04L 29/06176](#))}
- U H04N 21/44 . . . . {Processing of video elementary streams, e.g. splicing a video clip retrieved from local storage with an incoming video stream, rendering scenes according to MPEG-4 scene graphs}
- H04N 21/4402 . . . . {involving reformatting operations of video signals for household redistribution, storage or real-time display (adapting incoming signals to the display format of the display terminal [G09G 5/005](#); media manipulation, adaptation or conversion at the destination in one way streaming for real-time multimedia communications [H04L 29/06496](#); details of conversion of video standards at pixel level [H04N 7/01](#); video transcoding [H04N 19/40](#))}
- H04N 21/4405 . . . . {involving video stream decryption (arrangements for secret or secure communication [H04L 9/00](#); arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#))}
- H04N 21/4408 . . . . {involving video stream encryption, e.g. re-encrypting a decrypted video stream for redistribution in a home network (arrangements for secret or secure communication [H04L 9/00](#); arrangements using cryptography for the use of broadcast information or broadcast-related information [H04H 60/23](#))}
- U H04N 21/441 . . . . Acquiring end-user identification {(authentication in wireless communication networks [H04W 12/06](#))e.g. using personal code sent by the remote control or by inserting a card (restricting access to computer systems by authenticating users using a predetermined code [G06F 21/33](#))}
- H04N 21/4415 . . . . {using biometric characteristics of the user, e.g. by voice recognition or fingerprint scanning (methods or arrangements for recognising patterns [G06K 9/00](#); restricting access to computer systems by authenticating users using biometric data [G06F 21/32](#); authentication mechanisms using biometrical features for network security [H04L 29/06809](#); authentication in wireless network security [H04W 12/06](#))}

- H04N 21/442
- • • {Monitoring of processes or resources, e.g. detecting the failure of a recording device, monitoring the downstream bandwidth, the number of times a movie has been viewed, the storage space available from the internal hard disk (arrangements for monitoring broadcast services or broadcast-related services [H04H 60/29](#); arrangements for identifying or recognising characteristics with a direct linkage to broadcast information [H04H 60/35](#); monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); monitoring in wireless networks [H04W 24/00](#))}
- H04N 21/44204
- • • • {Monitoring of content usage, e.g. the number of times a movie has been viewed, copied or the amount which has been watched (monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); Protecting generic digital content where the protection is independent of the precise nature of the content [G06F 21/10](#); arrangements for monitoring the use made of the broadcast services in broadcast systems [H04H 60/31](#))}
- U H04N 21/44213
- • • • {Monitoring of end-user related data (arrangements for monitoring the users' behaviour or opinions in broadcast systems [H04H 60/33](#))}
- H04N 21/44218
- • • • • {Detecting physical presence or behaviour of the user, e.g. using sensors to detect if the user is leaving the room or changes his face expression during a TV program (methods or arrangements for acquiring or recognising human faces, facial parts, facial sketches, facial expressions [G06K 9/00221](#); methods or arrangements for recognising movements or behaviour [G06K 9/00335](#); methods or arrangements for recognising human body or animal bodies or body parts [G06K 9/00362](#); arrangements for identifying users in broadcast systems [H04H 60/45](#))}
- H04N 21/44222
- • • • • {Monitoring of user selections, e.g. selection of programs, purchase activity (monitoring of user selections in data processing systems [G06F 11/34](#); monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); tracking the activity of the end-user [H04L 29/08675](#); arrangements for monitoring the user's behaviour or opinions in broadcast systems [H04H 60/33](#))}
- H04N 21/44227
- • • • • {Monitoring of local network, e.g. connection or bandwidth variations; Detecting new devices in the local network (configuring of peripheral devices in general [G06F 9/4411](#); monitoring connectivity in data switched networks [H04L 12/2639](#))}
- H04N 21/44231
- • • • • {Monitoring of peripheral device or external card, e.g. to detect processing problems in a handheld device or the failure of an external recording device (configuring of peripheral devices in general [G06F 9/4411](#); monitoring the status of connected device in data switched networks [H04L 12/2642](#); reporting information sensed by appliance or service execution status of appliance services in a home automation network [H04L 12/2823](#))}
- H04N 21/44236
- • • • • {Monitoring of piracy processes or activities (protecting computer platforms against harmful, malicious or unexpected behaviour or activities using intrusion detection and counter measures [G06F 21/566](#); computer virus detection and handling [G06F 21/56](#))}
- H04N 21/4424
- • • • • {Monitoring of the internal components or processes of the client device, e.g. CPU or memory load, processing speed, timer, counter or percentage of the hard disk space used (error monitoring in general [G06F 11/30](#); arrangements for monitoring conditions of receiving stations in broadcast systems [H04H 60/32](#); diagnosis, testing or measuring for television receivers [H04N 17/04](#))}

- H04N 21/4425
  - • • {Monitoring of client processing errors or hardware failure (monitoring in electrical digital data processing [G06F 11/00](#); error detection in general [G06F 11/07](#); monitoring in general [G06F 11/30](#))}
- H04N 21/443
  - • • {OS processes, e.g. booting a STB, implementing a Java virtual machine in a STB, power management in a STB (arrangements for program loading or initiating [G06F 9/445](#); boot device selection; loading of operating system [G06F 9/4406](#); program loading or initiating in general using non-volatile memory from which the program can be directly executed [G06F 9/44568](#))}
- H04N 21/4432
  - • • {Powering on the client, e.g. bootstrap loading using setup parameters being stored locally or received from the server (resetting in general [G06F 1/14](#); program loading or initiating in general [G06F 9/445](#); bootstrapping in general [G06F 9/4401](#); secure boots of computer platforms [G06F 21/57](#))}
- H04N 21/4435
  - • • {Memory management (allocation of memory to service a request [G06F 9/5016](#); addressing or allocating within memory systems or architectures [G06F 12/02](#))}
- H04N 21/4436
  - • • {Power management, e.g. shutting down unused components of the receiver (power management in computer systems [G06F 1/3203](#); Hibernate or awake process in computer systems [G06F 9/4418](#))}
- U H04N 21/45
  - {Management operations performed by the client for facilitating the reception of or the interaction with the content or administrating data related to the end-user or to the client device itself, e.g. learning user preferences for recommending movies, resolving scheduling conflicts}
- U H04N 21/4508
  - • • {Management of client or end-user data}
- H04N 21/4516
  - • • {involving client characteristics, e.g. Set-Top-Box type, software version, amount of memory available (allocation of resources considering software capabilities [G06F 9/5055](#); Allocation of resources considering hardware capabilities [G06F 9/5044](#); message adaptation based on network or terminal capabilities in packet switching networks [H04L 12/5825](#); protocols involving terminal profiles for network applications in communication control or processing [H04L 29/08927](#); processing of terminal status or physical abilities in wireless networks [H04W 8/22](#))}
- H04N 21/4524
  - • • {involving the geographical location of the client (retrieval from the Internet by querying based on geographical locations [G06F 17/3087](#); Systems specially adapted for using geographical information in broadcast systems [H04H 60/70](#); protocols in which the network application is adapted for the location of the user terminal in communication control or processing [H04L 29/08657](#); services making use of the location of users or terminals in wireless networks [H04W 4/02](#); Locating users or terminals in wireless networks [H04W 64/00](#))}
- H04N 21/4532
  - • • {involving end-user characteristics, e.g. viewer profile, preferences (monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); protocols involving user profiles for network applications in communication control or processing [H04L 29/08936](#); processing of user preferences or user profiles in wireless networks [H04W 8/18](#))}
- U H04N 21/458
  - • • Scheduling content for creating a personalized stream, e.g. by combining a locally stored advertisement with an incoming stream; Updating operations, e.g. for OS modules {; time-related management operations (arrangements for replacing or switching information during the broadcast or during the distribution [H04H 20/10](#))}

- H04N 21/4586
  - . . . {Content update operation triggered locally, e.g. by comparing the version of software modules in a DVB carousel to the version stored locally (deployment, distribution, installation, update of software [G06F 8/65](#); program updating while running in general [G06F 8/67](#); error detection or correction of the data by redundancy during software upgrading [G06F 11/1433](#); arrangements for updating broadcast information or broadcast-related information [H04H 60/25](#)}
- U H04N 21/462
  - . . . {Content or additional data management e.g. creating a master electronic program guide from data received from the Internet and a Head-end, controlling the complexity of a video stream by scaling the resolution or bit-rate based on the client capabilities}
- H04N 21/4621
  - . . . {Controlling the complexity of the content stream or additional data, e.g. lowering the resolution or bit-rate of the video stream for a mobile client with a small screen (arrangements for using the results of monitoring on user's side in broadcast systems [H04H 60/65](#); flow control in packet networks [H04L 12/569](#)}
- H04N 21/4622
  - . . . {Retrieving content or additional data from different sources, e.g. from a broadcast channel and the Internet (web site content organization and management for information retrieval from the Internet [G06F 17/3089](#); transmission by internet of broadcast information [H04H 60/82](#); stock exchange data over packet-switching network [H04L 12/1804](#); push services including data channel over packet-switching network [H04L 12/1859](#)}
- H04N 21/4627
  - . . . Rights management {associated to the content (protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#); security in data switching network management [H04L 12/2461](#); security management or policies for network security [H04L 29/06986](#); access security in wireless networks [H04W 12/08](#)}
- H04N 21/466
  - . . . {Learning process for intelligent management, e.g. learning user preferences for recommending movies (monitoring of user activities for profile generation for accessing a video database [G06F 17/30843](#); computer systems using learning methods [G06N 3/08](#); services using the results of monitoring in broadcast systems [H04H 60/61](#)}
- H04N 21/47
  - . . {End-user applications (interaction techniques for graphical user interfaces [G06F 3/048](#); receiver circuitry for displaying additional information [H04N 5/445](#); software engineering for user interfaces [G06F 8/20](#); services or applications for real-time multimedia communications [H04L 29/06387](#)}
- H04N 21/472
  - . . . {End-user interface for requesting content, additional data or services; End-user interface for interacting with content, e.g. for content reservation or setting reminders, for requesting event notification, for manipulating displayed content (end-user interfaces for retrieving video data from a database [G06F 17/30843](#); content on demand in one way streaming for real-time multimedia communications [H04L 29/06462](#)}
- H04N 21/47214
  - . . . {for content reservation or setting reminders; for requesting event notification, e.g. of sport results or stock market (notification of incoming messages in packet switching networks [H04L 12/587](#); stock exchange data over packet-switching network [H04L 12/1804](#); push services over packet-switching network [H04L 12/1859](#)}
- U H04N 21/4722
  - . . . {for requesting additional data associated with the content}
- H04N 21/4725
  - . . . . {using interactive regions of the image, e.g. hot spots (details of information retrieval from the Internet by using URLs [G06F 17/30876](#); processing chained hypermedia data for information retrieval [G06F 17/30014](#)}
- U H04N 21/475
  - . . . {End-user interface for inputting end-user data, e.g. personal identification number [PIN], preference data}

- H04N 21/4755
  - • • {for defining user preferences, e.g. favourite actors or genre (retrieval personalisation and generation of user profiles for the retrieval of video data [G06F 17/30843](#); Data switching network applications using user profiles [H04L 29/08936](#))}
- U H04N 21/478
  - • • {Supplemental services, e.g. displaying phone caller identification, shopping application}
- H04N 21/4782
  - • • Web browsing {, e.g. WebTV (information retrieval from the Internet [G06F 17/30861](#); protocols for network applications involving the use of web-based technology [H04L 29/0809](#))}
- H04N 21/4784
  - • • {receiving rewards (payment schemes, architectures or protocols [G06Q 20/00](#); e-commerce [G06Q 30/00](#); charging arrangements in data networks [H04L 12/14](#))}
- H04N 21/4788
  - • • {communicating with other users, e.g. chatting (arrangements for providing for computer conferences, e.g. chat rooms, to substation in data switching networks [H04L 12/1813](#); protocols for peer-to-peer networking in communication control or processing [H04L 29/08306](#))}
- H04N 21/60
  - {using} Network structure or processes {specifically adapted} for video distribution between server and client or between remote clients (data switching networks [H04L 12/00](#); wireless communication networks [H04W](#)); Control signaling {specific to video distribution} between clients, server and network components {, e.g. to video encoder or decoder}; Transmission of management data between server and client {e.g. sending from server to client commands for recording incoming content stream}; Communication details between server and client (Protocols for communication control and processing in data networks [H04L 29/06](#); Protocols for client-server architecture [H04L 67/42](#))
- U H04N 21/61
  - • {Network physical structure; Signal processing ([H04B](#) takes precedence)}
- U H04N 21/6156
  - • • {specially adapted to the upstream path of the transmission network}
- H04N 21/6181
  - • • {involving transmission via a mobile phone network (arrangements for providing broadcast or conference services to substation in data switching networks in combination with wireless systems [H04L 12/189](#); wireless uplink channel access [H04W 74/004](#))}
- H04N 21/63
  - • Control signaling {related to video distribution} between client, server and network components; Network processes for video distribution between server and clients {or between remote clients}, e.g. transmitting basic layer and enhancement layers over different transmission paths, setting up a peer-to-peer communication via Internet between remote STB's; Communication protocols; Addressing (signalling, control or architecture for real-time multimedia communications [H04L 29/06183](#); arrangements for peer-to-peer communications [H04L 29/08306](#))
- H04N 21/632
  - • • {using a connection between clients on a wide area network, e.g. setting up a peer-to-peer communication via Internet for retrieving video segments from the hard-disk of other client devices (broadcast-related systems characterised by transmission among terminal devices [H04H 60/80](#); protocols for peer-to-peer networking in communication control or processing [H04L 29/08306](#))}
- U H04N 21/633
  - • • {Control signals issued by server directed to the network components or client (management of faults, events, alarms in data networks [H04L 12/2419](#))}
- U H04N 21/6332
  - • • • {directed to client}
- H04N 21/6334
  - • • • {for authorization, e.g. by transmitting a key (arrangements for secret or secure communication [H04L 9/00](#); wireless communications network key management [H04W 12/04](#); wireless communications network access security [H04W 12/08](#))}

- H04N 21/63345 . . . . . {by transmitting keys (key distribution for secret or secure communication [H04L 9/08](#); arrangements for network security key management [H04L 29/06707](#))}
- U H04N 21/637 . . . {Control signals issued by the client directed to the server or network components}
- H04N 21/6375 . . . . for requesting retransmission {, e.g. of data packets lost or corrupted during transmission from server} (ARQ protocols [H04L 1/18](#); Transmission Control Protocol / Internet Protocol [TCP/IP] [H04L 29/06095](#))
- H04N 21/64 . . . {Addressing (multicast or broadcast in one way streaming for real-time multimedia communications [H04L 29/06455](#); arrangements for addressing and naming in data networks [H04L 29/12009](#))}
- U H04N 21/647 . . . {Control signaling between network components and server or clients; Network processes for video distribution between server and clients, e.g. controlling the quality of the video stream, by dropping packets, protecting content from unauthorized alteration within the network, monitoring of network load, bridging between two different networks, e.g. between IP and wireless (signalling, control or architecture for real-time multimedia communications [H04L 29/06183](#))}
- H04N 21/64715 . . . . {Protecting content from unauthorized alteration within the network (verifying the information received for network security in communication control or processing [H04L 29/06857](#); integrity in wireless network security [H04W 12/10](#))}
- U H04N 21/64723 . . . . {Monitoring of network processes or resources, e.g. monitoring of network load (traffic related reporting in data switching networks [H04L 12/2626](#))}
- H04N 21/64738 . . . . . {Monitoring network characteristics, e.g. bandwidth, congestion level (data switched network analysis [H04L 12/2414](#); monitoring functioning in data switched networks [H04L 12/2642](#); flow control in packet networks [H04L 12/569](#))}
- U H04N 21/64746 . . . . {Control signals issued by the network directed to the server or the client}
- U H04N 21/64761 . . . . . {directed to the server}
- H04N 21/64776 . . . . . for requesting retransmission, e.g. of data packets lost or corrupted during transmission from server (ARQ protocols [H04L 1/18](#); Transmission Control Protocol / Internet Protocol [TCP/IP] [H04L 29/06095](#))
- H04N 21/64784 . . . . {Data processing by the network (data processing in packet switching systems [H04L 12/56](#); flow control in packet networks [H04L 12/569](#); intermediate storage or scheduling [H04L 12/5694](#); protocols involving intermediate processing or storage in communication networks [H04L 29/08702](#))}
- H04N 21/64792 . . . . . {Controlling the complexity of the content stream, e.g. by dropping packets (media manipulation, adaptation or conversion at an intermediate station in one way streaming for real-time multimedia communications [H04L 29/06503](#); arrangements for reducing the amount or size of exchanged application data in the network [H04L 29/08783](#); negotiation of resources in wireless networks [H04W 28/16](#))}
- U H04N 21/80 . {Generation or processing of content or additional data by content creator independently of the distribution process; Content per se (arrangements for generating broadcast information [H04H 60/02](#))}
- U H04N 21/81 . . {Monomedia components thereof}
- U H04N 21/8126 . . . {involving additional data, e.g. news, sports, stocks, weather forecasts}

- H04N 21/814
  - • • {comprising emergency warnings (arrangements specially adapted for emergency or urgency in broadcast systems [H04H 20/59](#); arrangements for providing alarms, notifications, alerts to substation in data switching networks [H04L 12/1895](#))}
- H04N 21/8166
  - • • {involving executable data, e.g. software (arrangements for executing specific programs [G06F 9/44](#); broadcasting computer programmes in broadcast systems [H04H 20/91](#); movement of software or configuration parameters, in data networks [H04L 29/08981](#))}
- U H04N 21/83
  - • {Generation or processing of protective or descriptive data associated with content; Content structuring}
- U H04N 21/835
  - • • {Generation of protective data, e.g. certificates (protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#))}
- H04N 21/8358
  - • • • involving watermark {(protecting executable software by watermarking [G06F 21/16](#); image watermarking in general [G06T 1/0021](#); watermarks inserted in still images for transmission purposes [H04N 1/32144](#); inserting watermarks during video coding [H04N 19/467](#))}
- U H04N 21/85
  - • {Assembly of content; Generation of multimedia applications}
- U H04N 21/858
  - • • {Linking data to content, e.g. by linking an URL to a video object, by creating a hotspot}
- H04N 21/8586
  - • • • {by using a URL (processing chained hypermedia data for information retrieval [G06F 17/30014](#); information retrieval from the Internet by using URLs [G06F 17/30876](#); URL in broadcast information [H04H 20/93](#); protocols for network applications involving the use of web-based technology [H04L 29/0809](#))}
- U H04N 2201/00**      **Indexing scheme relating to scanning, transmission or reproduction of documents or the like, and to details thereof**
- U H04N 2201/0008
  - Connection or combination of a still picture apparatus with another apparatus (not used)
- H04N 2201/0013
  - • Arrangements for the control of the connected apparatus by the still picture apparatus (arrangements for the control of a still picture apparatus by the connected apparatus [H04N 2201/0074](#); control of image communication with the connected apparatus [H04N 2201/0015](#))
- U H04N 2201/0034
  - • Details of the connection, e.g. connector, interface
- U H04N 2201/0048
  - • • Type of connection
- H04N 2201/0056
  - • • • Using mechanical couplings, e.g. mating elements ([H04N 2201/0049](#), [H04N 2201/0051](#), [H04N 2201/0058](#) take precedence)
- H04N 2201/0074
  - • Arrangements for the control of a still picture apparatus by the connected apparatus (arrangements for the control of the connected apparatus by the still picture apparatus [H04N 2201/0013](#); control of image communication with the connected apparatus [H04N 2201/0015](#))
- U H04N 2201/024
  - deleted
- H04N 2201/02452
  - • Arrangements for mounting or supporting elements within a scanning head ([H04N 2201/02406](#), [H04N 2201/03154](#) take precedence)
- H04N 2201/02487
  - • Manufacturing details ([H04N 2201/02406](#), [H04N 2201/02452](#) take precedence)
- U H04N 2201/04
  - Scanning arrangements (not used)
- H04N 2201/0402
  - • Arrangements not specific to a particular one of the scanning methods covered by groups [H04N 1/04](#) to [H04N 1/207](#) (not used)
- H04N 2201/0422
  - • • Media holders, covers, supports, backgrounds; Arrangements to facilitate placing of the medium ([H04N 2201/0406](#) to [H04N 2201/0412](#), [H04N 2201/0434](#) take precedence)

- H04N 2201/0436
  - • • Scanning a picture-bearing surface lying face up on a support ([H04N 2201/0434](#) takes precedence; using cylindrical picture bearing surfaces [H04N 1/06](#); with manual scanning [H04N 1/107](#))
- U H04N 2201/047
  - • Detection, control or error compensation of scanning velocity or position (not used)
- U H04N 2201/04753
  - • • Control or error compensation of scanning position or velocity (not used)
- H04N 2201/04758
  - • • • by controlling the position of the scanned image area ([H04N 2201/04755](#), [H04N 2201/04756](#) take precedence)
- U H04N 2201/32
  - Circuits or arrangements for control or supervision between transmitter and receiver or between image input and image output device (not used)
- U H04N 2201/3201
  - • Display, printing, storage or transmission of additional information, e.g. ID code, date and time or title
- U H04N 2201/3225
  - • • of data relating to an image, a page or a document
- H04N 2201/3256
  - • • • colour related metadata, e.g. colour, ICC profiles (for use made of colour related metadata see the appropriate place, e.g. [H04N 1/60](#), [H04N 1/60](#) and subgroups)

**Project: N/A (H04Q)****H04Q 1/00**

**Details of selecting apparatus or arrangements {for establishing connections among stations for the purpose of transferring information via these connections}**

**Project: N/A (H04R)****U H04R 1/00****Details of transducers, {loudspeakers or microphones}**

- H04R 1/02
    - Casings; Cabinets; {Supports therefor;} Mountings therein ([H04R 1/28](#) takes precedence; {attachments for microphones [H04R 1/08](#); mounting of transducers in earpieces [H04R 1/1075](#)})
  - U H04R 1/10
    - Earpieces; Attachments therefor; {Earphones; Monophonic headphones ([H04R 1/28](#) takes precedence; stereophonic headphones [H04R 5/033](#))}
- NOTES**
1. This group covers details of headphones, both of monophonic and stereophonic type.
  2. When classifying in this group or in its subgroups, aspects relating to stereophonic headphones are to be classified in [H04R 5/033](#) as well
- H04R 1/1025
    - • {Accumulators or arrangements for charging (secondary cells per se [H01M 10/00](#); charging in general [H02J 7/00](#))}
  - H04R 1/1033
    - • {Cables or cables storage, e.g. cable reels (cord reels per se [H02G 11/02](#); arrangements for storing and repeatedly paying-out and re-storing lengths of conductors or cables [B65H 75/34](#); extensible conductors or cables, e.g. self-coiling cords [H01B 7/06](#))}
  - U H04R 1/1058
    - • {Manufacture or assembly}
  - H04R 1/1066
    - • • {Constructional aspects of the interconnection between earpiece and earpiece support (earpiece support for monophonic headphones [H04R 1/105](#); earpiece support for stereophonic headphones [H04R 5/0335](#))}
  - H04R 1/1083
    - • {Reduction of ambient noise (active noise reduction per se [G10K 11/175](#); protective devices for the ear, e.g. providing acoustic protection [A61F 11/06](#))}
  - U H04R 1/20
    - Arrangements for obtaining desired frequency or directional characteristics (for stereophonic purpose [H04R 5/00](#))

- H04R 1/22
- • for obtaining desired frequency characteristic only (circuit for combining transducers having different responses [H04R 3/00](#); {for hearing aids [H04R 25/407](#)})
- H04R 1/222
- • • {for microphones ([H04R 1/24](#)-, [H04R 1/26](#) take precedence)}
- U H04R 1/28
- • • Transducer mountings or enclosures modified by provision of mechanical or acoustic impedances, e.g. resonator, damping means {(combinations of transducers with horns, i.e. front-loaded horns [H04R 1/30](#))}
- U H04R 1/2807
- • • • {Enclosures comprising vibrating or resonating arrangements (for the reduction of undesired resonances or vibrations [H04R 1/2869](#))}
- U H04R 1/2815
- • • • • {of the bass reflex type}
- H04R 1/2823
- • • • • • {Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (number or position of ports [H04R 1/2815](#)-, vents in bandpass type enclosures [H04R 1/2846](#))}
- U H04R 1/2838
- • • • • • {of the bandpass type}
- H04R 1/2846
- • • • • • • {Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (number or position of ports [H04R 1/2838](#)-, vents in bass reflex type enclosures [H04R 1/2823](#))}
- U H04R 1/2869
- • • • • {Reduction of undesired resonances, i.e. standing waves within enclosure, or of undesired vibrations, i.e. of the enclosure itself}
- H04R 1/2876
- • • • • • {by means of damping material, e.g. as cladding (damping material for tuning desired resonances [H04R 1/2807](#)-, e.g. in vents [H04R 1/2823](#)-, [H04R 1/2846](#))}
- H04R 1/30
- • • Combinations of transducers with horns, e.g. with mechanical matching means {, i.e. front-loaded horns} (horns in general [G10K](#); {transducer enclosures or mountings using a back-loaded horn [H04R 1/2861](#)-, application of horns as guiding means to obtain a predetermined directivity characteristic [H04R 1/345](#)})
- H04R 5/00**
- Stereophonic arrangements (stereophonic pick-ups [H04R 9/16](#)-, [H04R 11/12](#)-, [H04R 17/08](#)-, [H04R 19/10](#))**
- NOTE
- In this group, the expression "stereophonic arrangements" covers quadraphonic or similar arrangements.
- H04R 5/04
- Circuit arrangements, {e.g. for selective connection of amplifier inputs/outputs to loudspeakers, for loudspeaker detection, or for adaptation of settings to personal preferences or hearing impairments (combinations of amplifiers [H03F 3/68](#)-, stereophonic systems [H04S](#))}
- H04R 7/00**
- Diaphragms for electromechanical transducers (in general [F16J 3/00](#)); Cones (for musical instruments [G10](#) )}{(cones, diaphragms or the like, for emitting or receiving sound in general [G10K 13/00](#)-, Mounting thereof)}**
- H04R 17/00**
- Piezo-electric transducers; Electrostrictive transducers (piezo-electric or electrostrictive elements in general [H01L 41/00](#)-, details of piezo-electric or electrostrictive motors, generators or positioners {[H01L 41/00](#)})**
- H04R 21/00**
- Variable-resistance transducers (gaseous resistance transducers [H04R 23/00](#)-, magneto-resistive transducers [H04R 23/00](#))**

H04R 25/00	<p>Deaf-aid sets {providing an auditory perception; Electric tinnitus maskers providing an auditory perception} (constructions of transducers per se <a href="#">H04R 9/00</a> to <a href="#">H04R 23/00</a>; {non-electric hearing aids <a href="#">A61F 11/008</a>; replacing direct auditory perception by another kind of perception <a href="#">A61F 11/04</a>; electrical stimulation of auditory nerves to promote the auditory function <a href="#">A61N 1/36032</a>}; structural combination with spectacle frames <a href="#">G02C 11/06</a>; processing of speech signals <a href="#">G10L 21/00</a>)</p> <p><u>NOTE</u></p> <p>Classification should be directed to groups <a href="#">H04R 25/02</a>-, <a href="#">H04R 25/04</a> or <a href="#">H04R 25/50</a> and its subgroups, if and only if the technical subject in consideration cannot be classified elsewhere under the main group <a href="#">H04R 25/00</a></p> <p><u>WARNING</u></p> <p>Groups <a href="#">H04R 25/30</a> to <a href="#">H04R 25/75</a> do not correspond to former or current IPC groups.</p>
H04R 25/30	<ul style="list-style-type: none"> <li>· {Monitoring or testing of hearing aids, e.g. functioning, settings, battery power (testing arrangements for electro-acoustic transducers in general <a href="#">H04R 29/00</a>;-; battery testing in general <a href="#">G01R 31/36</a>)}</li> </ul>
U H04R 25/55	<ul style="list-style-type: none"> <li>· {using an external connection, either wireless or wired}</li> </ul>
H04R 25/558	<ul style="list-style-type: none"> <li>· {Remote control, e.g. of amplification, frequency (remote control of amplifications, tone, or bandwidth <a href="#">H03G 1/02</a>;-; remote control, e.g. for Hi-Fi systems or audio/video combinations <a href="#">H04B 1/202</a>;-; remote control in general <a href="#">G05F</a>)}</li> </ul>
H04R 25/75	<ul style="list-style-type: none"> <li>· {Electric tinnitus maskers providing an auditory perception (evaluating tinnitus <a href="#">A61B 5/128</a>;-; devices or methods to cause a change in the state of consciousness <a href="#">A61M 21/00</a>;-; masking sound in general <a href="#">G10K 11/175</a> )}</li> </ul> <p>{-WARNINGNot complete pending a reorganization, see also <a href="#">H04R 25/00</a>}</p> <p><u>WARNING</u></p> <p>Not complete pending a reorganization, see also <a href="#">H04R 25/00</a></p>
H04R 27/00	<p>Public address systems (circuits for preventing acoustic reaction <a href="#">H04R 3/02</a>;-; circuits for distributing signals to loudspeakers <a href="#">H04R 3/12</a>;-; {monitoring or testing arrangements for public address systems <a href="#">H04R 29/007</a>}; amplifiers <a href="#">H03F</a>)</p>
H04R 29/00	<p>Monitoring arrangements; Testing arrangements {(for hearing aids <a href="#">H04R 25/30</a>;-; detection of loudspeaker connection <a href="#">H04R 5/04</a>;-; sound-field adaptation dependent on speaker detection <a href="#">H04S 7/308</a>)}</p>
H04R 2207/00	<p>Details of diaphragms or cones for electromechanical transducers or their suspension covered by <a href="#">H04R 7/00</a> but not provided for in <a href="#">H04R 7/00</a> or in <a href="#">H04R 2307/00</a> (not used, see subgroup)</p>
H04R 2225/00	<p>Details of deaf aids covered by <a href="#">H04R 25/00</a>-, not provided for in any of its subgroups</p>
H04R 2231/00	<p>Details of apparatus or processes specially adapted for the manufacture of transducers or diaphragms therefor covered by <a href="#">H04R 31/00</a>-, not provided for in its subgroups</p>
H04R 2307/00	<p>Details of diaphragms or cones for electromechanical transducers, their suspension or their manufacture covered by <a href="#">H04R 7/00</a> or <a href="#">H04R 31/003</a>-, not provided for in any of its subgroups</p>

**Project: N/A (H04T)**

H04T 2001/00

**Standards for wireless communication networks**NOTE

The indexing codes of this scheme are to be used mainly with classification in CPC subgroups [H04W](#).

In order to keep the structure adopted by the standardisation bodies considered, a matrix type of scheme is used as indicated below:

- [H04T 2001/101](#) to [H04T 2001/113](#) codes are used for information relating to the physical aspects, e.g. radio resources, core network resources...
- [H04T 2001/201](#) to [H04T 2001/231](#) codes are used for information relating to functional aspects, e.g. physical layer, traffic/transport...

For complete indexing it is mandatory to allocate at least one and preferably only one combination of **H04T2001/100** and **H04T2001/200** codes to a document.

Searching in this scheme is done by combining the above indicated codes, i.e. **H04T2001/100** and **H04T2001/200**

**Project: N/A (H04W)**

H04W

**WIRELESS COMMUNICATIONS NETWORKS (radio transmission systems [H04B 7/00](#); transmission systems using electromagnetic waves other than radio waves, e.g. light, infrared [H04B 10/00](#); communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones [H04M 1/72](#); broadcast communication [H04H](#))**

NOTES

1. This subclass covers :

- communication networks for selectively establishing one or a plurality of wireless communication links between a desired number of users or between users and network equipment, for the purpose of transferring information via these wireless communication links;
- networks deploying an infrastructure for mobility management of wireless users connected thereto, e.g. cellular networks, WLAN [Wireless Local Area Network], wireless access networks, e.g. WLL [Wireless Local Loop] or self-organising wireless communication networks, e.g. ad hoc networks;
- planning or deployment specially adapted for the above-mentioned wireless networks;
- services or facilities specially adapted for the above-mentioned wireless networks;
- arrangements or techniques specially adapted for the operation of the above-mentioned wireless networks.

2. This subclass does not cover :

- communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones, which are covered by group [H04M 1/72](#);
- broadcast communication, which is covered by subclass [H04H](#).

3. In this subclass, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

- H04W 4/00** {Mobile application} services or facilities specially adapted for wireless communication networks {(network arrangements or communication protocols for networked applications [H04L 67/00](#); network arrangements or protocols for real-time communications [H04L 65/00](#); network arrangements or network protocols for addressing or naming [H04L 61/00](#); application independent communication protocol aspects and techniques in packet data networks [H04L 69/00](#); network architectures or network communication protocols for network security [H04L 63/00](#); wireless network security [H04W 12/00](#); message switching systems [H04L 12/58](#); arrangements for broadcast or conference [H04L 12/18](#); telephonic communication, substation extension arrangements, cordless telephones, portable communication terminals with improved user interface to control a main telephone operation mode or to indicate the communication status [H04M 1/72522](#); automatic or semi-automatic exchanges for telephonic communication - systems providing special services or facilities to subscribers [H04M 3/42](#)}
- NOTES**
1. This groups covers mobile application services or application service signalling for communication over wireless networks.
  2. This group focuses on application services specially adapted for wireless networks or adjusted to the wireless environment
- H04W 4/001** • {Provisioning or reconfiguring application services e.g. OMA DM (network management [H04L 12/24](#); network arrangements or communication protocols for networked applications involving the movement of software or configuration parameters, e.g. applets [H04L 67/34](#); program loading or initiating [G06F 9/445](#); mobile agents [G06F 9/4862](#))}
- H04W 4/005** • {for Machine-to-Machine communication [M2M, MTC], e.g. 3GPP M2M, OMA M2M, 3GPP MTC or Wireless Sensor Networks [WSN] (self-organizing networks [H04W 84/18](#); network arrangements or communication protocols for networked applications adapted for proprietary or special purpose networking environments, e.g. medical networks, sensor networks, networks in a car, remote metering networks [H04L 67/12](#); mechanical means for transferring the output of a sensing member [G01D 5/00](#))}
- H04W 4/008** • {using short range communication, e.g. NFC, RFID or PAN (telephonic substation extension arrangements interfacing with an external accessory using a two-way short-range wireless interface [H04M 1/7253](#); mechanical means for transferring the output of a sensing member [G01D 5/00](#); near-field transmission systems [H04B 5/00](#))}
- H04W 4/02** • {Mobile application} Services making use of the location of users or terminals {, e.g. OMA SUPL, OMA MLP or 3GPP LCS} (mobility data transfer [H04W 8/08](#); access restriction based on user location or mobility data [H04W 48/04](#); registration, e.g. affiliation to network, de-registration, e.g. terminating affiliation [H04W 60/00](#); locating users or terminals for network management purpose [H04W 64/00](#); navigation or navigational instruments [G01C 21/00](#); radio direction-finding, radio navigation, determining distance or velocity by use of radio waves, locating or presence-detecting by use of the reflection or re-radiation of radio waves or analogous arrangements using other waves [G01S](#))
- H04W 4/06** • Selective distribution or broadcast {application services; Mobile application} services to user groups; One-way selective calling services {(connection management for selective distribution or broadcast [H04W 76/002](#); resource management for broadcast services [H04W 72/005](#))}
- H04W 4/08** • • User group management {(group management mechanisms in peer-to-peer network applications [H04L 67/1044](#); processing of subscriber group data [H04W 8/186](#))}

- H04W 4/10
  - • Push-to-Talk {mobile application services} or Push-on-Call {mobile application} services {(arrangements for real-time multimedia Push-to-X-Services [H04L 65/4061](#)-; connection management for Push-to-Talk or Push-on-Call services [H04W 76/005](#))}
- H04W 4/12
  - {Mobile application service signalling using} messaging, e.g. SMS [Short Message Service]; {Mobile application service signalling using} mailboxes; {Mobile application service signalling using} announcements, e.g. informing users on the status or progress of a communication request {(message switching systems [H04L 12/58](#)-; voice mail systems [H04M 3/533](#)-; arrangements for providing announcements [H04M 3/487](#))}
- H04W 4/18
  - {Customizing content of application services or} information format or content conversion, e.g. adaptation by the network of the transmitted or received information for the purpose of wireless delivery to users or terminals {(network arrangements or communication protocols for networked applications involving intermediate processing or storage in the network, e.g. proxy, [H04L 67/28](#)-; message adaptation based on network or terminal capabilities for message switching systems [H04L 12/5825](#))}
- U H04W 4/20
  - {Signalling of application services or} auxiliary data signalling, i.e. transmitting data via a non-traffic channel
- H04W 4/206
  - • {for socializing or targeting users of the same wireless application service, e.g. joint gesture signalling or mobile advertising signalling (marketing [G06Q 30/02](#)-; input arrangements for transferring data to be processed into a form capable of being handled by the computer for entering handwritten data [G06F 3/04883](#))}
- H04W 4/22
  - {Mobile application service} emergency connection handling {or mobile application services handling urgent or hazardous situations, e.g. 3GPP earthquake and tsunami warning system [ETWS] (connection management for emergency connection handling [H04W 76/007](#)-; centralised arrangements for answering calls for emergency applications requiring operator intervention [H04M 3/5116](#))}
- U H04W 28/00 Network traffic or resource management**
- U H04W 28/02
  - Traffic management, e.g. flow control or congestion control
- H04W 28/0215
  - • {based on user or device properties, e.g. MTC-capable devices (mobile application services or facilities specially adapted for wireless communication networks for machine-to-machine communication [H04W 4/005](#)-; wireless resource selection or allocation plan definition based on terminal or device properties [H04W 72/048](#))}
- H04W 28/0226
  - • {based on location or mobility (handoff or reselection [H04W 36/00](#)-; mobile application services making use of the location of users or terminals [H04W 4/02](#))}
- H04W 28/0289
  - • {Congestion control (performing reselection for handling the traffic [H04W 36/22](#)-; load shedding arrangements in network planning [H04W 16/08](#)-; dynamic wireless traffic scheduling [H04W 72/12](#))}
- U H04W 28/04
  - • Error control {, e.g. treating errors, collisions, noise or interference (arrangements for detecting or preventing errors in the information received [H04L 1/00](#))}
- H04W 28/048
  - • • {Treating noise or interference (means associated with receiver for limiting or suppressing noise or interference induced by transmission [H04B 1/10](#)-; baseband systems or shaping networks in transmitter or receiver [H04L 25/03](#))}
- U H04W 52/00 Power Management, e.g. TPC [Transmission Power Control], power saving or power classes {(gain control in transmitters or power amplifiers [H03G 3/3042](#))}**

- H04W 52/02
- Power saving arrangements {(in wired systems [H04L 12/12](#); signaling of mobile application services, e.g. low battery notifications [H04W 4/20](#))}
- U H04W 80/00** **Wireless network protocols or protocol adaptations to wireless operation, e.g. WAP [Wireless Application Protocol]**
- U H04W 80/08
- Upper layer protocols {(network arrangements or communication protocols for networked applications [H04L 67/00](#))}
- H04W 80/10
- adapted for {application} session management, e.g. SIP [Session Initiation Protocol] {(connection management [H04W 76/00](#); arrangements for session management [H04L 67/14](#))}

**Project: N/A (H05B)**

- U H05B 1/00** **Details of electric heating devices**
- H05B 1/02
- Automatic switching arrangements specially adapted to apparatus; {-Control of heating devices}(control of temperature in general [G05D 23/00](#); thermally-actuated switches [H01H 37/00](#))
- H05B 11/00** **Heating by combined application of processes covered by two or more of groups [H05B 3/00](#) to [H05B 7/00](#) ([H05B 7/20](#) takes precedence)**
- H05B 33/00** **Electroluminescent light sources (discharge lamps [H01J 61/00](#) to [H01J 65/00](#); semi-conductor devices with at least one particular jump barrier or surface barrier adapted for light emission [H01L 27/15](#), [H01L 33/00](#); organic light emitting devices [H01L 27/32](#), [H01L 51/50](#); lasers [H01S 3/00](#), [H01S 5/00](#); compositions per se, see the relevant subclasses; {-luminescent scales or hands [G01D 13/20](#), [G01D 13/28](#); luminescent dials [G09F 13/20](#); conductive layers on isolated substrate [H01B 1/00](#); solid state image amplifiers [H01L 31/14](#); electronic gates with electroluminescent elements [H03K 17/78](#); pulse generation with electroluminescent elements [H03K 3/00](#))}**
- U H05B 33/12
- Light sources with substantially two-dimensional radiating surfaces
- H05B 33/14
- characterised by the chemical or physical composition or the arrangement of the electroluminescent material, {-or by the simultaneous addition of the electroluminescent material in or onto the light source}
- NOTE
- When classifying in this group, the chemical composition of the electroluminescent material is also classified in the appropriate subgroup of [C09K 11/00](#)
- U H05B 41/00** **Circuit arrangements or apparatus for igniting or operating discharge lamps {(circuit elements structurally associated with discharge lamps [H01J 7/44](#), [H01J 19/78](#); discharge lamps per se [H01J 61/00](#) to [H01J 65/00](#); arc lamps with consumable electrodes [H05B 31/00](#); transformers or chokes for supplying discharge lamps [H01F 38/08](#))}**
- U H05B 41/14
- Circuit arrangements
- H05B 41/16
- in which the lamp is fed by dc or by low-frequency ac, e.g. by 50 cycles/sec ac, {-or with network frequencies}
- H05B 41/24
- in which the lamp is fed by high frequency ac, {-or with separate oscillator frequency}(H05B 41/26 takes precedence)
- U H05B 43/00** **Circuit arrangements for light sources, not otherwise provided for ([H05B 37/00](#) takes precedence)**
- H05B 43/02
- for light sources using a charge of combustible material, {-e.g. magnesium lamps}

**Project: N/A (H05F)**

H05F 7/00

Use of naturally-occurring electricity, {e.g. lightning or static electricity}

**Project: N/A (H05G)****U H05G 1/00****X-ray apparatus involving X-ray tubes; circuits therefor**

U H05G 1/08

· Electrical details

U H05G 1/26

· · Measuring, controlling, protecting (measuring electric values [G01R](#); measuring X-ray intensity [G01T](#))

H05G 1/54

· · · Protecting {-or lifetime prediction}(overload protection combined with control [H05G 1/46](#))

H05G 1/58

· · Switching arrangements for changing-over from one mode of operation to another, e.g. from radioscopy to radiography, from radioscopy to irradiation {-or from one tube voltage to another}

H05G 1/70

· · Circuit arrangements for X-ray tubes with more than one anode; Circuit arrangements for apparatus comprising more than one X ray tube {-or more than one cathode ([H05G 1/58](#) takes precedence)}**Project: N/A (H05H)****U H05H 1/00****Generating plasma; Handling plasma**

U H05H 1/24

· Generating plasma {(gas-filled discharge reactors [H01J 37/32](#); nuclear fusion reactors [G21B 1/00](#); ohmic heating [H05H 1/20](#); injection heating [H05H 1/22](#))}

U H05H 1/26

· · Plasma torches {(metal working with constricted arc [B23K 10/00](#), [B23K 10/02](#); metal spraying [B05B 7/18](#), [B05B 7/20](#))}

U H05H 1/32

· · · using an arc ([H05H 1/28](#) takes precedence)

U H05H 1/34

· · · · Details, e.g. electrodes, nozzles {(cf. [B23K 9/24](#))}

H05H 1/36

· · · · · Circuit arrangements ([H05H 1/38](#), [H05H 1/40](#) take precedence)**U H05H 2245/00****test**

U H05H 2245/12

· Applications

H05H 2245/122

· · medical applications {-e.g. plasma scalpels, blades, bistouri}

**Project: N/A (H05K)**

H05K

**PRINTED CIRCUITS; CASINGS OR CONSTRUCTIONAL DETAILS OF ELECTRIC APPARATUS; MANUFACTURE OF ASSEMBLAGES OF ELECTRICAL COMPONENTS (details of instruments or comparable details of other apparatus not otherwise provided for [G12B](#); thin-film or thick-film circuits [H01L 27/01](#), [H01L 27/13](#); non-printed means for electric connections to or between printed circuits, {electric connections or line connectors, apparatus or processes for manufacturing, assembling, maintaining or repairing such connections or connectors} [H01R](#); casings for, or constructional details of, particular types of apparatus, see the relevant subclasses; processes involving only a single technical art, e.g. heating, spraying, for which provision exists elsewhere, see the relevant classes)**

**NOTES**

1. This subclass covers:

- combinations of a radio or television receiver with apparatus having a different main function;
- printed circuits structurally associated with non-printed electric components;
- {printed connectors (non printed connectors [H01R](#))}

2. In this subclass, the following expression is used with the meaning indicated:

- "printed circuits" covers all kinds of mechanical constructions of circuits that consist of an insulating base or support carrying the conductor and are combined structurally with the conductor throughout their length, especially in a two-dimensional plane, the conductors of which are secured to the base in a non-dismountable manner, and also covers the processes or apparatus for manufacturing such constructions, e.g. forming the circuit by mechanical or chemical treatment of a conductive foil, paste, or film on an insulating support.

#### H05K 1/00

**Printed circuits (assemblies of a plurality of individual semiconductor or solid state devices [H01L 25/00](#); devices consisting of a plurality of solid state components formed in or on a common substrate, e.g. integrated circuits, thin-film or thick-film circuits, [H01L 27/00](#))**

- U H05K 1/02
  - Details
- H05K 1/0213
  - {Electrical arrangements not otherwise provided for (screening [H05K 9/00](#); emergency protective circuits [H02H](#))}
- U H05K 1/0216
  - • {Reduction of cross-talk, and noise or electromagnetic interference (grounding [H05K 1/0215](#))}
- H05K 1/0236
  - • • {Electromagnetic band-gap structures (conductive planes with an opening or a split [H05K 1/0225](#), [H05K 1/0227](#))}
- H05K 1/0254
  - • • {High voltage adaptations; Electrical insulation details; Overvoltage or electrostatic discharge protection (electrostatic discharge protection for electric apparatus in general [H05K 9/0067](#), [H05K 9/0079](#)); Arrangements for regulating voltages or for using plural voltages}
- H05K 1/0277
  - {Bendability or stretchability details (not used, see subgroups; [H05K 1/038](#), [H05K 3/4691](#) take precedence)}
- H05K 1/0296
  - {Conductive pattern lay-out details not covered by sub groups [H05K 1/02](#) to [H05K 1/0295](#) ([H05K 1/11](#) takes precedence; lay-out adapted to mounted component configuration [H05K 1/18](#))}
- U H05K 1/03
  - • Use of materials for the substrate {(substrates for semiconductor chips [H01L 23/00](#))}
- H05K 1/05
  - • • Insulated metal substrate {or other insulated electrically conductive substrate (thermal coupling of mounted components and metal substrate [H05K 1/0204](#), [H05K 1/021](#))}
- U H05K 1/09
  - • Use of materials for the metallic pattern {or other conductive pattern (materials for conductors [H01B 1/00](#))}
- H05K 1/092
  - • • {Dispersed materials, e.g. conductive pastes or inks (Conductive material dispersed in non-conductive material in general [H01B 1/14](#) to [H01B 1/24](#); Conductive inks in general [C09D 11/52](#))}
- H05K 1/14
  - • Structural association of two or more printed circuits (providing electric connection to or between printed circuits [H05K 1/11](#), [H01R 9/09](#), [H01R 23/68](#))
- H05K 1/16
  - incorporating printed electric components, e.g. printed resistor, capacitor, inductor {(thick-film or thin-film circuits [H01L 27/01](#), [H01L 27/13](#))}
- H05K 1/18
  - Printed circuits structurally associated with non-printed electric components ({[H05K 1/0201](#), [H05K 1/023](#), [H05K 1/0243](#), } [H05K 1/16](#) take precedence)
- U H05K 1/182
  - {associated with components mounted in the printed circuit board, e.g. IMC (insert mounted components)}
- H05K 1/185
  - • • {Components encapsulated in the insulating substrate of the printed circuit or incorporated in internal layers of a multilayer circuit (semiconductor chips encapsulated by interconnect and support structures [H01L 23/5389](#), [H01L 24/00](#))}

<b>H05K 3/00</b>	<b>Apparatus or processes for manufacturing printed circuits (photomechanical production of textured or patterned surfaces, materials or originals therefor, apparatus specially adapted therefor, in general G03F; involving the manufacture of semiconductor devices H01L)</b>
H05K 3/0008	· {for aligning or positioning of tools relative to the circuit board ( <a href="#">H05K 3/4638</a> -, <a href="#">H05K 3/4679</a> take precedence; for manufacturing assemblages of components <a href="#">H05K 13/0015</a> )}
H05K 3/0011	· {Working of insulating substrates or insulating layers (making copper-clad substrates <a href="#">H05K 3/022</a> -, surface treatment for improvement of adhesion <a href="#">H05K 3/381</a> )}
H05K 3/007	· {Manufacture or processing of a substrate for a printed circuit board supported by a temporary or sacrificial carrier ( <a href="#">H05K 1/187</a> -, <a href="#">H05K 3/20</a> and <a href="#">H05K 3/4682</a> take precedence)}
H05K 3/0073	· {Masks not provided for in groups <a href="#">H05K 3/02</a> to <a href="#">H05K 3/46</a> -, e.g. for photomechanical production of patterned surfaces}
H05K 3/0085	· {Apparatus for treatments of printed circuits with liquids not provided for in groups <a href="#">H05K 3/02</a> to <a href="#">H05K 3/46</a> -, conveyers and holding means therefor (apparatus specially adapted for manufacturing assemblages of electric components, e.g. printed circuit boards, <a href="#">H05K 13/00</a> )}
U H05K 3/02	· in which the conductive material is applied to the surface of the insulating support and is thereafter removed from such areas of the surface which are not intended for current conducting or shielding
H05K 3/027	· · {the conductive material being removed by irradiation, e.g. by photons, alpha, beta particles (machining by laser in general <a href="#">B23K 26/00</a> -, electron - or ion beam tubes therefor <a href="#">H01J 37/00</a> )}
U H05K 3/10	· in which conductive material is applied to the insulating support in such a manner as to form the desired conductive pattern
H05K 3/107	· · {by filling grooves in the support with conductive material ( <a href="#">H05K 3/045</a> -, <a href="#">H05K 3/101</a> -, <a href="#">H05K 3/1258</a> and <a href="#">H05K 3/465</a> take precedence)}
H05K 3/108	· · {by semi-additive methods; masks therefor (characterised by metallic etch mask <a href="#">H05K 3/062</a> -, electroplating methods or apparatus <a href="#">H05K 3/241</a> )}
U H05K 3/12	· · {using thick film techniques, e.g. printing techniques to apply the conductive material or similar techniques for applying conductive paste or ink patterns (printing techniques in general <a href="#">B41M</a> , printing apparatus <a href="#">B41F</a> )}
H05K 3/1208	· · · {Pretreatment of the circuit board, e.g. modifying wetting properties; Patterning by using affinity patterns (providing shape patterns <a href="#">H05K 3/1258</a> -, adhesion treatments <a href="#">H05K 3/38</a> )}
U H05K 3/1216	· · · {by screen printing or stencil printing}
H05K 3/1225	· · · · {Screens or stencils (in general <a href="#">B41N 1/24</a> -, manufacturing of screens or stencils <a href="#">B41C 1/14</a> ); Holders therefor (stencil holders for applying liquids <a href="#">B05C 17/08</a> )}
H05K 3/14	· · using spraying techniques to apply the conductive material {including vapour evaporation; (covering metals by metal spraying <a href="#">C23C 4/00</a> -, coating by vacuum evaporation <a href="#">C23C 14/00</a> )}
H05K 3/16	· · · by cathodic sputtering {(covering materials by cathodic sputtering <a href="#">C23C 14/34</a> -, discharge devices therefor <a href="#">H01J 37/34</a> )}
U H05K 3/18	· · using precipitation techniques to apply the conductive material {(chemical coating of a substrate by decomposition <a href="#">C23C 18/00</a> )}
H05K 3/181	· · · {by electroless plating (adhesives therefor <a href="#">H05K 3/387</a> -, electroless plating in general <a href="#">C23C 18/16</a> )}
H05K 3/20	· · by affixing prefabricated conductor pattern {( <a href="#">H05K 1/187</a> -, <a href="#">H05K 3/046</a> -, <a href="#">H05K 3/4658</a> -, <a href="#">H05K 3/4682</a> takes precedence)}

- U H05K 3/22
  - Secondary treatment of printed circuits {(H05K 3/1283 takes precedence; embedding circuits in grooves by pressure H05K 3/107)}
- H05K 3/225
  - • {Correcting or repairing of printed circuits (H05K 1/0292-, H05K 3/222-, H05K 3/288-, H05K 3/4685 take precedence)}
- U H05K 3/24
  - • Reinforcing the conductive pattern {(by solder coating H05K 3/3457)}
- H05K 3/243
  - • • {characterised by selective plating, e.g. for finish plating of pads (selective plating for making the circuit pattern H05K 3/108-, H05K 3/182)}
- H05K 3/244
  - • • {Finish plating of conductors, especially of copper conductors, e.g. for pads or lands (selective plating methods H05K 3/243-; finish plating of conductors made by printing techniques H05K 3/246-; solder as finish H05K 3/3457-, e.g. by plating H05K 3/3473)}
- U H05K 3/30
  - Assembling printed circuits with electric components, e.g. with resistor
- U H05K 3/32
  - • electrically connecting electric components or wires to printed circuits
- H05K 3/34
  - • • by soldering {(soldering or desoldering apparatus H05K 13/04-, B23K 1/00-, B23K 3/00)}
- U H05K 3/40
  - Forming printed elements for providing electric connections to or between printed circuits
- H05K 3/4007
  - • {Surface contacts, e.g. bumps (H05K 3/4092 takes precedence; deposition of finish layers on pads H05K 3/24-; forming solder bumps H05K 3/3457)}
- U H05K 3/42
  - • Plated through-holes {or plated via connections}
- H05K 3/421
  - • • {Blind plated via connections (H05K 3/422-, H05K 3/423 and H05K 3/425 take precedence)}
- H05K 3/44
  - Manufacture insulated metal core circuits {or other insulated electrically conductive core circuits (H05K 3/0058-, H05K 3/4641-, H05K 3/4608 take precedence)}
- U H05K 3/46
  - Manufacturing multilayer circuits {(incorporating non-printed electric components in internal layers H05K 1/185)}
- H05K 3/4644
  - • {by building the multilayer layer by layer, i.e. build-up multilayer circuits (making via holes in the insulating layers H05K 3/0011-; special circuit boards as base or core whereon the multilayer is built H05K 3/4602)}
- U H05K 3/4652
  - • • {Adding a circuit layer by laminating a metal foil or a preformed metal foil pattern (H05K 3/4647 takes precedence)}
- H05K 3/4655
  - • • • {by using a laminate characterized by the insulating layer (general-purpose insulating materials H05K 1/03-, H05K 3/4673)}
- H05K 5/00**
  - Casings, cabinets or drawers for electric apparatus (in general A47B; radio receiver cabinets H04B 1/08-; television receiver cabinets H04N 5/64-; { constructional details or arrangements for computers G06F 1/16})**
- U H05K 5/02
  - Details
- H05K 5/0217
  - • {Mechanical details of casings (G06F 1/1613-, H01M 2/10-, H04M 1/0202 take precedence)}
- U H05K 7/00**
  - Constructional details common to different types of electric apparatus (casings, cabinets, drawers H05K 5/00)**
- U H05K 7/02
  - Arrangements of circuit components or wiring on supporting structure
- H05K 7/06
  - • on insulating boards {e.g. wiring harnesses (for printed circuits H05K 1/18-, H05K 3/30)}
- U H05K 7/14
  - Mounting supporting structure in casing or on frame or rack {(H05K 7/18 takes precedence; test adapters G01R 31/2808)}
- U H05K 7/1462
  - • {for programmable logic controllers [PLC] for automation and/or industrial process control (programmable logic controllers per se G05B 19/05)}
- H05K 7/1482
  - • • {PLC power supply; PLC accessories, e.g. for safety}

- U H05K 7/1485      · · {Servers; Data center rooms, e.g. 19-inch computer racks}
- U H05K 7/1488      · · · {Cabinets therefore, e.g. chassis, racks}
- H05K 7/1491      · · · · {having cable management arrangements (management of optical cables [G02B 6/444](#); in telecommunication cabinets [H04Q 1/06](#))}
- H05K 7/20      · Modifications to facilitate cooling, ventilating, or heating {(of printed circuits [H05K 1/0201](#); of resistors [H01C](#); of capacitors [H01G](#); of individual semiconductor components [H01L 23/34](#); [H01L 31/024](#); of LEDs [H01L 33/64](#); of personal computers [G06F 1/20](#))}
- H05K 7/20009      · · {using a gaseous coolant in electronic enclosures (in cabinets of standardized dimensions [H05K 7/20536](#); in server cabinets [H05K 7/20709](#); in vehicle electronic casings [H05K 7/20845](#); in power control electronics [H05K 7/2089](#); in displays [H05K 7/20954](#))}
- H05K 7/20218      · · {using a liquid coolant without phase change in electronic enclosures (in cabinets of standardized dimensions [H05K 7/20536](#); in server cabinets [H05K 7/20709](#); in vehicle electronic casings [H05K 7/20845](#); in power control electronics [H05K 7/2089](#); in displays [H05K 7/20954](#))}
- H05K 7/2029      · · {using a liquid coolant with phase change in electronic enclosures (in cabinets of standardized dimensions [H05K 7/20536](#); in server cabinets [H05K 7/20709](#); in vehicle electronic casings [H05K 7/20845](#); in power control electronics [H05K 7/2089](#); in displays [H05K 7/20954](#))}
- H05K 7/20954      · · {for display panels (cooling means for computer displays [G06F 1/20](#); heating or cooling of liquid crystal cells [G02F 1/133382](#); cooling for projectors [G03B 21/16](#); plasma display panels per se [H01J 17/49](#))}
  
- H05K 9/00      Screening of apparatus or components against electric or magnetic fields (devices for absorbing radiation from an aerial [H01Q 17/00](#); { screening of semiconductor devices [H01L 24/00](#), [H01L 23/58](#); screening structurally associated with dynamo-electric machines [H02K 11/00](#); shielding against nuclear radiation [G21F](#))}**
- H05K 9/0001      · {Rooms, chambers (building construction in general [E04B](#); anechoic room [G01R 29/0821](#); Nuclear magnetic resonance [G01R 33/42](#))}
- U H05K 9/0007      · {Casings (standardised racks [H05K 9/0062](#))}
- U H05K 9/002      · · {with localised screening}
- H05K 9/0022      · · · {of components mounted on printed circuit boards [PCB] (shields integrated within component packages [H01L 23/552](#); shields integrated within PCB [H05K 1/0218](#))}
- U H05K 9/0073      · {Shielding materials ([H05K 9/0003](#) takes precedence)}
- H05K 9/0075      · · {Magnetic shielding materials (magnetic material in general [H01F 1/00](#); for electrical motor [H02K 11/00](#); for transformer [H01F 27/28](#))}
  
- H05K 11/00      Combination of a radio or television receiver with apparatus having a different main function {(combined with clocks [G04B 47/00](#); controlled by a clock [G04C 21/28](#))}**
  
- U H05K 13/00      Apparatus or processes specially adapted for manufacturing or adjusting assemblages of electric components**
- H05K 13/0092      · {Treatment of the terminal leads as a separate operation (during transport [H05K 13/0076](#); [H05K 13/023](#); during mounting [H05K 13/04](#))}
- U H05K 13/02      · Feeding of components (in general [B65G](#))
- H05K 13/022      · · {with orientation of the elements (orientation while mounting [H05K 13/0413](#); in general [B23P 19/00](#))}
  
- U H05K 2201/00      Indexing scheme relating to printed circuits covered by [H05K 1/00](#)**
- U H05K 2201/02      · Fillers; Particles; Fibers; Reinforcement materials

- U H05K 2201/0203      · · Fillers and particles
- U H05K 2201/0242      · · · Shape of an individual particle
- H05K 2201/0248      · · · · Needles or elongated particles; Elongated cluster of chemically bonded particles (microfibers [H05K 2201/0251](#); stacked conductors [H05K 2201/0379](#))
- U H05K 2201/09      · Shape and layout
- U H05K 2201/09145      · · Edge details
- H05K 2201/092      · · · Exposing inner circuit layers or metal planes at the walls of high aspect ratio holes (forming plated-through holes [H05K 3/42](#); cutting around hole [H05K 2203/0242](#))
- U H05K 2201/09209      · · Shape and layout details of conductors
- U H05K 2201/09218      · · · Conductive traces
- H05K 2201/09236      · · · · Parallel layout (layout of balanced signal pairs [H05K 1/0245](#); superposed layout [H05K 2201/09672](#))
- H05K 2201/09281      · · · · Layout details of a single conductor (meander [H05K 2201/09263](#); layout details of angles or corners [H05K 2201/09272](#))
- U H05K 2201/10      · Details of components or other objects attached to or integrated in a printed circuit board
- U H05K 2201/10431      · · Details of mounted components (printed components [H05K 1/16](#))
- U H05K 2201/10439      · · · Position of a single component
- H05K 2201/10446      · · · · Mounted on an edge (soldering edge mounted components [H05K 3/3405](#); edge terminals [H05K 2201/1034](#))
- U H05K 2201/10613      · · Details of electrical connections of non-printed components, e.g. special leads
- U H05K 2201/10954      · · · Other details of electrical connections
- H05K 2201/10984      · · · · Component carrying a connection agent, e.g. solder, adhesive (soldering leadless components having an array of bottom contacts [H05K 3/3436](#); BGA components [H05K 2201/10734](#))
- U H05K 2203/00      Indexing scheme relating to apparatus or processes for manufacturing printed circuits covered by [H05K 3/00](#)**
- U H05K 2203/01      · Tools for processing; Objects used during processing
- H05K 2203/0195      · · Tool for a process not provided for in [H05K 3/00](#), e.g. tool for handling objects using suction, for deforming objects, for applying local pressure
- U H05K 2203/06      · Lamination
- H05K 2203/061      · · of previously made multilayered subassemblies (laminating only or mainly similar single-sided circuit boards [H05K 3/4617](#); laminating only or mainly similar double-sided circuit boards [H05K 3/462](#))

**Project: N/A (Y02B)**

- U Y02B 90/00      Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation**
- U Y02B 90/20      · Systems integrating technologies related to power network operation and communication or information technologies mediating in the improvement of the carbon footprint of the management of residential or tertiary loads, i.e. smart grids as enabling technology in buildings sector (not used, see subgroups) (Smart grids supporting the management or operation of end-user stationary applications in general, including technologies with no associated climate change mitigation effect [Y04S 20/00](#))
- U Y02B 90/22      · · Systems characterised by the monitored, controlled or operated end-user elements or equipments (not used, see subgroups)

Y02B 90/222

- • • the elements or equipments being or involving energy storage units, uninterruptible power supply [UPS] systems or standby or emergency generators involved in the last power distribution stages (energy storage units involved in power generation, transmission or distribution [Y04S 10/14](#); uninterruptible power supply systems or standby or emergency generators as end-user application [Y04S 20/248](#))

**Project: N/A (Y02C)**

Y02C 20/00

**Capture or disposal of greenhouse gases [GHG] other than CO<sub>2</sub> (not used, see subgroups)**

**Project: N/A (Y02E)****U** Y02E 40/00

**Technologies for an efficient electrical power generation, transmission or distribution**

Y02E 40/70

- Systems integrating technologies related to power network operation and communication or information technologies for improving the carbon footprint of electrical power generation, transmission or distribution, i.e. smart grids as climate change mitigation technology in the energy generation sector (smart grids relating to the energy generation sector in general, including the technologies with no associated climate change mitigation effect [Y04S 10/00](#)) {not used, see subgroups}

**U** Y02E 60/00

**Enabling technologies or technologies with a potential or indirect contribution to GHG emissions mitigation**

Y02E 60/70

- Systems integrating technologies related to power network operation and communication or information technologies mediating in the improvement of the carbon footprint of electrical power generation, transmission or distribution, i.e. smart grids as enabling technology in the energy generation sector (smart grids relating to the energy generation sector in general, including the technologies with no associated climate change mitigation effect [Y04S 10/00](#)) {not used, see subgroups}

Y02E 60/72

- • Systems characterised by the monitored, controlled or operated power network elements or equipments {not used, see subgroups}

**U** Y02E 60/78

- • Communication technology specific aspects (not used, see subgroups)

Y02E 60/7876

- • • Aspects related to the treatment or conditioning of data or signals {not used, see subgroups}

**Project: N/A (Y02T)****U** Y02T 10/00

**Road transport of goods or passengers**

**U** Y02T 10/60

- Other road transportation technologies with climate change mitigation effect (not used, see subgroups)

**U** Y02T 10/62

- • Hybrid vehicles

Y02T 10/6213

- • • using ICE and electric energy storage, i.e. battery, capacitor (battery or capacitor technology for electromobility in general [Y02T 10/7005](#), [Y02T 10/7022](#))

Y02T 10/70

- • Energy storage for electromobility (hydrogen internal combustion engines [Y02T 90/42](#); fuel cell powered electric vehicles [Y02T 90/34](#))