

Compilation of Changes to the CPC Scheme Between 2016.05 and 2016.08

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*
- 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: N/A (A01B)

- A01B 49/00** Combined machines (auxiliary devices attached to machines of a different kind, e.g. harrows attached to ploughs, ~~see~~*see* the relevant groups for the machines)
- A01B 51/00** Undercarriages specially adapted for mounting-on various kinds of agricultural tools or apparatus (general vehicle aspects, ~~see~~*see* the relevant subclass of class [B60](#) or [B62](#))
- A01B 61/00** Devices for, or parts of, agricultural machines or implements for preventing overstrain (preventing overstrain in vehicle connections, in general [B60D](#); preventing overstrain in couplings ~~per se~~*per se* [F16D](#))
- A01B 63/00** Lifting or adjusting devices or arrangements for agricultural machines or implements (lifting mechanisms for the cutter-bar of a mower [A01D 34/24](#); adjusting devices for the cutter-bar of a mower [A01D 34/28](#); constructional features of lifting devices ~~per se~~*per se* [B66F](#))
- A01B 79/00** Methods for working soil (essentially requiring the use of particular machines, ~~see~~*see* the relevant groups for the machines)

Project: N/A (A01C)

- U A01C 9/00** Potato planters ({planting by hand [A01C 7/02](#)}; combinations with soil working tools [A01B 49/04](#))
- A01C 9/08 • with other distributing devices, e.g. flaps, screws, horizontal turning plates {(with bucket wheels [A01C 9/04](#))}

Project: N/A (A01D)

- A01D** **HARVESTING; MOWING** ({parts, details or accessories of agricultural machines or implements in general [A01B 51/00](#) - [A01B 75/00](#))}
- NOTES**
1. This subclass ~~covers~~*covers* the shredding or pulverising of stubble, e.g. for the purpose of producing mulch, but ~~does not cover~~*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](#)
- U A01D 42/00** **Mowers convertible to apparatus for purposes other than mowing; Mowers capable of performing operations other than mowing (mowers combined with apparatus performing additional operations while mowing [A01D 43/00](#))**

- A01D 42/005
 - {Mulching (shredders or like cutting implements for comminuting plant waste ~~per se~~ ~~per se~~ [A01G 3/002](#))}
- A01D 42/06
 - Sweeping or cleaning lawns or other surfaces {(sweeping apparatus for lawns ~~per se~~ ~~per se~~ [A01G 1/125](#))}
- U A01D 43/00 Mowers combined with apparatus performing additional operations while mowing ([A01D 37/00](#), [A01D 39/00](#), [A01D 41/00](#), take precedence)**
- A01D 43/10
 - with means for crushing or bruising the mown crop {(stalk crushers or bruisers ~~per se~~ ~~per se~~ for standing stalks or stubbles [A01D 34/8355](#), for mown crop [A01D 82/00](#), for straw [A01F 12/40](#))}
- 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~~ ~~per se~~ [B24B](#), [B24D](#))
- A01D 75/10
 - Devices for reconditioning the knife-bar, e.g. removing the knife from its backing
- U A01D 75/28**
 - Control mechanisms for harvesters or mowers when moving on slopes; Devices preventing lateral pull
- A01D 75/282
 - {acting on the grain cleaning and separating device (grain cleaners, separators ~~per se~~ ~~per se~~ [A01F 12/44](#))}
- A01D 80/00 Parts or details of {, or accessories for,} haymakers (parts or details specific for one type of machine, ~~see~~ ~~see~~ the relevant groups for these machines)**
- 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 91/00 Methods for harvesting agricultural products (essentially requiring the use of particular machines, ~~see~~ ~~see~~ the relevant groups for the machines)**

Project: N/A (A01G)

- 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](#))}**
- U 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](#))}
- A01G 13/06
 - Devices for generating heat, smoke, or fog in gardens, orchards, or forests, e.g. to prevent damage by frost ({bee-smokers [A01K 55/00](#); fumigators for destroying insects [A01M 13/006](#); for destroying rats [A01M 17/004](#)}; chemical aspects of generating smoke or mist [C06D 3/00](#); heating devices in general, ~~see~~ ~~see~~ the appropriate classes, e.g. [F24](#))}
- U A01G 23/00 Forestry**
- U A01G 23/02**
 - Transplanting, uprooting, felling or delimbing trees (delimbing standing trees [A01G 3/00](#))
- NOTE**
- Tree feeding devices are covered by group [B27B 25/00](#)
- A01G 23/095
 - • Delimbers ([A01G 23/083](#) takes precedence; manufacture of wood shavings, chips, powder, or the like, ~~per se~~ ~~per se~~ [B27L 11/00](#))

- U A01G 25/00** Watering gardens, fields, sports grounds, or the like (special apparatus or adaptations for fertilising-liquids [A01C 23/00](#); nozzles or outlets, spraying apparatus [B05B](#); gravity flow, open channel irrigation ditch systems [E02B 13/00](#))
- A01G 25/02 • Watering arrangements located above the soil which make use of perforated pipe-lines or pipe-lines with dispensing fittings, e.g. for drip irrigation (perforated pipes ~~per se~~ [per se B05B 1/20](#))
- A01G 25/06 • Watering arrangements making use of perforated pipe-lines located in the soil (perforated pipes ~~per se~~ [per se B05B 1/20](#); similar arrangements for drainage [E02B 11/00](#))

Project: N/A (A01J)

A01J **MANUFACTURE OF DAIRY PRODUCTS** (preservation, pasteurisation, sterilisation of milk products [A23](#); for chemical matters, ~~see~~[see](#) subclass [A23C](#))

Project: N/A (A01K)

A01K **ANIMAL HUSBANDRY; CARE OF BIRDS, FISHES, INSECTS; FISHING; REARING OR BREEDING ANIMALS, NOT OTHERWISE PROVIDED FOR; NEW BREEDS OF ANIMALS**

NOTE

This subclass ~~covers~~[covers](#):

- equipment for the care, culture or rearing of all animals, or for obtaining their products, unless provided for elsewhere, e.g. milking [A01J](#), shoeing animals [A01L](#), veterinary devices [A61D](#), culture of animal cells [C12M](#), [C12N](#);
- methods of breeding animals or new animal breeds.

- U A01K 63/00** **Receptacles for live fish, e.g. aquaria (keepnets or other containers for keeping captured fish [A01K 97/20](#); Terraria {(receptacles for rearing fish [A01K 61/00](#))}**
- A01K 63/06 • Arrangements for heating or lighting in, or attached to, receptacles for live fish (heating, {cooling} or lighting apparatus ~~per se~~ [per se F21](#), [H01](#), [H05B](#))
- U A01K 67/00** **Rearing or breeding animals, not otherwise provided for; New breeds of animals (methods for reproduction or fertilisation [A61D 19/00](#); medicinal preparations containing sperm [A61K 35/52](#); tissue- or animal-cell cultivation apparatus [C12M 3/00](#); cultivation or maintenance of tissue or animal cells [C12N 5/00](#); mutation or genetic engineering [C12N 15/00](#))**
- NOTE
- In this group the following term is used with the meaning indicated:
- "breeding" means obtaining animals up to and including their birth or hatching.
- A01K 67/02 • Breeding vertebrates (covering boxes [A01K 15/00](#); devices for assisting or preventing mating [A01K 21/00](#))

NOTE

{Documents relating to new peptides or new DNA or its corresponding mRNA encoding for peptides, and their use for the obtention of transgenic animals, are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes}}

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 89/016

- • Fly reels {, i.e. with a stub shaft support}

WARNING

Group [A01K 89/016](#) is impacted by reclassification into group [A01K 89/0162](#).

Groups [A01K 89/016](#) and [A01K 89/0162](#) should be considered in order to perform a complete search.

A01K 89/08

- Pole-less fishing apparatus, i.e. hand-held reels

WARNING

Group [A01K 89/08](#) is impacted by reclassification into group [A01K 89/081](#).

Groups [A01K 89/08](#) and [A01K 89/081](#) should be considered in order to perform a complete search.

U A01K 2207/00**Modified animals**

A01K 2207/15

- Humanized animals

NOTE

This group ~~covers~~[covers](#) animals comprising human nucleic acids, proteins or cells. Classification in this group should be done in combination with [A01K 2217/00](#) codes.

Project: N/A (A01M)**U A01M 9/00****Special adaptations or arrangements of powder-spraying apparatus for purposes covered by this subclass ({[A01M 7/00](#), [A01C 15/00](#) take precedence}); spraying apparatus in general [B05B](#))**

A01M 9/0076

- {Special arrangements or adaptations of the dusting or distributing parts, e.g. mounting of the spray booms, the protection shields (nozzles [B05B 1/00](#); spray pistols [B05B 9/01](#))}

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

PRESERVATION OF BODIES OF HUMANS OR ANIMALS OR PLANTS OR PARTS THEREOF; BIOCIDES, e.g. AS DISINFECTANTS, AS PESTICIDES, AS HERBICIDES (preparations for medical, dental or toilet purposes [A61K](#); methods or apparatus for disinfection or sterilisation in general, or for deodorising of air [A61L](#)); PEST REPELLANTS OR ATTRACTANTS (decoys [A01M 1/06](#); medicinal preparations [A61K](#)); PLANT GROWTH REGULATORS (compounds in general [C01](#), [C07](#), [C08](#); fertilisers [C05](#); soil conditioners or stabilisers [C09K 17/00](#))

NOTES

1. This subclass ~~covers~~[covers](#):
 - compositions, physical forms, methods of application of specific materials or the use of single compounds or compositions
 - chemosterilants for the sexual sterilisation of invertebrates, e.g. insects (sex sterilants for other purposes [A61K](#)).
2. This subclass ~~does not cover~~[does not cover](#) materials which affect the growth of a plant solely by supplying nutrients, i.e. plant food, ordinarily required for growth or materials which are used to prevent or cure mineral deficiencies in plants, e.g. addition of iron chelates to cure iron chlorosis, which materials are covered by class [C05](#).
3. In this subclass, the following expression is used with the meaning indicated:
 - "plant growth regulators" are those materials which alter the plant through a chemical modification of the plant metabolism, such as auxins.

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:

A01N 43/824	covered by A01N 43/82
A01N 43/828	covered by A01N 43/82
A01N 43/832	covered by A01N 43/82
A01N 43/836	covered by A01N 43/82
A01N 53/02	covered by A01N 53/00
A01N 53/04	covered by A01N 53/00
A01N 53/06	covered by A01N 53/00
A01N 53/08	covered by A01N 53/00
A01N 53/10	covered by A01N 53/00
A01N 53/12	covered by A01N 53/00
A01N 53/14	covered by A01N 53/00
A01N 55/10	covered by A01N 55/00

**A01N 25/00 -
A01N 65/00****Biocides; Pest repellants or attractants; Plant growth regulators****NOTES**

1. Attention is drawn to the definitions of groups of chemical elements following the title of section **E**.
2. In groups [A01N 27/00](#) - [A01N 65/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place for an active ingredient.
3. 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.
4. Compounds covered by different main groups according to alternatively specified parts of their formulae are classified in every one of the relevant main groups.
5. 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.
6. Salts or metal chelates of an organic compound are classified as that compound.
7. In this subclass, a foodstuff is not considered as an active ingredient.
8. Different materials applied in sequence, at different times, are considered as a mixture of all materials employed
9. Synergistic or potentiated compositions are classified as if the synergist or potentiator were an active ingredient.
10. In groups [A01N 25/00](#) - [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. $\text{---}\cdot\cdot\cdot$ indicates one or two single bonds or a double bond.
11. In groups [A01N 25/00](#) - [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).

U A01N 47/00

Biocides, pest repellants or attractants, or plant growth regulators containing organic compounds containing a carbon atom not being member of a ring and having no bond to a carbon or hydrogen atom, e.g. derivatives of carbonic acid (carbon tetrahalides [A01N 29/02](#))

U A01N 47/08

- the carbon atom having one or more single bonds to nitrogen atoms

U A01N 47/10

- Carbamic acid derivatives, i.e. containing the group -O-CO-N< ; Thio analogues thereof

A01N 47/24

- containing the groups $\text{---}\ddot{\text{X}}\text{---O---CO---N<}$, $\text{---O---CO---N---}\ddot{\text{X}}\text{---}$ or $\text{---}\ddot{\text{X}}\text{---}\ddot{\text{S}}\text{---CO---N<}$; Thio analogues thereof

A01N 47/40

- the carbon atom having a double or triple bond to nitrogen, e.g. cyanates, cyanamides (inorganic cyanamides [A01N 59/24](#))

Project: N/A (A21C)**U A21C 1/00**

Mixing or kneading machines for the preparation of dough (domestic mixing or kneading machines [A47J 43/00](#), [A47J 44/00](#); {mixing in general [B01F](#); mixing or kneading of substances in a plastic state in general [B29B 7/00](#)})

- U A21C 1/14 • Structural elements of mixing or kneading machines; {Parts; Accessories}
- A21C 1/1495 • • {Arrangements for cooling or heating (receptacles with means for guiding fluids ~~per se~~ *per se* [A21C 1/149](#)); Arrangements for applying super- or sub-atmospheric pressure}
- U A21C 13/00 **Provers, i.e. apparatus permitting dough to rise {(testing dough properties [G01N 33/10](#))}**
- A21C 13/02 • with endless conveyors {, e.g. for moving the dough pieces progressively through the prover}

Project: RP0295 (A21D)

- U A21D 13/00 **Finished or partly finished {(par-baked)} bakery products**
- U A21D 13/0067 • {Special bakery products}
- A21D 13/0083 • • {Croutons from bread or bakery products (farinaceous granules ~~A23L 1/176~~ [A23L 7/157](#))}

Project: N/A (A21D)

- A21D 13/04 • Bread from materials other than rye or wheat flour {, e.g. rice flour}

Project: N/A (A22B)

- U A22B 5/00 **Accessories for use during or after slaughtering**
- 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](#))}

Project: RP0295 (A22C)

- A22C 9/00 **Apparatus for tenderising meat, e.g. ham {(tenderising chemically ~~A23L 1/31~~ [A23L 13/00](#), ~~A23L 1/318~~ [A23L 13/70](#))}**
- A22C 11/00 **Sausage making {(chemical aspects ~~A23L 1/31~~ [A23L 13/00](#)); Apparatus for handling or conveying sausage products during manufacture}**

Project: N/A (A22C)

- U A22C 13/00 **Sausage casings {(made of animal intestines [A22C 17/14](#))}**
- A22C 13/0003 • {Apparatus for making sausage casings, e.g. simultaneously with stuffing artificial casings (enclosing material webs being formed into tubes ~~in situ~~ *in situ* around filling nozzles [B65B 9/20](#))}

Project: RP0295 (A23B)

- U A23B 7/00 **Preservation or chemical ripening of fruit or vegetables**
- M A23B 7/02 • Dehydrating; Subsequent reconstitution (dried cooked potatoes ~~A23L 1/216~~ [A23L 19/12](#))
- M A23B 7/08 • Preserving with sugars (marmalade, jam; *or* fruit jellies ~~A23L 1/06~~ [A23L 21/10](#))

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** 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.

U A23C 7/00

A23C 7/02

Other dairy technology

- Chemical cleaning of dairy apparatus (cleaning in general [B08B](#), e.g. [B08B 3/08](#)); Use of sterilisation methods therefor (sterilisation methods **per se** [per se](#) [A61L](#))

Project: RP0295 (A23C)**M 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; **or** mixtures for preparation of ice-cream [A23G 9/00](#); puddings; **or** dry powder puddings [A23L 1/187](#) [A23L 9/10](#))

Project: N/A (A23C)**U A23C 9/12**

- Fermented milk preparations; Treatment using micro-organisms or enzymes (whey preparations [A23C 21/00](#))

A23C 9/127

- • using micro-organisms of the genus lactobacteriaceae and other micro-organisms or enzymes, e.g. kefir, koumiss ([A23C 9/13](#) takes precedence)

A23C 9/14

- in which the chemical composition of the milk is modified by non-chemical treatment

NOTE

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]

Project: RP0295 (A23C)**M A23C 11/00**

Milk substitutes, e.g. coffee whitener compositions (cheese substitutes [A23C 20/00](#); butter substitutes [A23D](#); cream substitutes [A23L 1/19](#) [A23L 9/20](#))

U A23C 11/02

- containing at least one non-milk component as source of fats or proteins ([A23C 19/055](#), [A23C 21/04](#) take precedence)

U A23C 11/10

- • containing or not lactose but no other milk components as source of fats, carbohydrates or proteins, e.g. soy milk

U A23C 11/103

- • • {containing only proteins from pulses, oilseeds or nuts, e.g. soy or nut milk}

M A23C 11/106

- • • • {Addition of, or treatment with, micro-organisms ([A23C 20/025](#) and [A23L 1/2118](#) [A23L 11/37](#) take precedence)}

M A23C 13/00

Cream; Cream preparations (**ice-cream [A23G 9/00](#)**); Making thereof (coffee whitener compositions [A23C 11/00](#); cream substitutes [A23L 1/19](#) [A23L 9/20](#))

Project: N/A (A23C)

- U A23C 19/00 Cheese; Cheese preparations; Making thereof (cheese substitutes [A23C 20/00](#); casein [A23J 1/20](#))**
- U A23C 19/02 · Making cheese curd
- U A23C 19/032 · · characterised by the use of specific micro-organisms, or enzymes of microbial origin
- A23C 19/0326 · · · {Rennet produced by fermentation, e.g. microbial rennet; Rennet produced by genetic engineering}
- U A23C 19/097 · Preservation
- A23C 19/10 · · Addition of preservatives {(enzymes or micro-organisms, [see see A23C 19/032](#), [A23C 19/04](#), [A23C 19/061](#) and [A23C 19/063](#))}
- U A23C 2240/00 Use or particular additives or ingredients (not used, see subgroups below)**
- A23C 2240/20 · Inert gas treatment, using, e.g. noble gases or CO₂, including CO₂ liberated by chemical reaction; Carbonation of milk products
- U A23C 2260/00 Particular aspects or types of dairy products (not used, see subgroups below)**
- U A23C 2260/15 · Frozen dairy products (not used, see subgroups below)
- A23C 2260/152 · · Frozen fermented milk products, e.g. frozen yoghurt or yoghurt ice cream; Frozen milk products containing living microorganisms
- U A23C 2270/00 Aspects relating to packaging (not used, see subgroups below)**
- A23C 2270/05 · Gelled or liquid milk product, e.g. yoghurt, cottage cheese or pudding being one of the separate layers of a multilayered soft or liquid food product
- A23C 2270/15 · Separate packaging or storing of foodstuffs or ingredients to be mixed prior to use or serving, e.g. storing into separate compartments of a single container or into separate containers

Project: RP0295 (A23F)

- U A23F 3/00 Tea; Tea substitutes; Preparations thereof**
- M A23F 3/40 · Tea flavour; Tea oil; Flavouring of tea or tea extract (synthetic tea flavours [A23L 1/226](#) [A23L 27/20](#))

Project: N/A (A23F)

- U A23F 5/00 Coffee; Coffee substitutes; Preparations thereof**
- U A23F 5/20 · Reducing or removing alkaloid content; Preparations produced thereby; Extracts or infusions thereof
- A23F 5/208 · · {by extraction of the beans with water, aqueous solutions without organic or inorganic solvents, or aqueous coffee extract}

Project: RP0295 (A23F)

- M A23F 5/46 · Coffee flavour; Coffee oil; Flavouring of coffee or coffee extract (synthetic coffee flavours [A23L 1/234](#) [A23L 27/28](#))

Project: RP0295 (A23G)

- 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

- M A23G 3/32
- Processes **Process** for preparing caramel or sugar colours (~~colouring or flavouring foodstuffs~~ **A23L 1/27** **colouring foodstuff** **A23L 5/40**; **flavouring foodstuff** **A23L 27/10**)

NOTE

Attention is drawn to the internal note after the subclass title

Project: N/A (A23G)

A23G 2200/00 containing organic compounds, e.g. synthetic flavouring agents

U A23G 2220/00 **Products with special structure**

A23G 2220/20 with a composite structure, e.g. laminated products, coated products, microstructures, e.g. with encapsulated ingredients

Project: N/A (A23J)

A23J **PROTEIN COMPOSITIONS FOR FOODSTUFFS; WORKING-UP PROTEINS FOR FOODSTUFFS; PHOSPHATIDE COMPOSITIONS FOR FOODSTUFFS (fodder** **A23K**; **protein compositions or phosphatide compositions for pharmaceuticals** **A61K**; **phosphatides** **per se** **per se** **C07F 9/10**; **proteins** **per se** **per se** **C07K**)

Project: RP0295 (A23J)**U A23J 3/00** **Working-up of proteins for foodstuffs****NOTE**

In groups **A23J 3/04** - **A23J 3/20**, in the absence of an indication to the contrary, classification is made in the last appropriate place

U A23J 3/22 by texturising**NOTE**

Subject matter classified in groups **A23J 3/22** - **A23J 3/28** is also classified in groups **A23J 3/04** - **A23J 3/20**, if the nature of the protein is of interest (except if subgroups **A23J 3/22** - **A23J 3/28** already provide for this subject matter)

A23J 3/225 {Texturised simulated foods with high protein content (synthetic caviar **see see** **A23L 1/3285** **A23L 17/35**)}

A23J 3/227 {Meat-like textured foods (meat extenders **A23L 1/31** **A23L 13/00**)}

Project: RP0295 (A23L)**D 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** - **A23L 1/0097** might be incomplete as a number of documents presently classified in groups **A23P 1/00** - **A23P 1/16**, still needs reclassification to groups **A23L 1/0002** - **A23L 1/0097**

D A23L 1/0002 {Concentration}

D A23L 1/0005 {Foodstuffs fixed on a non-edible supporting member (confectionery, chocolate, ice-cream **A23G**)}

D A23L 1/0008 {Rehydration or dissolving of foodstuffs}

Project: N/A (A23L)

D A23L 1/0011 {Chemical peeling or cleaning of harvested fruit, vegetables, or other foodstuffs (mechanical aspects **A23N**, **A23P**)}

- D A23L 1/0014 • {Specially-shaped or worked food or foodstuffs}
- D A23L 1/0017 • • {Agglomerated; Granulated; Tabletted}
- D A23L 1/002 • • • {Agglomerated or granulated with pulverisation of the solid particles, e.g. by the free-falling curtain method}
- D A23L 1/0023 • • • {Agglomerated or granulated by extrusion or by pressing, e.g. through small holes, through sieves, between surfaces}
- D A23L 1/0026 • • • {Tabletted; Food bars made by compressing of a dry powdered mixture}
- D A23L 1/0029 • • {Encapsulated particles, e.g. foodstuff additives (flavouring agents A23L 1/22)}
- D A23L 1/0032 • • • {encapsulated with oils, lipids or mono- or diglycerides}
- D A23L 1/0035 • • {Free-flowing or instant powder (A23L 1/0017, A23L 1/0029 take precedence)}
- D A23L 1/0038 • • • {comprising anti-caking or free-flowing agents}
- D A23L 1/0041 • • • {comprising additives other than anti-caking or free-flowing agents, e.g. emulsifiers, wetting agents; dust binding agents}
- D A23L 1/0044 • • {Coated foodstuffs; Coatings therefor; Laminated, Multilayered or stuffed foodstuffs}
- D A23L 1/0047 • • • {Coating with edible coatings}
- D A23L 1/005 • • • • {Coating with powdered or particulate coatings; Coating with batters or other similar liquid or semi-liquid compositions containing a substantial amount of vegetable flour or starch or starch derivatives other than sugars (A23L 1/0052 and A23L 1/0055 take precedence)}
- D A23L 1/0052 • • • • {Coating with compositions containing vegetable or microbial fermentation gums, e.g. cellulose or derivatives; Coating with edible polymers, e.g. polyvinylalcohol}
- D A23L 1/0055 • • • • {Coating with compositions containing a majority of oils, fats, mono/ diglycerides, fatty acids, mineral oils, waxes or paraffins}
- D A23L 1/0058 • • • • {using dip-coating processes in a liquid or semi-liquid bath}
- D A23L 1/0061 • • • • {using processes other than dip-coating for coating with liquid or semi-liquid products, e.g. spray-coating, fluidised-bed coating, coating by casting (combined with breaching A23L 1/005)}
- D A23L 1/0064 • • • {Coating with non-edible coatings (A23L 1/0055 takes precedence)}
- D A23L 1/0067 • • • {Laminated, multi-layered, stuffed or hollow foodstuffs, e.g. wrapped in a preformed edible dough sheet, edible food containers}
- D A23L 1/007 • • • • {Filled or stuffed cored food pieces}
- D A23L 1/0073 • • {Shaped or worked products not covered by groups A23L 1/0017–A23L 1/0044, A23L 1/0082 or A23L 1/0097, e.g. moulded}
- D A23L 1/0076 • • {Extruded products}
- D A23L 1/0079 • • • {Co-extruded products}
- D A23L 1/0082 • • {Puffed or expanded products (A23L 1/164, A23L 1/18, A23L 1/217 take precedence)}
- D A23L 1/0085 • • • {made by pressure release, e.g. explosion puffing or by vacuum treatment}
- D A23L 1/0088 • • • • {made by extrusion-expansion}
- D A23L 1/0091 • • • • {in a discontinuous process}
- D A23L 1/0094 • • • {made by heating without pressure release or without vacuum treatment}
- D A23L 1/0097 • • {Foamed or whipped (cream substitutes A23L 1/19)}
- D A23L 1/01 • General methods of cooking foods, e.g. by roasting or frying (methods specialised to particular food, see the relevant sub-groups; apparatus for baking, roasting, grilling or frying A47J 37/00)

- D A23L 1/0107
 - • {with oil}
- D A23L 1/0114
 - • • {Processes other than deep fat-frying or float-frying using cooking oil in direct contact with the food}
- D A23L 1/0121
 - • {with water or steam}
- D A23L 1/0128
 - • {by wave energy, irradiation, electrical means or magnetic fields; including oven cooking or roasting with radiant dry heat}
- D A23L 1/0135
 - • {in a gaseous atmosphere with forced air or gas circulation, in vacuum or under pressure}
- D A23L 1/0142
 - • {using chemicals before or during cooking, including liquid cooking media other than water or oil; Cooking with inert particles or fluidised bed cooking (using additives to cooking oil A23L 1/0107)}
- D A23L 1/015
 - Removal of unwanted matter, e.g. deodorisation, detoxification (A23L 1/211 takes precedence)
- D A23L 1/0151
 - • {by heating without chemical treatment, e.g. steam treatment, cooking}
- D A23L 1/0152
 - • {by extraction with solvents}
- D A23L 1/0153
 - • {using enzymes}
- D A23L 1/0155
 - • {by chemical treatment, adsorption or absorption}
- D A23L 1/0156
 - • • {using adsorption or absorption agents, resins, synthetic polymers, or ion exchangers}
- D A23L 1/0157
 - • • {Treatment with inorganic compounds (A23L 1/0156 takes precedence)}
- D A23L 1/0158
 - • {using micro-organisms}
- D A23L 1/025
 - Physical treatment, e.g. with wave energy, irradiation, electrical means, magnetic fields (cooking A23L 1/01; preserving A23L 3/00, A23B)
- D A23L 1/0252
 - • {by wave energy other than microwaves, e.g. sound or ultrasonic waves}
- D A23L 1/0255
 - • {by microwaves}
- D A23L 1/0257
 - • {by irradiation with frequencies more than 10 MHz}
- D A23L 1/03
 - containing additives (A23L 1/05, A23L 1/30, A23L 1/308 take precedence)

NOTE

In this group, in the absence of an indication to the contrary, an invention is classified in the last appropriate place

- D A23L 1/0305
 - • {Inorganic compounds}
- D A23L 1/031
 - • {Organic compounds}
- D A23L 1/0315
 - • • {containing oxygen (gums A23L 1/053; sugar or sugar alcohols A23L 1/09)}
- D A23L 1/032
 - • • • {Fatty acids or derivatives}
- D A23L 1/0325
 - • • {containing nitrogen}
- D A23L 1/033
 - • • {containing phosphorus}
- D A23L 1/0335
 - • • {containing sulfur}
- D A23L 1/034
 - • {Enzymes}
- D A23L 1/0345
 - • {Micro-organisms (addition of bacteria for nutritional purposes A23L 1/3014)}
- D A23L 1/035
 - • Emulsifiers (emulsifiers in general B01F 17/00)
- D A23L 1/05
 - containing gelling or thickening agents (A23L 1/06 takes precedence)
- D A23L 1/052
 - • of vegetable origin
- D A23L 1/0522
 - • • Starch; Modified starch; Starch derivatives, e.g. esters, ethers {(A23L 1/095 takes precedence)}
- D A23L 1/05223
 - • • • {Chemically modified starch; Reaction or complexation products of starch with other chemicals}

D	A23L 1/05226	<ul style="list-style-type: none"> • • • {Farinaceous thickening agents other than isolated starch or derivatives, e.g. oat meal}
D	A23L 1/0524	<ul style="list-style-type: none"> • • • Pectin; Derivatives thereof
D	A23L 1/0526	<ul style="list-style-type: none"> • • • from seeds, e.g. locust bean gum, guar gum (A23L 1/0522, A23L 1/0524 take precedence)
D	A23L 1/0528	<ul style="list-style-type: none"> • • • from corms, tubers or roots, e.g. glucomannan (A23L 1/0522 takes precedence)
D	A23L 1/053	<ul style="list-style-type: none"> • • • Exudates, e.g. gum arabic, gum acacia, gum karaya, tragacanth
D	A23L 1/0532	<ul style="list-style-type: none"> • • • from seaweeds, e.g. alginates, agar, carrageenan
D	A23L 1/0534	<ul style="list-style-type: none"> • • • Cellulose; Derivatives thereof, e.g. ethers
D	A23L 1/054	<ul style="list-style-type: none"> • • of microbial origin, e.g. xanthan, dextran
D	A23L 1/0541	<ul style="list-style-type: none"> • • • {Xanthan not combined with other microbial gums}
D	A23L 1/0543	<ul style="list-style-type: none"> • • • {Curdlan; beta-1-3 glucan; Polysaccharides produced by agrobacterium or alcaligenes}
D	A23L 1/0545	<ul style="list-style-type: none"> • • • {Gellan}
D	A23L 1/0546	<ul style="list-style-type: none"> • • • {Dextran; Polysaccharides produced by leuconostoc}
D	A23L 1/0548	<ul style="list-style-type: none"> • • • {Pullulan}
D	A23L 1/056	<ul style="list-style-type: none"> • • of animal origin, e.g. chitin
D	A23L 1/0562	<ul style="list-style-type: none"> • • • Proteins, e.g. gelatin, collagen
D	A23L 1/05625	<ul style="list-style-type: none"> • • • • {Gelatin, collagen}
D	A23L 1/058	<ul style="list-style-type: none"> • • Synthetic resins, e.g. polyvinylpyrrolidone
D	A23L 1/059	<ul style="list-style-type: none"> • • Inorganic additives, e.g. silica
D	A23L 1/06	<ul style="list-style-type: none"> • Marmalades; Jams; Jellies; Other similar fruit or vegetable compositions; Simulated fruit products
D	A23L 1/062	<ul style="list-style-type: none"> • • {obtained by enzymatic digestion of fruit or vegetable compositions}
D	A23L 1/064	<ul style="list-style-type: none"> • • derived from fruit or vegetable solids {(A23L 1/062 and A23L 1/243 take precedence)}
D	A23L 1/068	<ul style="list-style-type: none"> • • derived from fruit or vegetable juices
D	A23L 1/072	<ul style="list-style-type: none"> • • Simulated fruit products {without a substantial amount of fruit solids}
D	A23L 1/076	<ul style="list-style-type: none"> • Products from apiculture, e.g. royal jelly or pollen (apiculture A01K 47/00 - A01K 59/00); Substitutes therefor
D	A23L 1/08	<ul style="list-style-type: none"> • • Honey; Honey substitutes
D	A23L 1/085	<ul style="list-style-type: none"> • • • {Honey substitutes}
D	A23L 1/09	<ul style="list-style-type: none"> • containing carbohydrate syrups; containing sugars; containing sugar alcohols, e.g. xylitol; containing starch hydrolysates, e.g. dextrin (A23L 1/076, A23L 1/236 take precedence)
D	A23L 1/092	<ul style="list-style-type: none"> • • {Processes or apparatus for dissolving of sugars (dissolving and refining C13B 30/14)}
D	A23L 1/095	<ul style="list-style-type: none"> • • {Degradation products of starch, e.g. hydrolysates, dextrans; Enzymatically modified starches}
D	A23L 1/097	<ul style="list-style-type: none"> • • {Sugar alcohols}
D	A23L 1/10	<ul style="list-style-type: none"> • containing cereal-derived products (treating or baking of doughs containing flour A21D)
D	A23L 1/1008	<ul style="list-style-type: none"> • • {Addition of antibiotics, vitamins, amino-acids, minerals}
D	A23L 1/1016	<ul style="list-style-type: none"> • • {Cereal fibre products, e.g. bran, husk}
D	A23L 1/1025	<ul style="list-style-type: none"> • • {Treatment of whole grains not provided for in groups A23L 1/164 - A23L 1/182 (preservation A23B 9/00)}

- D A23L 1/1033
 - • • {Cooking or roasting}
- D A23L 1/1041
 - • {Dry unshaped finely divided cereal products, not provided for in groups A23L 1/05226 and A23L 1/164 - A23L 1/182, e.g. meal, flour, powder, dried cereal creams or extracts}
- D A23L 1/105
 - • Fermentation of farinaceous cereal or cereal material; Addition of enzymes or micro-organisms (A23L 1/16, A23L 1/185, A23L 1/238 take precedence)
- D A23L 1/1055
 - • • {Addition or treatment with enzymes not combined with fermentation with micro-organisms}
- D A23L 1/16
 - • Types of pasta, e.g. macaroni, noodles (machines for making A21C; devices for drying F26B)
- D A23L 1/1606
 - • • {Filled, stuffed or multilayered pasta}
- D A23L 1/1613
 - • • {Semi-moist, i.e. containing about 20% of moist, or moist packaged or frozen pasta; Pasta fried or prefried in a non-aqueous frying medium, e.g. oil; Packaged pasta to be cooked directly in the package}
- D A23L 1/162
 - • • Par-boiled or instant pasta
- D A23L 1/164
 - • Flakes or other shapes of the ready-to-eat type (A23L 1/18 takes precedence)
- D A23L 1/1641
 - • • {coated, filled, multilayered or hollow and closed ready-to-eat cereals}
- D A23L 1/1643
 - • • {Snacks or chips obtained by binding, shaping or compacting together whole cereals or cereal pieces, e.g. Granola bars}
- D A23L 1/1645
 - • • {Snacks or chips obtained by oil frying of a formed cereal dough; Half-products therefor to be fried}
- D A23L 1/1646
 - • • {Flakes, granules or other shapes of comparable size}
- D A23L 1/1648
 - • • • {made from whole grains or grain pieces without meal or dough making}
- D A23L 1/168
 - • Cereal granules or flakes to be cooked and eaten hot, e.g. oatmeal; {Reformed rice products}
- D A23L 1/1685
 - • • {made from whole grains or grain pieces without meal or dough making}
- D A23L 1/172
 - • Cereal germ products
- D A23L 1/176
 - • Farinaceous granules for dressing meat, fish, or the like
- D A23L 1/18
 - • Puffed cereals, e.g. popcorn, puffed rice
- D A23L 1/1802
 - • • {Making puffed cereals, comprising meal or dough making as an intermediate step (oil-fried snacks A23L 1/1645)}
- D A23L 1/1805
 - • • • {by extrusion}
- D A23L 1/1807
 - • • {Making puffed cereals from whole grains or grain pieces without meal or dough forming}
- D A23L 1/181
 - • • • {by pressure release}
- D A23L 1/1812
 - • • • {by heating without pressure release, e.g. corn popping}
- D A23L 1/1815
 - • • • • {Discontinuously-working apparatus}
- D A23L 1/1817
 - • • {After-treatment of puffed cereals, e.g. coating, salting}
- D A23L 1/182
 - • Products in which the original granular shape is maintained, e.g. par-boiled rice
- D A23L 1/1823
 - • • {coated with a layer}
- D A23L 1/1826
 - • • {cooked, precooked, fried or prefried in a non-aqueous liquid frying medium, e.g. oil}
- D A23L 1/185
 - Malt products (malt products or pulse A23L 1/202; preparation of malt for brewing C12C)
- D A23L 1/186
 - • Fermentation of cereal malt, or of cereal by malting
- D A23L 1/187
 - Puddings; Dry powder puddings

- D A23L 1/1875
 - • {Ready-to-eat liquid or semi-liquid desserts or puddings not to be mixed with water, milk or other liquids}
- D A23L 1/19
 - Cream substitutes (milk substitutes, coffee whitener compositions A23C 11/00)
- D A23L 1/193
 - • {containing non-milk fats but no proteins other than milk proteins}
- D A23L 1/196
 - • {containing non-milk fats and non-milk proteins, e.g. eggs or soybeans}
- D A23L 1/20
 - Treatment of pulse, i.e. fruits of leguminous plants, for production of fodder or food; Preparation of products from legumes; Chemical means for rapid cooking of these foods, e.g. treatment with phosphates (animal foods A23K)
- D A23L 1/2001
 - • {Pulses or legumes in form of whole pieces or fragments thereof, without mashing or comminuting (A23L 1/201 and A23L 1/211 take precedence)}
- D A23L 1/2003
 - • • {Soya beans, e.g. full-fat soya bean flakes or grits}
- D A23L 1/2005
 - • {Mashed or comminuted pulses or legumes; Products made therefrom (A23L 1/211 takes precedence; soya milk A23C 11/103; tofu or soya cheese A23C 20/025)}
- D A23L 1/2006
 - • • {Soya beans, e.g. oil-extracted soya bean flakes (removing undesirable substances A23L 1/211)}
- D A23L 1/2008
 - • {Fermented pulses or legumes, e.g. miso, tempeh; Addition of micro-organisms (A23L 1/2118 takes precedence; treatment with enzymes A23L 1/2113; soya sauce A23L 1/238; fermented soya milk A23C 11/103; cheese-like products A23C 20/025)}
- D A23L 1/201
 - • Rapid cooking pulse {in whole pieces or fragments without comminuting; Reducing cooking time of whole pulses; Precooked dehydrated whole pulses}
- D A23L 1/202
 - • Malt products; Fermented malt products (A23L 1/22 takes precedence; malt products of cereals A23L 1/185)
- D A23L 1/211
 - • Removing bitter or other undesirable substances {from pulses, legumes or oilseeds}
- D A23L 1/2111
 - • • {by heating without chemical treatment, e.g. steam treatment, cooking}
- D A23L 1/2112
 - • • {by extraction with solvents}
- D A23L 1/2113
 - • • {using enzymes; Enzymatic transformation of pulses or legumes}
- D A23L 1/2115
 - • • {by chemical treatment, adsorption or absorption}
- D A23L 1/2116
 - • • • {combined with heat treatment}
- D A23L 1/2117
 - • • {by wave energy, irradiation, electrical means or magnetic fields}
- D A23L 1/2118
 - • • {using micro-organisms}
- D A23L 1/212
 - Preparation of fruits or vegetables (of pulse A23L 1/20; treating harvested fruit or vegetables in bulk A23N)
- D A23L 1/2121
 - • {Instant products; Powders; Flakes; Granules (A23L 1/214 and A23L 1/216 take precedence)}
- D A23L 1/2123
 - • {consisting of whole pieces or fragments without mashing the original pieces}
- D A23L 1/2125
 - • • {Stuffed or cored products; Multilayered or coated products; Binding or compressing of original pieces}
- D A23L 1/2126
 - • {Fruit waste products, e.g. from citrus peel or seed}
- D A23L 1/2128
 - • {Mashed or comminuted products, e.g. pulp, purée, sauce, or products made therefrom, e.g. snacks (A23L 1/06, A23L 1/2121, A23L 1/214, A23L 1/243 take precedence)}
- D A23L 1/214
 - • of tuberous or like starch-containing root crops
- D A23L 1/2142
 - • • {Sweet potatoes}
- D A23L 1/2145
 - • • {Cassava, manioc, tapioca, or fermented products thereof, e.g. gari}
- D A23L 1/2147
 - • • {Konjak; Konntaku}
- D A23L 1/216
 - • • of potatoes

D	A23L 1/2161	. . . . {Mashed potato products}
D	A23L 1/2162	. . . . . {Preformed edible shells filled with mashed potatoes; Stuffed mashed potato products}
D	A23L 1/2163	. . . . {Original non-roasted or non-fried potato pieces}
D	A23L 1/2165	. . . . Unshaped dry products, e.g. powders, flakes, granules or agglomerates
D	A23L 1/217	. . . . Roasted or fried products, e.g. snacks or chips; {Other snacks or chips from potatoes}
D	A23L 1/2175	. . . . . {from powdered or mashed potato products (A23L 1/2162 takes precedence)}
D	A23L 1/218	. . by pickling, e.g. sauerkraut, pickles
D	A23L 1/22	. Spices; Flavouring agents or condiments; Artificial sweetening agents; Table salts; Dietetic salt substitutes; {Other taste or flavour affecting agents}
D	A23L 1/22008	. . {Fixation, conservation, or encapsulation of flavouring agents}
D	A23L 1/22016	. . . {Encapsulation}
D	A23L 1/22025	. . . {with a synthetic polymer matrix or excipient, e.g. vinyl, acrylic polymers}
D	A23L 1/22033	. . . {the flavouring agents being bound to a host by chemical, electrical or like forces, e.g. use of precursors}
D	A23L 1/22041	. . . {Use of inorganic solid carriers, e.g. silica}
D	A23L 1/2205	. . . {in the form of films}
D	A23L 1/22058	. . {Emulsions}
D	A23L 1/22066	. . {Acid flavourants}
D	A23L 1/22075	. . {Flavour masking or reducing agents}
D	A23L 1/22083	. . {Addition of bitterness inhibitors}
D	A23L 1/22091	. . {Taste or flavour enhancing agents}
D	A23L 1/221	. . Natural spices, flavouring agents or condiments; Extracts thereof (natural coffee or tea flavour A23F 3/40, A23F 5/46)
D	A23L 1/2212	. . . {from liliaceae, e.g. onions, garlic}
D	A23L 1/2215	. . . {Solvent extraction}
D	A23L 1/2217	. . . {Distilling, stripping, or recovering of volatiles}
D	A23L 1/222	. . . from fruit, e.g. essential oils (essential oils in general C11B 9/00)
D	A23L 1/2225	. . . . {from citrus fruits}
D	A23L 1/223	. . . Dried spices
D	A23L 1/224	. . . . Onions
D	A23L 1/225	. . . Mustard
D	A23L 1/226	. . Synthetic spices or flavouring agents or condiments
D	A23L 1/22607	. . . {Compounds of unspecified constitution characterised by the chemical reaction for their preparation (A23L 1/2275 takes precedence)}
D	A23L 1/22614	. . . {Aliphatic compounds}
D	A23L 1/22621	. . . . {containing S}
D	A23L 1/22628	. . . . {having O as the only hetero atom}
D	A23L 1/22635	. . . . . {Hydroxy compounds}
D	A23L 1/22642	. . . . . {Carboxy compounds}
D	A23L 1/2265	. . . {alicyclic}
D	A23L 1/22657	. . . {aromatic}
D	A23L 1/22664	. . . {heterocyclic}
D	A23L 1/22671	. . . . {having O or S as the only hetero atoms}

D	A23L 1/22678	. . . {having N as the only hetero-atom}
D	A23L 1/22685	. . . {having at least two different hetero-atoms, at least one being an N atom}
D	A23L 1/22692	. . . {Dairy flavours}
D	A23L 1/227	. . . containing amino-acids
D	A23L 1/2275	. . . {heated in the presence of reducing sugars or the like, e.g. Maillard's non-enzymatic browning}
D	A23L 1/228	. . . containing glutamic acids
D	A23L 1/229	. . . containing nucleotides {(A23L 1/3018 takes precedence)}
D	A23L 1/2295	. . . {containing also amino-acids}
D	A23L 1/23	. . . prepared by fermentation {(yeast extracts A23L 1/3016)}
D	A23L 1/2305	. . . {Dairy flavours}
D	A23L 1/231	. . . Meat flavours
D	A23L 1/232	. . . Smoke flavours
D	A23L 1/234	. . . Coffee or cocoa flavours
D	A23L 1/235	. . . Fruit flavours
D	A23L 1/236	. . Artificial sweetening agents
D	A23L 1/2361	. . . {containing amino-acids, nucleotides, peptides or derivatives}
D	A23L 1/2362	. . . {containing dipeptides or derivatives}
D	A23L 1/2363	. . . {containing sugars or derivatives}
D	A23L 1/2364	. . . {Sugar alcohols}
D	A23L 1/2365	. . . {Starch hydrolysates}
D	A23L 1/2366	. . . {Terpene glycosides}
D	A23L 1/2367	. . . {Halogenated sugars}
D	A23L 1/2368	. . . {L-sugars}
D	A23L 1/2369	. . . {Addition of sweetness inhibitors}
D	A23L 1/237	. . Table salts; Dietetic salt substitutes
D	A23L 1/2375	. . . {Salt substitutes completely devoid of sodium chloride}
D	A23L 1/238	. . Soya-sauce
D	A23L 1/24	. . Salad dressings; Mayonnaise; Ketchup
D	A23L 1/243	. . . {Ketchup}
D	A23L 1/246	. . . {Use of milk products or milk derivatives in the preparation of dressings}
D	A23L 1/27	. Colouring or decolouring of foods
D	A23L 1/272	. . Retaining or modifying natural colour by use of additives, e.g. optical brighteners (A23L 1/275 takes precedence)
D	A23L 1/275	. . Addition of dyes or pigments with or without optical brighteners
D	A23L 1/2751	. . . {using naturally occurring organic dyes or pigments, including synthetically duplicated natural extracts, e.g. carotenoids}
D	A23L 1/2753	. . . {using carotenoids or xanthophylls}
D	A23L 1/2755	. . . {using dyes or pigments from microbial origin, including from algae}
D	A23L 1/2756	. . . {using other synthetic organic dyes or pigments}
D	A23L 1/2758	. . . {Compounds of unspecified constitution characterised by the chemical reaction for their preparation}
D	A23L 1/277	. . Removing colour by chemical reaction, e.g. by bleaching (bleaching flour A21D 2/00)
D	A23L 1/28	. Edible extracts or preparations of fungi (for medicinal purposes A61K)

- D A23L 1/29
 - Modifying nutritive qualities of foods; Dietetic products (A23L 1/09 takes precedence; dietetic salt substitutes A23L 1/22; enriched flour A21D 2/00; milk preparations A23C 9/00)
- D A23L 1/293
 - • {dietetic or nutritional methods, e.g. for losing weight (A23L 1/296 takes precedence; Reducing nutritive value A23L 1/307)}
- D A23L 1/296
 - • {complete food formulations for specific consumer groups or specific purposes, e.g. infant formula (A23L takes precedence)}
- D A23L 1/30
 - • containing additives (A23L 1/308 takes precedence)
- D A23L 1/3002
 - • • {Plant extracts, e.g. synthetically duplicated plant extracts}
- D A23L 1/3004
 - • • • {Plant sterols or derivatives thereof, e.g. phytosterols}
- D A23L 1/3006
 - • • {Fatty acids or derivatives thereof; Fats or oils}
- D A23L 1/3008
 - • • • {Fatty acids or derivatives thereof}
- D A23L 1/301
 - • • {Antibiotics}
- D A23L 1/3012
 - • • {Nucleic acids or derivatives (A23L 1/3018 takes precedence)}
- D A23L 1/3014
 - • • {Bacteria or derivatives, e.g. probiotics}
- D A23L 1/3016
 - • • {Yeasts or derivatives}
- D A23L 1/3018
 - • • • {Extracts}
- D A23L 1/302
 - • • Vitamins
- D A23L 1/303
 - • • • Vitamins A or D
- D A23L 1/304
 - • • Inorganic salts, minerals, trace elements
- D A23L 1/3045
 - • • • {Complexes or chelates}
- D A23L 1/305
 - • • Amino acids, peptides or proteins (working-up proteins for foodstuffs A23J 3/00)
- D A23L 1/3051
 - • • • {Amino acids}
- D A23L 1/3053
 - • • • {Peptides; Protein hydrolysates}
- D A23L 1/3055
 - • • • {Vegetable proteins}
- D A23L 1/3056
 - • • • {Dairy proteins}
- D A23L 1/3058
 - • • • {Proteins from micro-organisms}
- D A23L 1/307
 - • Reducing nutritive value; Dietetic products with reduced nutritive value
- D A23L 1/308
 - • • Addition of substantially indigestible substances, e.g. dietary fibres (A23L 1/05 takes precedence)
- D A23L 1/3081
 - • • • {Comminuted fibrous parts of plants, e.g. bagasse, pulp}
- D A23L 1/3082
 - • • • {Cellulose or derivatives}
- D A23L 1/3084
 - • • • {Synthetic polymers, e.g. vinylic or acrylic polymers}
- D A23L 1/3085
 - • • • {Substances of animal origin, e.g. gelatin, collagen}
- D A23L 1/3087
 - • • • {Mineral substances, including mineral oils, e.g. paraffin, clay}
- D A23L 1/3088
 - • • • {Polyol polyesters, e.g. sucrose polyesters; Synthetic sugar polymers, e.g. polydextrose}
- D A23L 1/31
 - Meat products; Meat meal (working-up proteins for foodstuffs A23J 3/00)
- D A23L 1/3103
 - • {Coating with a layer, stuffing, laminating, binding, or compressing of original meat pieces}
- D A23L 1/3106
 - • {with gravy or sauce}
- D A23L 1/311
 - • Meat meal or powder; Granules, agglomerates or flakes
- D A23L 1/312
 - • from offal, e.g. rinds, skins, marrow, tripes, feet, ears or snouts (glands or bones as ingredients of processed meat A23L 1/317)
- D A23L 1/313
 - • Meat extracts

D	A23L 1/314	• • containing additives
D	A23L 1/31409	• • • {using additives other than enzymes or micro-organisms in meat products or meat meals}
D	A23L 1/31418	• • • {Addition of natural plant hydrocolloids, e.g. gums of cellulose derivatives or of microbial fermentation gums}
D	A23L 1/31427	• • • {Addition of non-meat animal protein material, e.g. blood, egg, dairy products, fish or addition of proteins from micro-organisms, yeasts or fungi}
D	A23L 1/31436	• • • {Addition of proteins, carbohydrates or fibrous material from vegetable origin other than sugars or sugar alcohols (A23L 1/31418 takes precedence)}
D	A23L 1/31445	• • • {Addition of flavours, spices, sweeteners, e.g. sugars or sugar alcohols, colours, amino acids or their salts, peptides, vitamins, yeast extract or autolysate, nucleic acid or derivatives, organic acidifying agents or their salts or acidogens; Alcohol-containing products}
D	A23L 1/31454	• • • {Addition of vegetable or non-meat animal fats or oils; Addition of fatty acids}
D	A23L 1/31463	• • • {Addition of inorganic compounds, e.g. minerals; oligoelements}
D	A23L 1/31472	• • • {Addition of, or treatment with, micro-organisms (A23L 1/3185 takes precedence)}
D	A23L 1/31481	• • • {Addition of, or fermentation with yeasts, or fungi; Enrichment with dried biomass other than starter cultures}
D	A23L 1/3149	• • • {Addition of, or treatment with, enzymes (A23L 1/3185 takes precedence)}
D	A23L 1/315	• • Poultry products, e.g. poultry sausages
D	A23L 1/3152	• • • {Comminuted, emulsified or processed products; Pastes; Reformed or compressed products from poultry meat}
D	A23L 1/3155	• • • {Treatment of original pieces or parts (binding meat pieces in a compact form A23L 1/3152)}
D	A23L 1/3157	• • • {Coating with a layer or stuffing}
D	A23L 1/317	• • Comminuted or emulsified meat products, including sausages; Reformed meat from comminuted meat products
D	A23L 1/3172	• • • {Coating with a layer, stuffing or laminating}
D	A23L 1/3175	• • • {Sausages}
D	A23L 1/3177	• • • {Reformed meat products other than sausages}
D	A23L 1/318	• • Tenderised or flavoured meat pieces, e.g. obtained by injecting solutions; Macerating solutions
D	A23L 1/3182	• • • {using additives, including micro-organisms or enzymes, e.g. injection solutions}
D	A23L 1/3185	• • • • {using micro-organisms or enzymes}
D	A23L 1/3187	• • • {by treatment in a gaseous atmosphere, e.g. aging, ripening; by electrical treatment or irradiation or wave treatment}
D	A23L 1/32	• Egg products
D	A23L 1/3204	• • {Addition of proteins, including hydrolysates, fats, or carbohydrates, including natural plant hydrocolloids or animal or vegetable substances containing proteins, fats, or carbohydrates}
D	A23L 1/3208	• • {Addition or treatment with micro-organisms or enzymes}
D	A23L 1/3212	• • {Addition of other substances}
D	A23L 1/3216	• • {Egg substitutes}
D	A23L 1/322	• • Egg rolls

D	A23L 1/325	• Food-from-the-sea products; Fish products; Fish meal; Fish-egg substitutes
D	A23L 1/3252	• • {Addition of, or treatment with, micro-organisms or enzymes}
D	A23L 1/3255	• • {Comminuted, e.g. emulsified, fish products; Processed products therefrom such as pastes, reformed or compressed products (A23L 1/3252, A23L 1/326, A23L 1/327, A23L 1/33, A23L 1/333 take precedence)}
D	A23L 1/3257	• • {Coating with a layer, stuffing, laminating, binding or compressing of original fish pieces}
D	A23L 1/326	• • Fish meal or powder; Granules, agglomerates or flakes
D	A23L 1/327	• • Fish extracts
D	A23L 1/328	• • Fish eggs, e.g. caviar; Fish-egg substitutes
D	A23L 1/3285	• • • {Fish-egg substitutes}
D	A23L 1/33	• • Shell-fish
D	A23L 1/333	• • Molluscs
D	A23L 1/337	• • Edible seaweed
D	A23L 1/36	• Food consisting mainly of nut meats or seeds
D	A23L 1/362	• • {consisting of whole seeds or seed fragments}
D	A23L 1/364	• • • {coated with a layer}
D	A23L 1/366	• • {Mashed or comminuted products, e.g. pulp, pastes, meal, powders; Products made therefrom, e.g. blocks, flakes, snacks; Liquid or semi-liquid products (A23L 1/368 and A23L 1/38 take precedence)}
D	A23L 1/368	• • {Fermented products; Treatment with micro-organisms or enzymes}
D	A23L 1/38	• • Peanut butter {or other nut butters}
D	A23L 1/39	• Soups; Sauces (A23L 1/238, A23L 1/24 take precedence)
D	A23L 1/40	• • Soup concentrates, e.g. powders, cakes
D	A23L 1/48	• Food compositions or treatment thereof not covered by the preceding subgroups, {e.g. complete meals}
D	A23L 1/483	• • {Emulsified foodstuffs}
D	A23L 1/486	• • {No-fat spreads}
	A23L 2/00	Non-alcoholic beverages; Dry compositions or concentrates therefor; Their preparation (soup concentrates A23L 1/40A23L 23/10; {introducing gases into liquids in general, apparatus for impregnating liquids with gases per se, B01F 3/04099}; preparation of non-alcoholic beverages by removal of alcohol {C12G 3/08})
	A23L 2/38	• Other non-alcoholic beverages ({mineral supplements A23L 1/304 }; milk products A23C ; coffee, tea or their substitutes A23F)
	A23L 2/382	• • {fermented (fermented nut meats or seeds A23L 1/368 A23L 25/40 ; fermented milk preparations A23C 9/12 ; other foodstuffs containing micro-organisms A23L 1/0345 ; addition of bacteria for nutritional purposes A23L 1/3014 A23L 33/135)}
N	A23L 5/00	<i>Preparation or treatment of foods or foodstuffs, in general; Food or foodstuffs obtained thereby; Materials therefor (preservation thereof in general A23L 3/00)</i>
		<u>WARNING</u>
		Group A23L 5/00 is impacted by the reclassification into groups A23L 7/00 , A23L 9/00 and A23L 21/00 .
		Groups A23L 5/00 , A23L 7/00 , A23L 9/00 , and A23L 21/00 should be considered in order to perform a complete search.
N	A23L 5/10	• General methods of cooking foods, e.g. by roasting or frying

N	A23L 5/11	• • {using oil}
N	A23L 5/12	• • • {Processes other than deep-frying or float-frying using cooking oil in direct contact with the food}
N	A23L 5/13	• • {using water or steam}
N	A23L 5/15	• • {using wave energy, irradiation, electrical means or magnetic fields, e.g. oven cooking or roasting using radiant dry heat}
N	A23L 5/17	• • {in a gaseous atmosphere with forced air or gas circulation, in vacuum or under pressure}
N	A23L 5/19	• • {using chemicals before or during cooking, e.g. liquid cooking media other than water or oil; Cooking using inert particles, e.g. fluidised bed cooking (using additives to cooking oil A23L 5/11)}
N	A23L 5/20	• Removal of unwanted matter, e.g. deodorisation or detoxification (removing undesirable, e.g. bitter, substances from pulses or legumes A23L 11/30)
N	A23L 5/21	• • {by heating without chemical treatment, e.g. steam treatment, cooking}
N	A23L 5/23	• • {by extraction with solvents}
N	A23L 5/25	• • {using enzymes}
N	A23L 5/27	• • {by chemical treatment, by adsorption or by absorption}
N	A23L 5/273	• • • {using adsorption or absorption agents, resins, synthetic polymers, or ion exchangers}
N	A23L 5/276	• • • {Treatment with inorganic compounds (A23L 5/273 takes precedence)}
N	A23L 5/28	• • {using micro-organisms}
N	A23L 5/30	• Physical treatment, e.g. electrical or magnetic means, wave energy or irradiation (preservation A23L 3/00 , A23B ; cooking A23L 5/10)
N	A23L 5/32	• • {using phonon wave energy, e.g. sound or ultrasonic waves}
N	A23L 5/34	• • {using microwaves}
N	A23L 5/36	• • {using irradiation with frequencies of more than 10 MHz}
N	A23L 5/40	• Colouring or decolouring of foods
N	A23L 5/41	• • Retaining or modifying natural colour by use of additives, e.g. optical brighteners (A23L 5/42 takes precedence)
N	A23L 5/42	• • Addition of dyes or pigments, e.g. in combination with optical brighteners
N	A23L 5/43	• • • using naturally occurring organic dyes or pigments, their artificial duplicates or their derivatives
N	A23L 5/44	• • • • using carotenoids or xanthophylls
N	A23L 5/46	• • • using dyes or pigments of microbial or algal origin
N	A23L 5/47	• • • using synthetic organic dyes or pigments not covered by groups A23L 5/43 - A23L 5/46
N	A23L 5/48	• • • • Compounds of unspecified constitution characterised by the chemical process for their preparation
N	A23L 5/49	• • Removing colour by chemical reaction, e.g. bleaching
N	A23L 5/51	• {Concentration}
N	A23L 5/55	• {Rehydration or dissolving of foodstuffs}
N	A23L 5/57	• {Chemical peeling or cleaning of harvested fruits, vegetables or other foodstuffs (mechanical aspect A23N , A23P)}

N A23L 7/00 **Cereal-derived products; Malt products (malt products of pulses [A23L 11/20](#)); Preparation or treatment thereof (preparation of malt for brewing [C12C](#))**

WARNING

Group [A23L 7/00](#) is incomplete pending reclassification of documents from group [A23L 5/00](#).

Groups [A23L 5/00](#) and [A23L 7/00](#) should be considered in order to perform a complete search.

- N A23L 7/10 • Cereal-derived products
- N A23L 7/101 • • {Addition of antibiotics, vitamins, amino-acids, or minerals}
- N A23L 7/104 • • Fermentation of farinaceous cereal or cereal material; Addition of enzymes or micro-organisms ([A23L 7/109](#), [A23L 7/20](#) take precedence; Soya sauce [A23L 27/50](#))
- N A23L 7/107 • • • {Addition or treatment with enzymes not combined with fermentation with micro-organisms}
- N A23L 7/109 • • Types of pasta, e.g. macaroni or noodles
- N A23L 7/11 • • • {Filled, stuffed or multilayered pasta}
- N A23L 7/111 • • • {Semi-moist pasta, i.e. containing about 20% of moist; Moist packaged or frozen pasta; Pasta fried or pre-fried in a non-aqueous frying medium, e.g. oil; Packaged pasta to be cooked directly in the package}
- N A23L 7/113 • • • Parboiled or instant pasta
- N A23L 7/115 • • {Cereal fibre products, e.g. bran, husk}
- N A23L 7/117 • • Flakes or other shapes of ready-to-eat type; Semi-finished or partly-finished products therefor ([A23L 7/143](#), [A23L 7/152](#) take precedence)
- N A23L 7/122 • • • Coated, filled, multilayered or hollow ready-to-eat cereals
- N A23L 7/126 • • • Snacks or the like obtained by binding, shaping or compacting together cereal grains or cereal pieces, e.g. cereal bars
- N A23L 7/13 • • • Snacks or the like obtained by oil frying of a formed cereal dough
- N A23L 7/135 • • • Individual or non-extruded flakes, granules or shapes having similar size, e.g. breakfast cereals
- N A23L 7/139 • • • • made from wholegrain or grain pieces without preparation of meal or dough
- N A23L 7/143 • • Cereal granules or flakes to be cooked and eaten hot, e.g. oatmeal; Reformed rice products
- N A23L 7/148 • • • made from wholegrain or grain pieces without preparation of meal or dough
- N A23L 7/152 • • Cereal germ products
- N A23L 7/157 • • Farinaceous granules for dressing meat, fish or the like
- N A23L 7/161 • • Puffed cereals, e.g. popcorn or puffed rice
- N A23L 7/165 • • • Preparation of puffed cereals involving preparation of meal or dough as an intermediate step
- N A23L 7/17 • • • • by extrusion
- N A23L 7/174 • • • Preparation of puffed cereals from wholegrain or grain pieces without preparation of meal or dough
- N A23L 7/178 • • • • by pressure release with or without heating
- N A23L 7/183 • • • • by heating without using a pressure release device
- N A23L 7/187 • • • • • Discontinuously-working apparatus
- N A23L 7/191 • • • After-treatment of puffed cereals, e.g. coating or salting

- N A23L 7/196
 - • Products in which the original granular shape is maintained, e.g. parboiled rice
- N A23L 7/1963
 - • • {coated with a layer}
- N A23L 7/1965
 - • • {Cooked; Precooked; Fried or pre-fried in a non-aqueous liquid frying medium, e.g. oil}
- N A23L 7/197
 - • {Treatment of whole grains not provided for in groups [A23L 7/117](#) - [A23L 7/196](#) (preservation [A23B 9/00](#))}
- N A23L 7/1975
 - • • {Cooking or roasting}
- N A23L 7/198
 - • {Dry unshaped finely divided cereal products, not provided for in groups [A23L 7/117](#) - [A23L 7/196](#) and [A23L 29/00](#), e.g. meal, flour, powder, dried cereal creams or extracts}
- N A23L 7/20
 - Malt products (malt products of pulses [A23L 11/20](#); preparation of malt for brewing [C12C](#))
- N A23L 7/25
 - • Fermentation of cereal malt or of cereal by malting

N A23L 9/00**Puddings; Cream substitutes; Preparation or treatment thereof**WARNING

Group [A23L 9/00](#) is incomplete pending reclassification of documents from group [A23L 5/00](#).

Groups [A23L 5/00](#) and [A23L 9/00](#) should be considered in order to perform a complete search.

- N A23L 9/10
 - Puddings; Dry powder puddings
- N A23L 9/12
 - • {Ready-to-eat liquid or semi-liquid desserts, e.g. puddings, not to be mixed with liquids, e.g. water, milk}
- N A23L 9/20
 - Cream substitutes
- N A23L 9/22
 - • {containing non-milk fats but no proteins other than milk proteins}
- N A23L 9/24
 - • {containing non-milk fats and non-milk proteins, e.g. eggs or soybeans}
- N A23L 11/00
 - **Pulses, i.e. fruits of leguminous plants, for production of fodder or food; Products from legumes; Preparation or treatment thereof, e.g. treatment with phosphates**
- N A23L 11/01
 - {Pulses or legumes in form of whole pieces or fragments thereof, without mashing or comminuting ([A23L 11/10](#) – [A23L 11/37](#) take precedence)}
- N A23L 11/03
 - • {Soya beans, e.g. full-fat soya bean flakes or grits}
- N A23L 11/05
 - {Mashed or comminuted pulses or legumes; Products made therefrom ([A23L 11/30](#) takes precedence; soya milk [A23C 11/103](#); tofu or soya cheese [A23C 20/025](#))}
- N A23L 11/07
 - • {Soya beans, e.g. oil-extracted soya bean flakes ([A23L 11/30](#) takes precedence)}
- N A23L 11/09
 - {Fermented pulses or legumes, e.g. miso, tempeh; Addition of micro-organisms ([A23L 11/30](#) takes precedence; soya sauce [A23L 27/50](#); fermented soya milk [A23C 11/103](#); cheese-like products [A23C 20/025](#))}
- N A23L 11/10
 - Rapid cooking pulses
- N A23L 11/20
 - Malt products; Fermented malt products (flavouring agents or condiments [A23L 27/00](#); malt products of cereals [A23L 7/20](#))
- N A23L 11/30
 - Removing undesirable substances, e.g. bitter substances
- N A23L 11/31
 - • {by heating without chemical treatment, e.g. steam treatment, cooking}
- N A23L 11/32
 - • {by extraction with solvents}
- N A23L 11/33
 - • {using enzymes; Enzymatic transformation of pulses or legumes}
- N A23L 11/34
 - • {using chemical treatment, adsorption or absorption}

N	A23L 11/35	• • • {combined with heat treatment}
N	A23L 11/36	• • {using irradiation, e.g. with wave energy; Using electrical means or magnetic fields}
N	A23L 11/37	• • {using micro-organisms}
N	A23L 13/00	Meat products; Meat meal; Preparation or treatment thereof
N	A23L 13/03	• {Coating with a layer; Stuffing, laminating, binding, or compressing of original meat pieces}
N	A23L 13/06	• {with gravy or sauce}
N	A23L 13/10	• Meat meal or powder; Granules, agglomerates or flakes
N	A23L 13/20	• from offal, e.g. rinds, skins, marrow, tripes, feet, ears or snouts (glands or bones as ingredients of processed meat A23L 13/60)
N	A23L 13/30	• Meat extracts
N	A23L 13/40	• containing additives
N	A23L 13/42	• • {Additives other than enzymes or micro-organisms in meat products or meat meals}
N	A23L 13/422	• • • {Addition of natural plant hydrocolloids, e.g. gums of cellulose derivatives or of microbial fermentation gums}
N	A23L 13/424	• • • {Addition of non-meat animal protein material, e.g. blood, egg, dairy products, fish; Proteins from micro-organisms, yeasts or fungi}
N	A23L 13/426	• • • {Addition of proteins, carbohydrates or fibrous material from vegetable origin other than sugars or sugar alcohols (A23L 13/422 takes precedence)}
N	A23L 13/428	• • • {Addition of flavours, spices, colours, amino acids or their salts, peptides, vitamins, yeast extract or autolysate, nucleic acid or derivatives, organic acidifying agents or their salts or acidogens, sweeteners, e.g. sugars or sugar alcohols; Addition of alcohol-containing products}
N	A23L 13/43	• • • {Addition of vegetable fats or oils; Addition of non-meat animal fats or oils; Addition of fatty acids}
N	A23L 13/432	• • • {Addition of inorganic compounds, e.g. minerals; oligo-elements}
N	A23L 13/45	• • {Addition of, or treatment with, micro-organisms (A23L 13/74 takes precedence)}
N	A23L 13/46	• • • {Addition of, or fermentation with fungi, e.g. yeasts; Enrichment with dried biomass other than starter cultures}
N	A23L 13/48	• • {Addition of, or treatment with, enzymes (A23L 13/74 takes precedence)}
N	A23L 13/50	• Poultry products, e.g. poultry sausages
N	A23L 13/52	• • {Comminuted, emulsified or processed products; Pastes; Reformed or compressed products from poultry meat}
N	A23L 13/55	• • {Treatment of original pieces or parts (binding meat pieces in a compact form A23L 13/52)}
N	A23L 13/57	• • • {Coating with a layer or stuffing}
N	A23L 13/60	• Comminuted or emulsified meat products, e.g. sausages; Reformed meat from comminuted meat product
N	A23L 13/62	• • {Coating with a layer, stuffing or laminating}
N	A23L 13/65	• • {Sausages}
N	A23L 13/67	• • {Reformed meat products other than sausages}
N	A23L 13/70	• Tenderised or flavoured meat pieces, e.g. obtained by injecting solutions; Macerating solutions
N	A23L 13/72	• • {using additives, e.g. injection solutions}
N	A23L 13/74	• • • {using micro-organisms or enzymes}

- N A23L 13/76
- • {by treatment in a gaseous atmosphere, e.g. aging, ripening; By electrical treatment, irradiation or wave treatment}
- N A23L 15/00** **Egg products; Preparation or treatment thereof**
- N A23L 15/10
- Egg rolls
- N A23L 15/20
- {Addition of proteins, e.g. hydrolysates, fats, carbohydrates, natural plant hydrocolloids; Addition of animal or vegetable substances containing proteins, fats, or carbohydrates}
- N A23L 15/25
- {Addition or treatment with micro-organisms or enzymes}
- N A23L 15/30
- {Addition of substances other than those covered by [A23L 15/20](#) – [A23L 15/25](#)}
- N A23L 15/35
- {Egg substitutes}
- N A23L 17/00** **Food-from-the-sea products; Fish products; Fish meal; Fish-egg substitutes; Preparation or treatment thereof**
- N A23L 17/10
- Fish meal or powder; Granules, agglomerates or flakes
- N A23L 17/20
- Fish extracts
- N A23L 17/30
- Fish eggs, e.g. caviar; Fish-egg substitutes
- N A23L 17/35
- • {Fish-egg substitutes}
- N A23L 17/40
- Shell-fish
- N A23L 17/50
- Molluscs
- N A23L 17/60
- Edible seaweed
- N A23L 17/65
- {Addition of, or treatment with, micro-organisms or enzymes}
- N A23L 17/70
- {Comminuted, e.g. emulsified, fish products; Processed products therefrom such as pastes, reformed or compressed products ([A23L 17/65](#), [A23L 17/10](#), [A23L 17/20](#), [A23L 17/40](#), [A23L 17/50](#) take precedence)}
- N A23L 17/75
- {Coating with a layer, stuffing, laminating, binding or compressing of original fish pieces}
- N A23L 19/00** **Products from fruits or vegetables; Preparation or treatment thereof (of pulses [A23L 11/00](#); marmalades, jams, jellies or the like [A23L 21/10](#); treating harvested fruit or vegetables in bulk [A23N](#))**
- N A23L 19/01
- {Instant products; Powders; Flakes; Granules ([A23L 19/10](#) – [A23L 19/12](#) take precedence)}
- N A23L 19/03
- {consisting of whole pieces or fragments without mashing the original pieces}
- N A23L 19/05
- • {Stuffed or cored products; Multilayered or coated products; Binding or compressing of original pieces}
- N A23L 19/07
- • {Fruit waste products, e.g. from citrus peel or seeds}
- N A23L 19/09
- {Mashed or comminuted products, e.g. pulp, purée, sauce, or products made therefrom, e.g. snacks ([A23L 19/01](#), [A23L 19/10](#), [A23L 27/63](#) and [A23L 21/00](#) take precedence)}
- N A23L 19/10
- of tuberous or like starch containing root crops
- N A23L 19/105
- • {Sweet potatoes}
- N A23L 19/11
- • {Cassava, manioc, tapioca, or fermented products thereof, e.g. gari}
- N A23L 19/115
- • {Konjak; Konntaku}
- N A23L 19/12
- • of potatoes
- N A23L 19/13
- • • {Mashed potato products}
- N A23L 19/135
- • • • {Preformed edible shells filled with mashed potatoes; Stuffed mashed potato products}
- N A23L 19/14
- • • {Original non-roasted or non-fried potato pieces}
- N A23L 19/15
- • • Unshaped dry products, e.g. powders, flakes, granules or agglomerates

- N A23L 19/18 • • • Roasted or fried products, e.g. snacks or chips
- N A23L 19/19 • • • • {from powdered or mashed potato products ([A23L 19/135](#) takes precedence)}
- N A23L 19/20 • by pickling, e.g. sauerkraut or pickles
- N A23L 21/00 Marmalades, jams, jellies or the like; Products from apiculture; Preparation or treatment thereof**
- WARNING
Group [A23L 21/00](#) is incomplete pending reclassification of documents from group [A23L 5/00](#).
Groups [A23L 5/00](#) and [A23L 21/00](#) should be considered in order to perform a complete search.
- N A23L 21/10 • Marmalades; Jams; Jellies; Other similar fruit or vegetable compositions; Simulated fruit products
- N A23L 21/11 • • {obtained by enzymatic digestion of fruit or vegetable compositions}
- N A23L 21/12 • • derived from fruit or vegetable solids
- N A23L 21/15 • • derived from fruit or vegetable juice
- N A23L 21/18 • • Simulated fruit products
- N A23L 21/20 • Products from apiculture, e.g. royal jelly or pollen; Substitutes therefor
- N A23L 21/25 • • Honey; Honey substitutes
- N A23L 21/27 • • • {Honey substitutes}
- N A23L 23/00 Soups; Sauces ([A23L 27/50](#), [A23L 27/60](#) take precedence); Preparation or treatment thereof**
- N A23L 23/10 • Soup concentrates, e.g. powders or cakes
- N A23L 25/00 Food consisting mainly of nutmeat or seeds; Preparation or treatment thereof**
- N A23L 25/10 • Peanut butter
- N A23L 25/20 • {consisting of whole seeds or seed fragments}
- N A23L 25/25 • • {coated with a layer}
- N A23L 25/30 • {Mashed or comminuted products, e.g. pulp, pastes, meal, powders; Products made therefrom, e.g. blocks, flakes, snacks; Liquid or semi-liquid products ([A23L 25/10](#) and [A23L 25/40](#) take precedence)}
- N A23L 25/40 • {Fermented products; Products treated with micro-organisms or enzymes}
- N A23L 27/00 Spices; Flavouring agents or condiments; Artificial sweetening agents; Table salts; Dietetic salt substitutes; Preparation or treatment thereof**
- N A23L 27/10 • Natural spices, flavouring agents or condiments; Extracts thereof
- N A23L 27/105 • • {obtained from liliaceae, e.g. onions, garlic}
- N A23L 27/11 • • {obtained by solvent extraction}
- N A23L 27/115 • • {obtained by distilling, stripping, or recovering of volatiles}
- N A23L 27/12 • • from fruit, e.g. essential oils
- N A23L 27/13 • • • {from citrus fruits}
- N A23L 27/14 • • Dried spices
- N A23L 27/16 • • • Onions
- N A23L 27/18 • • Mustard
- N A23L 27/20 • Synthetic spices, flavouring agents or condiments
- N A23L 27/201 • • {Compounds of unspecified constitution characterised by the chemical reaction for their preparation ([A23L 27/215](#) takes precedence)}

N	A23L 27/202	• • {Aliphatic compounds}
N	A23L 27/2022	• • • {containing sulfur}
N	A23L 27/2024	• • • {having oxygen as the only hetero atom}
N	A23L 27/2026	• • • • {Hydroxy compounds}
N	A23L 27/2028	• • • • {Carboxy compounds}
N	A23L 27/203	• • {Alicyclic compounds}
N	A23L 27/204	• • {Aromatic compounds }
N	A23L 27/205	• • {Heterocyclic compounds}
N	A23L 27/2052	• • • {having oxygen or sulfur as the only hetero atoms}
N	A23L 27/2054	• • • {having nitrogen as the only hetero atom}
N	A23L 27/2056	• • • {having at least two different hetero atoms, at least one being an nitrogen atom}
N	A23L 27/206	• • {Dairy flavours}
N	A23L 27/21	• • containing amino acids
N	A23L 27/215	• • • {heated in the presence of reducing sugars, e.g. Maillard's non-enzymatic browning}
N	A23L 27/22	• • • containing glutamic acids
N	A23L 27/23	• • containing nucleotides
N	A23L 27/235	• • • {containing also amino acids}
N	A23L 27/24	• • prepared by fermentation
N	A23L 27/25	• • • {Dairy flavours}
N	A23L 27/26	• • Meat flavours
N	A23L 27/27	• • Smoke flavours
N	A23L 27/28	• • Coffee or cocoa flavours
N	A23L 27/29	• • Fruit flavours
N	A23L 27/30	• Artificial sweetening agents
N	A23L 27/31	• • {containing amino acids, nucleotides, peptides or derivatives}
N	A23L 27/32	• • • {containing dipeptides or derivatives}
N	A23L 27/33	• • {containing sugars or derivatives}
N	A23L 27/34	• • • {Sugar alcohols}
N	A23L 27/35	• • • {Starch hydrolysates}
N	A23L 27/36	• • • {Terpene glycosides}
N	A23L 27/37	• • • {Halogenated sugars}
N	A23L 27/38	• • • {L-sugars}
N	A23L 27/39	• • {Addition of sweetness inhibitors}
N	A23L 27/40	• Table salts; Dietetic salt substitutes
N	A23L 27/45	• • {Salt substitutes completely devoid of sodium chloride}
N	A23L 27/50	• Soya sauce
N	A23L 27/60	• Salad dressings; Mayonnaise; Ketchup
N	A23L 27/63	• • {Ketchup}
N	A23L 27/66	• • {Use of milk products or milk derivatives in the preparation of dressings}
N	A23L 27/70	• {Fixation, conservation, or encapsulation of flavouring agents}
N	A23L 27/72	• • {Encapsulation}
N	A23L 27/74	• • {with a synthetic polymer matrix or excipient, e.g. vinylic, acrylic polymers}

N	A23L 27/75	• • {the flavouring agents being bound to a host by chemical, electrical or like forces, e.g. use of precursors}
N	A23L 27/77	• • {Use of inorganic solid carriers, e.g. silica}
N	A23L 27/79	• • {in the form of films}
N	A23L 27/80	• {Emulsions}
N	A23L 27/82	• {Acid flavourants}
N	A23L 27/84	• {Flavour masking or reducing agents}
N	A23L 27/86	• {Addition of bitterness inhibitors}
N	A23L 27/88	• {Taste or flavour enhancing agents}
N	A23L 29/00	Foods or foodstuffs containing additives (containing additives for modifying the nutritive qualities A23L 33/10; containing substantially indigestive additives, e.g. dietary fibres, A23L 33/21); Preparation or treatment thereof
N	A23L 29/015	• {Inorganic compounds}
N	A23L 29/03	• {Organic compounds}
N	A23L 29/035	• • {containing oxygen as heteroatom (gums A23L 29/25 ; sugar or sugar alcohols A23L 29/30)}
N	A23L 29/04	• • • {Fatty acids or derivatives}
N	A23L 29/045	• • {containing nitrogen as heteroatom}
N	A23L 29/05	• • {containing phosphorus as heteroatom}
N	A23L 29/055	• • {containing sulfur as heteroatom}
N	A23L 29/06	• {Enzymes}
N	A23L 29/065	• {Micro-organisms (addition of bacteria for nutritional purposes A23L 33/135)}
N	A23L 29/10	• containing emulsifiers
N	A23L 29/20	• containing gelling or thickening agents (marmalades, jams, jellies or other similar fruit or vegetable compositions A23L 21/10)
N	A23L 29/206	• • of vegetable origin
N	A23L 29/212	• • • Starch; Modified starch; Starch derivatives, e.g. esters or ethers (containing starch hydrolysates, e.g. dextrin, A23L 29/30)
N	A23L 29/219	• • • • Chemically modified starch; Reaction or complexation products of starch with other chemicals
N	A23L 29/225	• • • • Farinaceous thickening agents other than isolated starch or derivatives
N	A23L 29/231	• • • Pectin; Derivatives thereof
N	A23L 29/238	• • • from seeds, e.g. locust bean gum or guar gum (A23L 29/212 , A23L 29/231 take precedence)
N	A23L 29/244	• • • from corms, tubers or roots, e.g. glucomannan (A23L 29/212 takes precedence)
N	A23L 29/25	• • • Exudates, e.g. gum arabic, gum acacia, gum karaya or tragacanth
N	A23L 29/256	• • • from seaweeds, e.g. alginates, agar or carrageenan
N	A23L 29/262	• • • Cellulose; Derivatives thereof, e.g. ethers
N	A23L 29/269	• • of microbial origin, e.g. xanthan or dextran
N	A23L 29/27	• • • {Xanthan not combined with other microbial gums}
N	A23L 29/271	• • • {Curdlan; beta-1-3 glucan; Polysaccharides produced by agrobacterium or alcaligenes}
N	A23L 29/272	• • • {Gellan}
N	A23L 29/273	• • • {Dextran; Polysaccharides produced by leuconostoc}
N	A23L 29/274	• • • {Pullulan}

- N A23L 29/275 • • of animal origin, e.g. chitin
- N A23L 29/281 • • • Proteins, e.g. gelatin or collagen
- N A23L 29/284 • • • • {Gelatin; Collagen}
- N A23L 29/288 • • Synthetic resins, e.g. polyvinylpyrrolidone
- N A23L 29/294 • • Inorganic additives, e.g. silica
- N A23L 29/30 • containing carbohydrate syrups; containing sugars; containing sugar alcohols, e.g. xylitol; containing starch hydrolysates, e.g. dextrin ([A23L 21/20](#) takes precedence; artificial sweetening agents [A23L 27/30](#))
- WARNING**
Group [A23L 29/30](#) is impacted by reclassification into group [A23L 33/125](#). Groups [A23L 29/30](#) and [A23L 33/125](#) should be considered in order to perform a complete search.
- N A23L 29/32 • • {Processes or apparatus for dissolving of sugars (dissolving or refining raw sugar [C13B 30/14](#))}
- N A23L 29/35 • • {Degradation products of starch, e.g. hydrolysates, dextrans; Enzymatically modified starches}
- N A23L 29/37 • • {Sugar alcohols}
- N A23L 31/00 Edible extracts or preparations of fungi; Preparation or treatment thereof**
- WARNING**
Group [A23L 31/00](#) is impacted by reclassification into groups [A23L 31/10](#) and [A23L 31/15](#). Groups [A23L 31/00](#), [A23L 31/10](#) and [A23L 31/15](#) should be considered in order to perform a complete search.
- N A23L 31/10 • Yeasts or derivatives thereof
- WARNING**
Group [A23L 31/10](#), is incomplete pending reclassification of documents from group [A23L 31/00](#). Groups [A23L 31/00](#) and [A23L 31/10](#) should be considered in order to perform a complete search.
- N A23L 31/15 • • Extracts
- WARNING**
Group [A23L 31/15](#) is incomplete pending reclassification of documents from group [A23L 31/00](#). Groups [A23L 31/00](#) and [A23L 31/15](#) should be considered in order to perform a complete search.
- N A23L 33/00 Modifying nutritive qualities of foods; Dietetic products; Preparation or treatment thereof**
- N A23L 33/10 • using additives ([A23L 33/21](#) takes precedence)
- N A23L 33/105 • • Plant extracts, their artificial duplicates or their derivatives
- N A23L 33/11 • • • Plant sterols or derivatives thereof, e.g. phytosterols
- N A23L 33/115 • • Fatty acids or derivatives thereof; Fats or oils
- N A23L 33/12 • • • Fatty acids or derivatives thereof
- N A23L 33/125 • • containing carbohydrate syrups; containing sugars; containing sugar alcohols; containing starch hydrolysates (indigestible substances [A23L 33/21](#))
- WARNING**
Group [A23L 33/125](#) is incomplete pending reclassification of documents from group [A23L 29/30](#).

Groups [A23L 29/30](#) and [A23L 33/125](#) should be considered in order to perform a complete search.

- | | | |
|----------|-------------------|---|
| N | A23L 33/127 | • {Antibiotics} |
| N | A23L 33/13 | • Nucleic acids or derivatives thereof (A23L 33/145 takes precedence) |
| N | A23L 33/135 | • Bacteria or derivatives thereof, e.g. probiotics |
| N | A23L 33/14 | • Yeasts or derivatives thereof |
| N | A23L 33/145 | • Extracts |
| N | A23L 33/15 | • Vitamins |
| N | A23L 33/155 | • Vitamins A or D |
| N | A23L 33/16 | • Inorganic salts, minerals or trace elements |
| N | A23L 33/165 | • Complexes or chelates |
| N | A23L 33/17 | • Amino acids, peptides or proteins |
| N | A23L 33/175 | • Amino acids |
| N | A23L 33/18 | • Peptides; Protein hydrolysates |
| N | A23L 33/185 | • Vegetable proteins |
| N | A23L 33/19 | • Dairy proteins |
| N | A23L 33/195 | • Proteins from micro-organisms |
| N | A23L 33/20 | • Reducing nutritive value; Dietetic products with reduced nutritive value |
| N | A23L 33/21 | • Addition of substantially indigestible substances, e.g. dietary fibres (addition of gelling or thickening agents A23L 29/20) |
| N | A23L 33/22 | • Comminuted fibrous parts of plants, e.g. bagasse or pulp |
| N | A23L 33/24 | • Cellulose or derivatives thereof |
| N | A23L 33/25 | • Synthetic polymers, e.g. vinylic or acrylic polymers |
| N | A23L 33/26 | • Polyol polyesters, e.g. sucrose polyesters; Synthetic sugar polymers, e.g. polydextrose |
| N | A23L 33/28 | • Substances of animal origin, e.g. gelatin or collagen |
| N | A23L 33/29 | • Mineral substances, e.g. mineral oils or clays |
| N | A23L 33/30 | • {Dietetic or nutritional methods, e.g. for losing weight (A23L 33/10 takes precedence)} |
| N | A23L 33/40 | • {Complete food formulations for specific consumer groups or specific purposes, e.g. infant formula} |
| N | A23L 35/00 | Food or foodstuffs not provided for in groups A23L 5/00 – A23L 33/00; Preparation or treatment thereof |
| N | A23L 35/10 | • {Emulsified foodstuffs} |
| N | A23L 35/20 | • {No-fat spreads} |

Project: N/A (A23N)

- | | |
|--------------|--|
| A23N 12/00 | Machines for cleaning, blanching, drying or roasting fruits or vegetables, e.g. coffee, cocoa, nuts (methods for treating, e.g. roasting, coffee or cocoa, A23F , A23G ; cleaning, e.g. washing, or drying grain B02B 1/00 ; separating solids from solids for cleaning B07B ; cleaning in general B08B ; heating devices per se per se , see see the relevant classes, e.g. F24 ; drying machines in general F26B) |
| U A23N 15/00 | Machines or apparatus for other treatment of fruits or vegetables for human purposes; Machines or apparatus for topping or skinning flower bulbs {(treatment of coffee, other than drying or roasting A23F ; treatment of cocoa A23G 1/02)} |

- A23N 15/06 • Devices for other treatment of fruit, e.g. marking, maturing, polishing

Project: RP0307 (A23P)**D A23P 1/00****Shaping or working of foodstuffs**

- D A23P 1/005 • {Fixation on a non-edible supporting member (confectionery, chocolate, ice-cream A23G)}
- D A23P 1/02 • Agglomerating; Granulating; Tableting
- D A23P 1/022 • {Agglomeration or granulation with pulverisation of the solid particles, including free-falling curtain}
- D A23P 1/025 • {Agglomeration or granulation by extrusion or by pressing, e.g. through small holes, through sieves, between surfaces}
- D A23P 1/027 • {Tableting; Making food bars by compressing of a dry powdered mixture}

Project: RP0295 (A23P)

- D A23P 1/04 • Encapsulation of particles, e.g. foodstuff additives (flavouring agents A23L 1/22)

Project: RP0307 (A23P)

- D A23P 1/045 • {with oils, lipids or mono- or diglycerides}
- D A23P 1/06 • Making free-flowing or instant powder (A23P 1/02, A23P 1/04 take precedence)
- D A23P 1/063 • {using anti-caking or free-flowing agents}
- D A23P 1/066 • {using other additives, e.g. emulsifiers, wetting agents; Dust binding agents}
- D A23P 1/08 • Coating of foodstuffs; Coatings therefor; Making of laminated, multilayered or stuffed foodstuffs
- D A23P 1/081 • {Coating with edible coating; Coating with oils or fats}
- D A23P 1/082 • {Apparatus for applying powders or particles to foodstuffs, possibly combined with premoistening or battering, e.g. breading apparatus}
- D A23P 1/083 • {with agitation of the foodstuff inside a rotating apparatus, e.g. drum}
- D A23P 1/084 • {Apparatus or processes for dip-coating in a liquid or semi-liquid bath (dip-coating in general B05D 1/18, B05C 3/02)}
- D A23P 1/085 • {Other apparatus or processes for coating with liquid or semi-liquid products, e.g. spray-coating, fluidised-bed coating, coating by casting (combined with breading A23P 1/082; coating processes and apparatus in general B05C, B05D)}
- D A23P 1/086 • {Making of laminated, multi-layered, stuffed or hollow foodstuffs, e.g. wrapping in a preformed edible dough sheet, edible food containers}
- D A23P 1/087 • {Filling or stuffing cored food pieces, e.g. combined with coring or making cavities}
- D A23P 2001/088 • {Tempura batter, leavened and other aerated batter or coating}
- D A23P 2001/089 • {Coating food items by printing onto them, or printing layers of food products}
- D A23P 1/10 • Other shaping methods, e.g. moulding
- D A23P 1/105 • {Moulding (A23P 1/027 takes precedence)}
- D A23P 1/12 • Extruding
- D A23P 1/125 • {Co-extrusion of different foodstuffs}

Project: RP0295 (A23P)

- D A23P 1/14 • Puffing or expanding (A23L 1/164, A23L 1/18, A23L 1/217 take precedence)

Project: RP0307 (A23P)

- D A23P 1/142 . . . {by pressure release, e.g. explosion puffing or by vacuum treatment}
- D A23P 1/144 . . . {Extrusion-expansion}
- D A23P 1/146 . . . {Discontinuously working apparatus}
- D A23P 1/148 . . . {by heating without pressure release or without vacuum treatment}

Project: RP0295 (A23P)

- D A23P 1/16 . . Foaming or whipping (cream substitutes A23L 1/19)

Project: RP0307 (A23P)

- D A23P 2001/165 . . . {Forming foamed food products by sonication}

N A23P 10/00**Shaping or working of foodstuffs characterised by the products**

- N A23P 10/10 . . Securing foodstuffs on a non-edible supporting member
- N A23P 10/20 . . Agglomerating; Granulating; Tableting
- N A23P 10/22 . . Agglomeration or granulation with pulverisation of solid particles, e.g. in a free-falling curtain
- N A23P 10/25 . . Agglomeration or granulation by extrusion or by pressing, e.g. through small holes, through sieves or between surfaces
- N A23P 10/28 . . Tableting; Making food bars by compression of a dry powdered mixture
- N A23P 10/30 . . Encapsulation of particles, e.g. foodstuff additives
- N A23P 10/35 . . with oils, lipids, monoglycerides or diglycerides
- N A23P 10/40 . . free-flowing powder or instant powder, i.e. powder which is reconstituted rapidly when liquid is added ([A23P 10/20](#), [A23P 10/30](#) take precedence)
- N A23P 10/43 . . using anti-caking agents or agents improving flowability, added during or after formation of the powder
- N A23P 10/47 . . using additives, e.g. emulsifiers, wetting agents or dust-binding agents

N A23P 20/00**Coating of foodstuffs; Coatings therefor; Making laminated, multi-layered, stuffed or hollow foodstuffs**

- N A23P 20/10 . . Coating with edible coatings, e.g. with oils or fats
- N A23P 20/105 . . {Coating with compositions containing vegetable or microbial fermentation gums, e.g. cellulose or derivatives; Coating with edible polymers, e.g. polyvinylalcohol}
- N A23P 20/11 . . {Coating with compositions containing a majority of oils, fats, mono/diglycerides, fatty acids, mineral oils, waxes or paraffins}
- N A23P 20/12 . . Apparatus for applying powders or particles to foodstuffs, e.g. for breading; Such apparatus combined with means for pre-moistening or battering
- N A23P 20/13 . . . involving agitation of the foodstuff inside a rotating apparatus, e.g. a drum
- Q A23P 20/15 . . Apparatus or processes for coating with liquid or semi-liquid products

WARNING

Group [A23P 20/15](#) is incomplete pending reclassification of documents from group [A23P 20/18](#).

Groups [A23P 20/15](#) and [A23P 20/18](#) should be considered in order to perform a complete search.

- N A23P 20/17 . . . by dipping in a bath

- N A23P 20/18
- • • by spray-coating, fluidised-bed coating or coating by casting (combined with breading [A23P 20/12](#))
- WARNING
Group [A23P 20/18](#) is impacted by reclassification of documents from group [A23P 20/18](#).
Groups [A23P 20/18](#) and [A23P 20/15](#) should be considered in order to perform a complete search.
- N A23P 20/19
- {Coating with non-edible coatings }
- N A23P 20/20
- Making of laminated, multi-layered, stuffed or hollow foodstuffs, e.g. by wrapping in preformed edible dough sheets or in edible food containers
- N A23P 20/25
- • Filling or stuffing cored food pieces, e.g. combined with coring or making cavities
- N A23P 20/251
- • • {Tempura batter; Leavened or other aerate batter or coating }
- N A23P 20/253
- • • {Coating food items by printing onto them; Printing layers of food products}
- N A23P 30/00**
- Shaping or working of foodstuffs characterised by the process or apparatus ([A23P 10/00](#), [A23P 20/00](#) take precedence)**
- N A23P 30/10
- Moulding
- N A23P 30/20
- Extruding
- N A23P 30/25
- • Co-extrusion of different foodstuffs
- N A23P 30/30
- Puffing or expanding
- N A23P 30/32
- • by pressure release, e.g. explosion puffing; by vacuum treatment
- N A23P 30/34
- • • by extrusion-expansion
- N A23P 30/36
- • • in discontinuously working apparatus
- N A23P 30/38
- • by heating (combined with pressure release or vacuum treatment [A23P 30/32](#))
- N A23P 30/40
- Foaming or whipping
- N A23P 2030/405
- • {Forming foamed food products by sonication}

Project: N/A (A23V)

- U A23V 2200/00**
- Function of food ingredients (not used; see subgroups)**
- NOTE
The indexing codes under this group are used in combination with the codes for ingredients compositions
- A23V 2200/26
- Food, ingredients or supplements targeted to meet non-medical requirements, e.g. environmental, religious
- U A23V 2300/00**
- Processes (not used; see subgroups)**
- A23V 2300/06
- Deamidation, e.g. deamidation of protein

Project: N/A (A24D)

- U A24D 1/00**
- Cigars; Cigarettes**
- A24D 1/04
- with mouthpieces or filter-tips (mouthpieces, filter-tips ~~per se~~ ~~per se~~ [A24D 3/00](#))
- A24D 1/042
- • {with mouthpieces ([A24D 1/047](#) takes precedence; mouthpieces ~~per se~~ ~~per se~~ [A24D 3/18](#))}
- A24D 1/08
- with lighting means (pyrophoric compositions [C06C 15/00](#); lighters ~~per se~~ ~~per se~~ [F23Q](#))

- U A24D 3/00** Tobacco smoke filters, e.g. filter-tips, filtering inserts (filters in general [B01D](#)); Mouthpieces for cigars or cigarettes (for pipes, for cigar or cigarette holders [A24F 7/00](#))
- A24D 3/18
- Mouthpieces for cigars or cigarettes; Manufacture thereof ([A24D 3/02](#) takes precedence; making tipping materials for, or attaching them to mouthpieces of, cigars or cigarettes [A24C 5/56](#); producing cigar or cigarette holders from plastics or from substances in a plastic state [B29D 23/14](#); ~~manufacture from metal, see the relevant subclasses of Section B~~; *manufacture from metal, see the relevant subclasses of Section B*)

Project: N/A (A41C)

- U A41C 3/00** Brassieres
- A41C 3/0007
- {with stay means ([A41C 3/06](#) takes precedence; stay means ~~per se~~ *per se* [A41C 3/122](#))}
- A41C 3/10
- with stiffening or bust-forming inserts (inserts ~~per se~~ *per se* [A41C 3/14](#))

Project: N/A (A41H)

- A41H** APPLIANCES OR METHODS FOR MAKING CLOTHES, e.g. FOR DRESS-MAKING, FOR TAILORING, NOT OTHERWISE PROVIDED FOR (machines, appliances, or methods for making particular articles of apparel, ~~see~~ *see* the relevant groups for these articles in [A41B](#) - [A41F](#); cutting tools or machines in general [B26](#); weaving, braiding, lace-making, knitting, tufting, treating of textiles [D03](#) - [D06](#); sewing-machines, sewing appliances, seam-ripping devices [D05B](#); cutting or otherwise severing textile materials [D06H 7/00](#))
- U A41H 1/00** Measuring aids or methods (making patterns by modelling on the human body [A41H 3/04](#); measuring persons for identification purposes [A61B 5/117](#); measuring in general [G01](#), e.g. [G01B](#))
- A41H 1/06
- in combination with marking (marking ~~per se~~ *per se* [D06H 1/00](#))
- 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~~ *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 (A43B)

- U A43B 23/00** Uppers; Boot legs; Stiffeners; Other single parts of footwear
- U A43B 23/02**
- Uppers; Boot legs {(ski boots with an upper made of flexible material [A43B 5/0486](#); skating boots characterised by the uppers [A43B 5/1666](#))}
- U A43B 23/0245**
- {characterised by the constructive form}
- A43B 23/028
- • {Resilient uppers, e.g. shock absorbing}

Project: N/A (A43C)

- U A43C 15/00** Non-skid devices or attachments (apparatus for climbing poles, trees, or the like [A63B 27/00](#))
- A43C 15/06
- Ice-gripping devices or attachments, e.g. ice-spurs, ice-cleats, ice-creepers, crampons; Climbing devices or attachments, e.g. mountain climbing irons ([A43C 15/09](#) takes precedence; ice-spurs for horseshoes [A01L 7/08](#))

Project: N/A (A43D)

- U A43D 8/00** Machines for cutting, ornamenting, marking or otherwise working up shoe part blanks (pulling-over or lasting [A43D 9/00](#) - [A43D 23/00](#); making or fastening soles, heels or welts [A43D 25/00](#) - [A43D 83/00](#))
- U A43D 8/16** • Ornamentation (by creasing [A43D 8/44](#); of leather in general [C14B 1/56](#))
- A43D 8/22** • • by embossing or printing (printing [per se per se](#), stamping [per se per se B41](#))
- A43D 8/26** • Marking for future work ([A43D 8/16](#) takes precedence; printing [per se per se](#), stamping [per se per se B41](#))

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

BUTTONS, PINS, BUCKLES, SLIDE FASTENERS, OR THE LIKE (fastenings specially adapted for footwear [A43C](#))

NOTE

This subclass [covers covers](#) buckles or slide fasteners whether used as haberdashery or otherwise.

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:

- [A44B 1/16](#) covered by [A44B 1/14](#)

A44B 1/00

Buttons (setting on garments [A41H 37/10](#); setting on footwear [A43D 100/08](#); making buttons: [see see](#) the relevant groups in the classes for making articles from particular materials)

Project: N/A (A44C)**A44C 27/00**

Making jewellery or other personal adornments (single step processes, [see see](#) the relevant places, e.g. making rings from wire [B21F 37/00](#))

Project: N/A (A45C)

- U A45C 11/00** Receptacles for purposes not provided for in groups [A45C 1/00](#) - [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 11/04** • Spectacle cases; Pince-nez cases
- A45C 11/06** • • Making of spectacle or pince-nez cases (of a single specified material, [see see](#) the relevant class, e.g. [B31](#))

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 2/38** • Surface-wave devices
- A45D 2/40** • • as hair-pressing tongs {(hair grips, clamps or clasps [per se per se A45D 8/14](#), [A45D 8/20](#), [A45D 8/24](#))}
- A45D 2/42** • Clamps or clasps with teeth or combs {(hair clasps with comb-like prongs [per se per se A45D 8/30](#))}
- U A45D 8/00** Hair-holding devices {(as hair-curling or hair-waving appliances [A45D 2/00](#)); Accessories therefor}
- A45D 8/18** • Grip openers; Grip {storing means, e.g.} boxes

A45D 26/00

Hair-singeing apparatus; Apparatus for removing superfluous hair, e.g. tweezers (removing hair using electrosurgical instruments [A61B 18/04](#), [A61B 18/18](#))

Project: N/A (A46B)**U A46B 5/00**

Brush bodies; Handles integral with brushware

- U A46B 5/002
 - {having articulations, joints or flexible portions}
- U A46B 5/0054
 - • {designed to allow relative positioning of the head to body}
- U A46B 5/0062
 - • • {being flexible or resilient during use}
- A46B 5/007
 - • • • {Inserts made of different material, e.g. springs, plates}
- A46B 5/04
 - shaped as gloves or finger-stalls {or other special holding ways, e.g. by the tongue}

U A46B 2200/00

Brushes characterized by their functions, uses or applications

- U A46B 2200/10
 - For human or animal care
- A46B 2200/1026
 - • Gum massaging brush, i.e. specifically designed for massaging the gums

Project: N/A (A46D)**U A46D 1/00**

Bristles; Selection of materials for bristles (making artificial bristles [D01D](#), [D01F](#))

- U A46D 1/02
 - {Bristles details}
- A46D 1/0207
 - • {Bristles characterised by the choice of material, e.g. metal}
- A46D 1/0253
 - • {Bristles having a shape which is not a straight line, e.g. curved, "S", hook, loop}

Project: N/A (A47B)**U A47B 19/00**

Reading-desks; Lecterns; Pulpits, {i.e. free-standing}

- A47B 19/10
 - characterised by association with auxiliary devices, e.g. paper clamps, line indicators (spot indicators ~~per se~~ ~~per se~~ [B42D 9/00](#))

U A47B 23/00

Bed-tables; Trays; Reading-racks; Book-rests, {i.e. items used in combination with something else}

- A47B 23/06
 - characterised by association with auxiliary devices, e.g. line indicators, leaf turners, lampholders, {book or page holders} (spot indicators, leaf turners, ~~per se~~ ~~per se~~ [B42D 9/00](#))

A47B 35/00

Tables combined with ironing-boards, washers, wringers, or the like (washing machines, ironing boards, wringers ~~per se~~ ~~per se~~ [D06F](#))

U A47B 67/00

Chests; Dressing-tables; Medicine cabinets or the like; Cabinets characterised by the arrangement of drawers

- A47B 67/04
 - Chests of drawers; Cabinets characterised by the arrangement of drawers ([A47B 67/02](#) takes precedence; drawers, guides for drawers, ~~per se~~ ~~per se~~ [A47B 88/00](#))

Project: N/A (A47C)**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 1/023
 - • • the parts being horizontally-adjustable seats; {Expandable seats or the like, e.g. seats with horizontally adjustable parts}
- U A47C 1/031
 - • having coupled adjustable supporting parts
- U 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](#)})
- U 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 1/0352
 - • • • {characterised by coupled seat and back-rest slidingly movable in the base frame, e.g. by rollers}

Project: N/A (A47F)

- U A47F 9/00
 - Shop, bar, bank or like counters (show cases or show cabinets [A47F 3/00](#); safety transaction partitions, e.g. movable pay plates, [E05G 7/00](#))
- U A47F 9/02
 - Paying counters {(change plates, coin dispensers with rotatable change dishes [G07D](#))}
- U A47F 9/04
 - • Check-out counters, e.g. for self-service stores
- A47F 9/046
 - • • {Arrangement of recording means in or on check-out counters (record carriers or readers ~~per se~~ [per se](#) [G06K](#))}

Project: N/A (A47G)**A47G****HOUSEHOLD OR TABLE EQUIPMENT (book-ends [A47B 5/00](#); knives [B26B](#))**NOTE

This subclass ~~covers~~[covers](#) equipment for similar use in hotels, dressing rooms, vehicles, or the like, not otherwise provided for

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:

- [A47G 25/42](#) covered by [A47G 25/40](#), [A47G 2025/4092](#)
- [A47G 25/46](#) covered by [A47G 25/44](#), [A47G 2025/448](#)
- [A47G 25/64](#) covered by [A47G 25/62](#), [A47G 2025/629](#)
- [A47G 29/02](#) covered by [A47B 97/001](#)

Project: N/A (A47J)

- 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](#))
- U A47J 31/40
 - Beverage-making apparatus with dispensing means for adding a measured quantity of ingredients, e.g. coffee, water, sugar, cocoa, milk, tea
- A47J 31/408
 - {with means for moving a filter in the form of a tape (coffee or tea filters ~~per se~~ [per se](#) [A47J 31/06](#))}
- U A47J 31/44
 - Parts or details {or accessories} of beverage-making apparatus (filters or strainers [A47J 31/06](#))
- U A47J 31/4403
 - • {Constructional details}

- U A47J 31/441
 - • {Warming devices or supports for beverage containers (warming devices not being part of the beverage-making apparatus [A47J 36/24](#); stands or holders for beverage containers not being part of the beverage-making apparatus [A47J 47/16](#))}
- U A47J 31/4425
 - • • {Supports for beverage containers when filled or while being filled (supports allowing to adapt the beverage making apparatus to the size of the beverage container [A47J 31/4482](#))}
- U A47J 31/4432
 - • • • {with means for keeping the beverage warm (urns with devices for keeping beverages hot or cool [A47J 31/50](#))}
- U A47J 31/4435
 - • • • • {Heated support plates}
- A47J 31/4442
 - • • • • {in combination with a continuous-flow heater for the water (continuous-flow heaters ~~per se~~ [per se A47J 31/542](#))}
- U A47J 36/00

Parts, details or accessories of cooking-vessels ([A47J 27/00](#) - [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](#))
- U A47J 36/02
 - Selection of specific materials, e.g. heavy bottoms with copper inlay or with insulating inlay {(Processes for applying fluoropolymers to obtain an anti-adhesive surface [B05D 5/083](#))}
- A47J 36/022
 - {Cooking- or baking-vessels or supports thereof for using only once (eating- or serving-plates for using only once [A47G 19/02](#); heat-resistant food-packages [B65D 81/34](#))}
- U A47J 42/00

Coffee mills; Spice mills (as part of universal or multi-purpose machines [A47J 43/04](#), [A47J 44/00](#); grinding or pulverising in general [B02C](#))
- U A47J 42/38
 - Parts or details
- A47J 42/52
 - • Coffee mills combined with roasting devices ({combinations of coffee mills with coffee-making machines [A47J 31/42](#);} coffee-roasting devices ~~per se~~ [per se A23N 12/00](#))

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](#))}
- U A47K 3/02
 - Baths (heatable [F24H](#))
- A47K 3/022
 - • specially adapted for particular use, e.g. for washing the feet, for bathing in sitting position ({doors to get in and out of baths more easily [A47K 3/006](#)}; collapsible baths [A47K 3/062](#))
- U A47K 5/00

Holders or dispensers for soap, toothpaste, or the like (specially adapted for shaving soap or cosmetics [A45D 33/00](#) - [A45D 40/00](#))
- A47K 5/18
 - for both soap and toothpaste or the like; in combination with holders for drinking glasses, toothbrushes, or the like; {Toothpaste dispensers; Dental care centers (soap dispensers ~~per se~~ [per se A47K 5/06](#); dispensers using pliable containers with auxiliary devices for expelling contents [B65D 35/28](#))}
- U A47K 11/00

Closets without flushing (closets with recirculation of bowl-cleaning fluid [E03D 5/016](#)); Urinals without flushing (for vehicles in general [B60R](#); closets for railway-cars [B61D](#); for ships [B63B](#); for aircraft [B64D](#); urinals with flushing arrangements [E03D 13/00](#)); Chamber pots; Chairs with toilet conveniences or specially adapted for use with toilets

A47K 11/08

- Night cabinets or tables with closet or bidet equipment (bedside cabinets ~~per se~~ [per se A47B 79/00](#))

Project: N/A (A47L)**U A47L 15/00****Washing or rinsing machines for crockery or tableware**

U A47L 15/0018

- {Controlling processes, i.e. processes to control the operation of the machine characterised by the purpose or target of the control (for control of water softening or water softener regeneration [A47L 15/4229](#); for control of water level [A47L 15/4244](#); for control of bad smells or odours [A47L 15/4276](#); for control of water temperature [A47L 15/4287](#); for control of water pressure [A47L 15/4289](#); for control of condition of crockery or tableware [A47L 15/4295](#); for control of condition of washing water [A47L 15/4297](#))}

U A47L 15/0021

- {Regulation of operational steps within the washing processes, e.g. optimisation or improvement of operational steps depending from the detergent nature or from the condition of the crockery}

A47L 15/0042

- {Desorption phases of reversibly dehydrogenated drying material, e.g. zeolite in a sorption drying system}

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~~[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:

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

U 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 1/24
- for the mouth, i.e. stomatoscopes, e.g. with tongue depressors (tongue depressors ~~per se~~ ~~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](#))
- U 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](#))**
- U A61B 3/02
- Subjective types, i.e. testing apparatus requiring the active assistance of the patient
- U A61B 3/028
- • for testing visual acuity; for determination of refraction, e.g. phoropters
- A61B 3/04
- • • Trial frames; Sets of lenses for use therewith (lenses ~~per se~~ ~~per se~~ [G02C 7/02](#))
- A61B 3/08
- • for testing binocular or stereoscopic vision, e.g. strabismus
- U A61B 3/10
- Objective types, i.e. instruments for examining the eyes independent of the patients' perceptions or reactions
- U A61B 3/12
- • for looking at the eye fundus, e.g. ophthalmoscopes ([A61B 3/13](#) takes precedence)
- A61B 3/125
- • • with contact lenses (contact lenses ~~per se~~ ~~per se~~ [G02C 7/04](#))
- A61B 3/14
- • Arrangements specially adapted for eye photography {(apparatus or arrangements for taking photographs ~~per se~~ ~~per se~~ [G03B](#))}
- U 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 {(medical informatics [G06F 19/30](#))}**
- U A61B 5/04
- Detecting, measuring or recording bioelectric signals of the body of parts thereof
- U A61B 5/0476
- • Electroencephalography {(devices for psychotechnics [A61B 5/16](#))}
- A61B 5/0482
- • • using biofeedback {(biofeedback ~~per se~~ ~~per se~~ [A61B 5/486](#))}
- U A61B 5/06
- Devices, other than using radiation, for detecting or locating foreign bodies (or removing same [A61B 17/50](#)); {determining position of probes within or on the body of the patient}
- A61B 5/065
- • {Determining position of the probe employing exclusively positioning means located on or in the probe, e.g. using position sensors arranged on the probe}
- WARNING
[A61B 5/065](#) and subgroups are not complete pending a reorganisation, see also group [A61B 5/06](#)
- A61B 5/14
- Devices for taking samples of blood (hypodermic syringes [A61M 5/00](#)); Measuring characteristics of blood ~~in vivo~~ ~~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~~ ~~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](#))

- U 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 5/150053 • • {for enhanced collection of blood or interstitial fluid at the sample site, e.g. by applying compression, heat, vibration, ultrasound, suction or vacuum to tissue; for reduction of pain or discomfort; Skin piercing elements, e.g. blades, needles, lancets or canulas, with adjustable piercing speed}
- A61B 5/150167 • • • {Adjustable piercing speed of skin piercing element, e.g. blade, needle, lancet or canula, for example with varying spring force or pneumatic drive}
- 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 5/150244 • • • {Rods for actuating or driving the piston, i.e. the cylindrical body that sits inside the syringe barrel, typically with an air tight seal, and slides in the barrel to create a vacuum or to expel blood}
- U A61B 5/150274 • • • {Manufacture or production processes or steps for blood sampling devices}
- A61B 5/150282 • • • • {for piercing elements, e.g. blade, lancet, canula, needle}
- A61B 5/15029 • • • • {for driving devices, i.e. means for driving the piercing element}
- 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 5/150351 • • {Caps, stoppers or lids for sealing or closing a blood collection vessel or container, e.g. a test-tube or syringe barrel (caps for bottles or containers in general [B65D 41/00](#))}
- U 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}
- U A61B 5/150389 • • • • {Hollow piercing elements, e.g. canulas, needles, for piercing the skin}
- A61B 5/150396 • • • • • {Specific tip design, e.g. for improved penetration characteristics}
- U A61B 5/150412 • • • • {Pointed piercing elements, e.g. needles, lancets for piercing the skin (blade-like piercing elements [A61B 5/150442](#))}
- A61B 5/150427 • • • • • {Specific tip design, e.g. for improved penetration characteristics}
- U A61B 5/150442 • • • • {Blade-like piercing elements, e.g. blades, cutters, knives, for cutting the skin}
- A61B 5/150458 • • • • • {Specific blade design, e.g. for improved cutting and penetration characteristics}

	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 5/150496	. . . . . {Details of construction of hub, i.e. element used to attach the double-ended needle to a piercing device or sampling device}
U	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 5/150519	. . . . . {Details of construction of hub, i.e. element used to attach the single-ended needle to a piercing device or sampling device}
	A61B 5/150534	. . . . {Design of protective means for piercing elements for preventing accidental needle sticks, e.g. shields, caps, protectors, axially extensible sleeves, pivotable protective sleeves}
	A61B 5/150541	. . . . . {Breakable protectors, e.g. caps, shields or sleeves, i.e. protectors separated destructively, e.g. by breaking a connecting area}
	A61B 5/150549	. . . . . {Protectors removed by rotational movement, e.g. torsion or screwing}
U	A61B 5/15058	. . . . . {Joining techniques used for protective means}
	A61B 5/15061	. . . . . {by material engagement, e.g. welding, bonding}
	A61B 5/150625	. . . . . {by using additional parts, e.g. clamping rings or collets}
U	A61B 5/150633	. . . . . {Protective sleeves which are axially extensible, e.g. sleeves connected to, or integrated in, the piercing or driving device; pivotable protective sleeves}
U	A61B 5/150641	. . . . . {comprising means to impede repositioning of protection sleeve from covering to uncovering position}
	A61B 5/150656	. . . . . {semi-automatically triggered, i.e. in which the triggering of the protective sleeve requires a deliberate action by the user, e.g. manual release of spring-biased extension means}
	A61B 5/150664	. . . . . {Pivotable protective sleeves, i.e. sleeves connected to, or integrated in, the piercing or driving device, and which are pivoted for covering or uncovering the piercing element}
U	A61B 5/150763	. . . {with identification means (identification means for surgical instruments A61B 90/90)}
	A61B 5/150786	. . . . {Optical identification systems, e.g. bar codes, colour codes}
	A61B 5/150801	. . . {Means for facilitating use, e.g. by people with impaired vision; means for indicating when used correctly or incorrectly; means for alarming}
	A61B 5/150816	. . . . {by tactile feedback, e.g. vibration}
	A61B 5/150832	. . . . {by topography of the surface, e.g. Braille, embossed printing}
U	A61B 5/150885	. . . {Preventing re-use}
	A61B 5/1509	. . . . {by disrupting a seal, e.g. puncturing a piston seal}
	A61B 5/150908	. . . . {by disconnecting components, e.g. breaking or rupturing of connected parts, e.g. piston and rod}
	A61B 5/150916	. . . . {by blocking components, e.g. piston, driving device or fluid passageway}
	A61B 5/150923	. . . . {by means for destroying components or parts, e.g. by cutting or piercing}
	A61B 5/150954	. . . {Means for the detection of operative contact with patient, e.g. by temperature sensitive sensor}
U	A61B 5/151	. . {Devices} specially adapted for taking samples of capillary blood, e.g. by lancets {, needles or blades}
U	A61B 5/15101	. . . {Details}

- U A61B 5/15115 . . . {Driving means for propelling the piercing element to pierce the skin, e.g. comprising mechanisms based on shape memory alloys, magnetism, solenoids, piezoelectric effect, biased elements, resilient elements, vacuum or compressed fluids}
- A61B 5/15117 . . . {comprising biased elements, resilient elements or a spring, e.g. a helical spring, leaf spring, or elastic strap}
- U A61B 5/15134 . . {Bladeless capillary blood sampling devices, i.e. devices for perforating the skin in order to obtain a blood sample but not using a blade, needle, canula, or lancet, e.g. by laser perforation, suction or pressurized fluids}
- A61B 5/15136 . . . {by use of radiation, e.g. laser}
- A61B 5/15138 . . . {provided with means to ensure the protection of the user, e.g. to avoid laser light entering the eyes of a user}
- U A61B 5/15146 . . {Devices loaded with multiple lancets simultaneously, e.g. for serial firing without reloading, for example by use of stocking means. (multiple simultaneous cutting or piercing [A61B 5/150977](#))}
- A61B 5/15148 . . . {Constructional features of stocking means, e.g. strip, roll, disc, cartridge, belt or tube}
- A61B 5/15182 . . . {Means for keeping track or checking of the total number of piercing elements already used or the number of piercing elements still remaining in the stocking, e.g. by check window, counter, display}
- U 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](#))}
- 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](#))}
- 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](#)
- A61B 5/746 . . {Alarms related to a physiological condition, e.g. details of setting alarm thresholds or avoiding false alarms (alarms ~~per se~~ [G08B](#))}
- 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~~ [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](#))**
- U A61B 6/40 . {with arrangements for generating radiation specially adapted for radiation diagnosis (X-ray tubes or details thereof [H01J 35/00](#))}
- A61B 6/4035 . . {the source being combined with a filter or grating (filters for radiation ~~per se~~ [G21K 1/10](#))}
- WARNING
Groups [A61B 6/4035](#) and [A61B 6/4042](#) are not complete pending a reorganisation; see also [A61B 6/06](#)

- 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 6/425 • • • {using detectors specifically adapted to be used in the interior of the body (detector details for ~~in-vivo~~ *in vivo* counting [G01T 1/161](#))}
- A61B 6/52 • {Devices using data or image processing specially adapted for radiation diagnosis (image processing ~~per se~~ *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 8/00 Diagnosis using ultrasonic, sonic or infrasonic waves (imaging of objects using sonar [G01S 15/00](#))**
- A61B 8/12 • In body cavities or body tracts, e.g. by using catheters (catheters ~~per se~~ *per se* [A61M 25/00](#))
- 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 8/465 • • • {adapted to display user selection data, e.g. icons or menus}
- A61B 8/52 • {Devices using data or image processing specially adapted for diagnosis using ultrasonic, sonic or infrasonic waves (image processing ~~per se~~ *per se* [G06T](#))}
- WARNING
This subgroup is not complete pending a reorganisation, see [A61B 8/08](#) and [A61B 8/14](#)
- 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
- U A61B 10/02 • Instruments for taking cell samples 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](#))}
- A61B 10/06 • • Biopsy forceps {, e.g. with cup-shaped jaws}
- A61B 16/00 Devices specially adapted for vivisection or autopsy (similar devices for medical purposes, ~~see~~ *see* the relevant groups for such devices; {autopsy tables [A61G 13/0027](#)})**
- U A61B 17/00 Surgical instruments, devices or methods, e.g. tourniquets ([A61B 18/00](#) takes precedence; contraceptive devices, pessaries, or applicators therefor [A61F 6/00](#); eye surgery [A61F 9/007](#); ear surgery [A61F 11/00](#))**
- U A61B 2017/00743 • {Type of operation; Specification of treatment sites ([A61B 2017/00238](#) takes precedence)}
- A61B 2017/00814 • • {Surgery of the tongue, e.g. glossoplasty}

- U 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 17/1633
- • • {Sleeves, i.e. non-rotating parts surrounding the bit shaft, e.g. the sleeve forming a single unit with the bit shaft ([A61B 17/1644](#) takes precedence)}
- U 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)}
- U 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](#))}
- U 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 2017/3437
- • • • {with means for removing or absorbing fluid, e.g. wicks or absorbent pads}
- 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
- U 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
- A61B 17/64
- • • • Devices extending alongside the bones to be positioned {(not used, [see see](#) subgroups and [A61B 17/60](#))}

Project: RP0158 (A61B)

- U 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}
- U A61B 17/7019 {Longitudinal elements having flexible parts, or parts connected together, such that after implantation the elements can move relative to each other}
- M A61B 17/7022 {Tethers, i.e. longitudinal elements capable of transmitting tension only, e.g. ~~cables~~straps, sutures} or cables ([A61B 17/702](#) takes precedence)}
- M A61B 17/7046 {the screws or hooks being mobile in use relative to the longitudinal element ([A61B 17/702](#), [A61B 17/7035](#) takes take precedence)}
- M A61B 17/7053 {with parts attached to bones or to each other by flexible wires, straps, sutures or cables}

Project: N/A (A61B)

- 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}
- A61B 17/7068 {Devices comprising separate rigid parts, assembled ~~in-situ~~in situ, to bear on each side of spinous processes; Tools therefor}

Project: RP0158 (A61B)

- M A61B 17/88 . . . {Osteosynthesis instruments;} Methods or means for implanting or extracting internal {or external} fixation devices {([A61B 17/7074](#) takes precedence)}

Project: N/A (A61B)

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~~per se [G06T](#); details of algorithms for analysing medical images [G06T 7/0012](#))

Project: N/A (A61C)

- U A61C 1/00 **Dental machines for boring or cutting; {General features of dental machines or apparatus, e.g. hand-piece design}**
- A61C 1/0046 . {Dental lasers (surgical lasers [A61B 18/20](#); working by laser beam in general [B23K 26/00](#); lasers ~~per se~~per se [H01S 3/00](#))}
- U A61C 19/00 **Dental auxiliary appliances (dental chairs or accessories therefor, working stands whether or not combined with chairs [A61G 15/00](#))**
- A61C 19/001 . {Holders for absorbent pads (absorbent pads ~~per se~~per se [A61F 13/00](#))}

Project: N/A (A61D)

A61D

VETERINARY INSTRUMENTS, IMPLEMENTS, TOOLS, OR METHODS

NOTE

This subclass ~~covers~~covers only instruments, implements, tools, or methods specially adapted for use with animals

Project: N/A (A61F)**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 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](#))}
 - U A61F 2/14
 - • Eye parts, e.g. lenses, corneal implants; {Implanting instruments specially adapted therefor}; Artificial eyes
 - U A61F 2/16
 - • • Intraocular lenses
- WARNING
- Group [A61F 2/16](#) is impacted by reclassification into groups [A61F 2/1601](#), [A61F 2/16015](#), [A61F 2002/1696](#), and [A61F 2002/16965](#).
All groups listed should be considered in order to perform a complete search.
- U A61F 2/1613
 - • • {having special lens configurations, e.g. multipart lenses; having particular optical properties, e.g. pseudo-accommodative lenses, lenses having aberration corrections, diffractive lenses, lenses for variably absorbing electromagnetic radiation, lenses having variable focus}
 - U A61F 2/1624
 - • • • {having adjustable focus; power activated variable focus means, e.g. mechanically or electrically by the ciliary muscle or from the outside}
 - A61F 2/1627
 - • • • • {for changing index of refraction, e.g. by external means or by tilting}
 - A61F 2/20
 - • {Epiglottis}; Larynxes; Tracheae combined with larynxes or for use therewith (tracheae, bronchi [per se per se A61F 2/04](#); {tracheostomy tubes [A61M 16/0465](#))}
 - U A61F 2/30
 - • Joints
 - U A61F 2/3094
 - • • {Designing or manufacturing processes (not used, see subgroups)}
 - A61F 2/30942
 - • • • {for designing or making customized prostheses, e.g. using templates, CT or NMR scans, finite-element analysis or CAD-CAM techniques (computer-assisted sizing or machining of dental prostheses [A61C 13/0004](#); CAD-CAM techniques [per se per se G05B 19/4202](#))}
 - U A61F 2/44
 - • • for the spine, e.g. vertebrae, spinal discs
 - A61F 2002/4495
 - • • • {having a fabric structure, e.g. made from wires or fibres}
 - U A61F 2/50
 - Prostheses not implantable in the body {(closure means for urethra or rectum or for artificial body openings therefor [A61F 2/0004](#))}
 - U A61F 2/68
 - • Operating or control means
 - A61F 2/70
 - • • electrical {(not used, [see see A61F 2/68](#) and [A61F 2/72](#))}
 - 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](#) - [A61B 17/115](#); dilators [A61M 29/00](#))}
 - U A61F 2/94
 - • Stents retaining their form, i.e. not being deformable, after placement in the predetermined place

A61F 2/945	<ul style="list-style-type: none"> • • • hardenable, e.g. stents formed in-situ<i>in situ</i>
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 5/01	<ul style="list-style-type: none"> • Orthopaedic devices, e.g. splints, casts or braces
U A61F 5/30	<ul style="list-style-type: none"> • • Pressure-pads (corn-pads, corn-rings A61F 13/06; {tourniquets A61B 17/132})
A61F 5/34	<ul style="list-style-type: none"> • • • Pressure pads filled with air or liquid (valves specially adapted for medical use A61M 39/00; connection of valves to inflatable elastic bodies B60C 29/00; {valves per-se<i>per se</i> F16K})
U A61F 9/00	Method or devices for treatment of the eyes; Devices for putting-in contact lenses; Devices to correct squinting; Apparatus to guide the blind; Protective devices for the eyes, carried on the body or in the hand (caps with means for protecting the eyes A42B 1/06; visors for helmets A42B 3/22; {retractors A61B 17/02; manipulators specially adapted for use in surgery A61B 34/70}; appliances to aid invalids to move about A61H 3/00; {exercisers for the eyes A61H 5/00}; eye baths A61H 35/02; sunglasses or goggles having the same features as spectacles G02C)
U A61F 9/02	<ul style="list-style-type: none"> • Goggles {(breathing masks A62B 18/00; swimming goggles A63B 33/002; diving masks B63C 11/12)}
A61F 9/022	<ul style="list-style-type: none"> • • {Use of special optical filters, e.g. multiple layers, filters for protection against laser light or light from nuclear explosions, screens with different filter properties on different parts of the screen; Rotating slit-discs (optical filters per-se<i>per se</i> G02B 5/20)}
U A61F 11/00	Methods or devices for treatment of the ears, e.g. surgical; Protective devices for the ears, carried on the body or in the hand; {Non-electric hearing aids}
U A61F 11/06	<ul style="list-style-type: none"> • Protective devices for the ears
A61F 11/14	<ul style="list-style-type: none"> • • external, e.g. earcaps or earmuffs (headwear, e.g. caps or helmets, with means for protecting the ears A42B 1/06, A42B 3/16, {for hairdresser's rooms A45D 44/12; for sports A63B 71/10; headphones H04R 1/10})
	NOTE
	{Group A61F 11/14 contains only acoustic protection (other external protectors, see-see <i>see</i> A61F 11/06)}
U 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})
U A61F 13/00004	<ul style="list-style-type: none"> • {Non-adhesive dressings}
U A61F 13/00008	<ul style="list-style-type: none"> • • {characterized by the material}
A61F 13/00012	<ul style="list-style-type: none"> • • • {being made of natural material, e.g. cellulose-, protein-, collagen-based}
A61F 13/00017	<ul style="list-style-type: none"> • • • {synthetic, e.g. polymer based}
U A61F 13/00051	<ul style="list-style-type: none"> • {Accessories for dressings}
A61F 13/00059	<ul style="list-style-type: none"> • • {provided with visual effects, e.g. printed or colored}
A61F 13/00063	<ul style="list-style-type: none"> • • {comprising medicaments or additives, e.g. odor control, PH control, debriding, antimicrobial (drug delivery dressings A61K 9/70; chemical aspect of the additives A61L 15/00)}

- A61F 13/00068
 - • {specially adapted for application or removal of fluid, e.g. irrigation or drainage of wounds, under-pressure wound-therapy ([A61F 13/0216](#) takes precedence; Drainage appliances for wounds in general [A61M 27/00](#))}
- U A61F 2013/00361
 - {Plasters}
- U A61F 2013/00544
 - • {form or structure}
- U A61F 2013/00621
 - • • {cast}
- A61F 2013/00625
 - • • • {~~in situ~~ *in situ*}
- U A61F 13/02
 - Adhesive plasters or dressings ([A61F 13/06](#) - [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 13/0203
 - • {having a fluid handling member}
- A61F 13/0223
 - • • {characterized by parametric properties of the fluid handling layer, e.g. absorbency, wicking capacity, liquid distribution}
- 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](#)
- U A61F 13/2022
 - • • {characterised by the shape}
- A61F 13/204
 - • • • {having an external member remaining outside the body cavity, e.g. for form fitting or leakage prevention (withdrawal strings persee [A61F 13/34](#))}
- A61F 13/2077
 - • • {having a visual effect, e.g. printed or embossed}
- A61F 13/208
 - • • {having means for avoiding leakage, e.g. liquid impermeable withdrawal end ([A61F 13/204](#) takes precedence)}
- U A61F 13/45
 - • characterised by the shape (cup-shaped type tampons [A61F 13/2045](#))
- 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](#))}
- U A61F 13/51
 - • characterised by the outer layers {(wicking or transfer layers [A61F 13/537](#))}
- U A61F 13/511
 - • • Topsheet, i.e. the permeable cover or layer facing the skin
- A61F 13/51104
 - • • • {the top sheet having a three-dimensional cross-section, e.g. corrugations, embossments, recesses or projections}
- A61F 13/51108
 - • • • • {the top sheet having corrugations or embossments having one axis relatively longer than the other axis, e.g. forming channels or grooves in a longitudinal direction}
- A61F 13/51113
 - • • • {comprising an additive, e.g. lotion or odour control ([A61F 13/51108](#) takes precedence)}
- U A61F 13/512
 - • • • characterised by its apertures, e.g. perforations
- A61F 13/5121
 - • • • • {characterised by the vertical shape of the apertures, e.g. three dimensional apertures , e.g. macro-apertures}
- A61F 13/5122
 - • • • • • {and comprising secondary apertures, e.g. macro-apertures in combination with micro-apertures}
- U A61F 13/5123
 - • • • • • {the apertures being formed on a multilayer top sheet}
- A61F 13/5125
 - • • • • • • {the apertures not being formed through the complete thickness of the topsheet, e.g. blind holes (blind holes in a single layered topsheet [A61F 13/51104](#))}

- U A61F 13/53 • • characterised by the absorbing medium ([A61F 13/20](#) takes precedence)
- U A61F 2013/530131 • • • {being made in fibre but being not pulp}
- U A61F 2013/530379 • • • • {comprising mixtures of fibres}
- A61F 2013/530416 • • • • • {having different count, e.g. denier or tex}
- U A61F 2013/530481 • • • {having superabsorbent materials, i.e. highly absorbent polymer gel materials}
- U A61F 2013/530583 • • • • {characterized by the form}
- U A61F 2013/530635 • • • • • {in thin film}
- A61F 2013/530642 • • • • • • {being cross-linked or polymerised ~~in-situ~~ *in situ*}
- U A61F 13/551 • • Packaging before or after use {(general packaging of absorbent pads [B65D 85/00](#))}
- U A61F 13/55105 • • • {packaging of diapers}
- A61F 13/55115 • • • • {characterized by the features before use, e.g. how are the diapers folded or arranged in a package}
- A61F 13/5519 • • • {packages containing more than one kind of item, e.g. tampon and napkin, or diaper and an exchangeable insert}
- U **A61F 2210/00** **Particular material properties of prostheses classified in groups [A61F 2/00](#) - [A61F 2/26](#) or [A61F 2/82](#) or [A61F 9/00](#) or [A61F 11/00](#) or subgroups thereof**
- A61F 2210/0085 • hardenable ~~in-situ~~ *in situ*, e.g. epoxy resins

Project: N/A (A61G)

- U **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 46/00](#))
- A61G 13/102 • • {Fluid drainage means for collecting bodily fluids from the operating table, e.g. for blood, urine (drainage on the patient [A61M 1/00](#))}

Project: N/A (A61H)

- A61H 1/00 **Apparatus for passive exercising ([A61H 5/00](#) takes precedence); Vibrating apparatus {(driving means for vibrating [A61H 23/00](#)); Chiropractic devices, e.g. body impacting devices, external devices for briefly extending or aligning unbroken bones**
 NOTE
 This group ~~does not cover~~ *does not cover* orthopaedic methods or devices, which are covered by group [A61F 5/00](#)
- U **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](#)})**
- U A61H 7/002 • {by rubbing or brushing}
- A61H 7/004 • • {power-driven, e.g. electrical}

- A61H 9/00** Pneumatic or hydraulic massage, {e.g. sprays ([A61H 13/00](#) takes precedence; underwater massage, spraying systems acting on a body or body part immersed in water [A61H 33/00](#), [A61H 35/00](#); brushes with fluid supply [A46B 11/00](#); nozzles ~~per se~~ [per se](#) [B05B](#))}
- U 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](#))}
- U A61H 19/30** • {Devices for external stimulation of the genitals}
- A61H 19/32** • • {for inserting the genitals therein, e.g. vibrating rings for males or breast stimulating devices}
- 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 2201/00** Characteristics of apparatus not provided for in the preceding codes
- A61H 2201/10** • with further special therapeutic means, e.g. electrotherapy, magneto therapy or radiation therapy, chromo therapy, infra-red or ultraviolet therapy
- U A61H 2201/14** • Special force transmission means, i.e. between the driving means and the interface with the user
- U A61H 2201/1481** • • Special movement conversion means
- A61H 2201/149** • • • rotation-linear or ~~vice-versa~~ [vice versa](#)
- U A61H 2201/16** • Physical interface with patient
- U A61H 2201/1657** • • Movement of interface, i.e. force application means
- A61H 2201/1661** • • • Wobbling interface, e.g. Stewart platform or Hexapod (nutating movement, [A61H 2001/0207](#))

Project: N/A (A61J)**A61J 3/00**

Devices or methods specially adapted for bringing pharmaceutical products into particular physical or administering forms (chemical aspects, ~~see~~ [see](#) the relevant classes)

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~~ [per se](#) [C01](#), [C07](#), [C08](#), [C12N](#)}; soap compositions [C11D](#); {micro-organisms ~~per se~~ [per se](#) [C12N](#)})

NOTES

1. This subclass ~~covers~~ [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](#) - [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](#) - [A01N 65/00](#));
- diagnosing a physiological condition or state by an *in-vivo* *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* *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 [G](#).
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:

A61K 9/133	covered by	A61K 9/127
A61K 9/18	covered by	A61K 9/14
A61K 9/22	covered by	A61K 9/20
A61K 9/24	covered by	
A61K 9/209		
A61K 9/26	covered by	A61K 9/2077 ,
A61K 9/2081		
A61K 9/30	covered by	A61K 9/28
A61K 9/32	covered by	A61K 9/28
A61K 9/34	covered by	A61K 9/28
A61K 9/36	covered by	A61K 9/28
A61K 9/38	covered by	A61K 9/28
A61K 9/40	covered by	A61K 9/28
A61K 9/42	covered by	A61K 9/28
A61K 9/44	covered by	
A61K 9/2072		
A61K 9/46	covered by	
A61K 9/0007		
A61K 9/52	covered by	A61K 9/50
A61K 9/54	covered by	A61K 9/5073 ,
A61K 9/5078 ,	A61K 9/5084	
A61K 9/56	covered by	A61K 9/50
A61K 9/58	covered by	A61K 9/50
A61K 9/60	covered by	A61K 9/50
A61K 9/62	covered by	A61K 9/50
A61K 9/64	covered by	A61K 9/50
A61K 9/66	covered by	A61K 9/48
A61K 9/68	covered by	
A61K 9/0058		
A61K 9/72	covered by	
A61K 9/0073		
A61K 45/08	covered by	A61K 31/00 ,
A61K 47/00		

[A61K 47/04](#) covered by
[A61K 47/02](#)
[A61K 50/00](#) covered by [A61K 9/0009](#),
[C09J 9/02](#)

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

U 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](#)

U A61K 6/02 A61K 6/027

- Use of preparations for artificial teeth, for filling or for capping teeth
- • Use of non-metallic elements or compounds thereof, e.g. carbon {(non-metallic elements ~~per se~~ ~~per se~~ [C01B](#))}
- • Use of metals or alloys (alloys ~~per se~~ ~~per se~~ [C22C](#))
- • Use of inorganic cements (cements ~~per se~~ ~~per se~~ [C04B](#))
- • Use of natural or synthetic resins (resins ~~per se~~ ~~per se~~ [C08](#))

A61K 6/04
A61K 6/06
A61K 6/08

U 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~~~~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
- A61K 8/63
- • containing organic compounds
 - • • Steroids; Derivatives thereof
- NOTE
This group ~~covers~~ steroids, as defined in Note (1) after the title of subclass [C07J](#).
- U A61K 9/00
- Medicinal preparations characterised by special physical form (nuclear magnetic resonance contrast preparations or magnetic resonance imaging contrast preparataions [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](#) - [A61K 9/7023](#)).
- Where relevant, documents are classified in more than one of these subdivisions.
- U A61K 9/0012
- {Galenical forms characterised by the site of application}
- 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 [A61K 47/00](#))}
- 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 [A61K 9/0019](#); brain implants [A61K 9/0085](#); (coated) prostheses, catheters or stents [A61L](#))}
- U 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](#)
- U A61K 9/127
- A61K 9/1271
- • Liposomes
 - • • {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](#))}
- U 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 9/28
- • 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)}
- 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)}
- 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)}

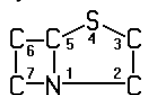
U A61K 31/00**Medicinal preparations containing organic active ingredients****NOTES**

1. When classifying in groups A61K 31/00 - 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 - 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 - 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 - A61K 33/38 and not in subgroups A61K 31/28 - 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 31/13 • Amines {(A61K 31/04 takes precedence)}
- A61K 31/135 • • having aromatic rings {, e.g. ketamine, nortriptyline (methadone A61K 31/137)}
- 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 31/41 • • • having five-membered rings with two or more ring hetero atoms, at least one of which being nitrogen, e.g. tetrazole
- U A61K 31/425 • • • • Thiazoles
- U A61K 31/429 • • • • • condensed with heterocyclic ring systems

A61K 31/43

- • • • • Compounds containing 4-thia-1-azabicyclo [3.2.0] heptane ring systems, i.e. compounds containing a ring system of the formula



, e.g. penicillins, penems

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](#) - [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~~[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.

U 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 38/08

- • Peptides having 5 to 11 amino acids {([A61K 38/043](#) - [A61K 38/046](#) take precedence)}

A61K 38/09

- • • Luteinising hormone-releasing hormone [LHRH] {, i.e. Gonadotropin-releasing hormone [GnRH]}; Related peptides

A61K 38/14

- • Peptides containing saccharide radicals; Derivatives thereof {, e.g. bleomycin, phleomycin, muramylpeptides or vancomycin}

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 38/19

- • • Cytokines; Lymphokines; Interferons

A61K 38/191

- • • {Tumor necrosis factors [TNF], e.g. lymphotoxin [LT], i.e. TNF-beta}

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

1. Groups [A61K 39/002](#) - [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](#) - [A61K 39/42](#), in association with symbol [A61K 2300/00](#) in Combination Sets.

U A61K 2039/51

• {comprising whole cells, viruses or DNA/RNA}

U A61K 2039/515

• • {Animal cells}

A61K 2039/5158

• • • {Antigen-pulsed cells, e.g. T-cells}

U 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 41/0009

• {Inactivation or decontamination of a medicinal preparation prior to administration to the animal or human, e.g. : inactivation of viruses or bacteria for vaccines, sterilisation by electromagnetic radiation}

NOTE

See [See A61K 41/0019](#) for the specific method; [see see A61L 2/0029](#) if the invention lies in the method of sterilization of the medicinal preparation rather than the sterilized medicinal preparation

A61K 41/0023

• {Aggression treatment or altering}

NOTE

This groups covers aggression treatment or altering

- of a medicinal preparation prior to administration to the human/animal, e.g. altering a binding specificity of a monoclonal antibody used in a medicinal agent with an oxidizing agent or an electric potential;
- of a tissue/organ prior to graft, e.g. destroying immunodominant epitopes;
- the permeability of cell membranes or biological barriers [in-vivo](#) [in vivo](#), e.g. by ultrasound, prior to the administration of a medicinal preparation to the animal/human;

- for inducing the production of stress response proteins or heat shock proteins in order to reduce subsequent response to injuries

- A61K 41/0028 • ~~{Disruption, e.g. by heat or ultrasounds, sonophysical or sonochemical activation; }~~ ~~{Disruption, e.g. by heat or ultrasounds, sonophysical or sonochemical activation, e.g. thermosensitive or heat-sensitive liposomes, disruption of calculi with a medicinal preparation and ultrasounds}~~
- A61K 41/0033 • {Sonodynamic cancer therapy with sonochemically active agents or sonosensitizers, having their cytotoxic effects enhanced through application of ultrasounds (ultrasound therapy ~~per se~~ ~~per se~~ [A61N 7/00](#))}
- A61K 41/0038 • {Radiosensitizing, i.e. administration of pharmaceutical agents that enhance the effect of radiotherapy (radiotherapy ~~per se~~ ~~per se~~ [A61N 5/10](#))}
- A61K 41/0042 • {Photocleavage of drugs ~~in vivo~~ ~~in vivo~~, e.g. cleavage of photolabile linkers ~~in vivo~~ ~~in vivo~~ by UV radiation for releasing the pharmacologically-active agent from the administered agent; photothrombosis or photoocclusion}
- A61K 41/0047 • {Sonophoresis, i.e. ultrasonically-enhanced transdermal delivery, electroporation of a pharmacologically active agent}

NOTE

To be classified in [A61K 9/0009](#) when it is in relation to the galenic form]

- A61K 41/0052 • {Thermotherapy; Hyperthermia; Magnetic induction; Induction heating therapy}

NOTE

simple magnetic guidance of drugs ~~in vivo~~ ~~in vivo~~ is to be classified in [A61K 41/00](#), and in [A61K 47/4893](#)

- U A61K 41/0057 • {Photodynamic therapy with a photosensitizer, i.e. agent able to produce reactive oxygen species upon exposure to light or radiation, e.g. UV or visible light; photocleavage of nucleic acids with an agent}
- A61K 41/0061 • • {5-aminolevulinic acid-based PDT: 5-ALA-PDT involving porphyrins or precursors of protoporphyrins generated ~~in vivo~~ ~~in vivo~~ from 5-ALA}

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 47/14 • • • Esters of carboxylic acids {, e.g. fatty acid monoglycerides, medium-chain triglycerides, parabens}
- U A61K 47/30 • Macromolecular compounds
- A61K 47/34 • • Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds, {e.g. polyesters, polyamino acids, polysiloxanes, copolymers of polyalkylene glycol or poloxamer (PEG or poloxamers [A61K 47/10](#))}

NOTE

This group ~~does not cover~~ ~~does not cover~~ polyalkoxylated compounds, which are classified according to the derivatized compounds. The following list provides examples of such polyalkoxylated compounds together with their relevant group:-

- POE alkyl ethers [A61K 47/10](#)
- PEG fatty acid esters [A61K 47/14](#)
- poloxamines [A61K 47/18](#)
- polysorbates [A61K 47/26](#)
- POE castor oil [A61K 47/44](#)

- 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](#))}
- 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](#)
- A61K 47/48015
- • ~~{the modifying agent being an inorganic compound; }~~ *{the modifying agent being an inorganic compound, e.g. inorganic ion that being chemically complexed with the pharmacologically- or therapeutically-active agent ([A61K 47/48161](#) takes precedence)}*
- NOTE
- Classic ion pairs of medicinal agents are not classified in [A61K 47/48](#) but in [A61K 31/00](#)
- U A61K 47/48023
- • {the modifying agent being an organic compound ([A61K 47/48161](#) takes precedence)}
- 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~~ *in vivo* to be classified in [A61K 49/0036](#)
- 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~~ *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 47/48153 • • • {the modifying agent being a chemiluminescent acceptor}

NOTE

A chemical reaction induces the cleavage of the pharmacologically or therapeutically active agent from the carrier while at the same time producing light. If the conjugate is cleaved through activation by light *in vivo* in ~~vivo~~ order to release the drug, then the classification symbol being [A61K 41/0042](#). Dyes/luminescent agents for optical diagnostic imaging [A61K 49/001](#); for photodynamic therapy [A61K 41/0057](#)

- U 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 47/48346 • • • {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~~ *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 an antibody. If M being biotin and A being a (strept)avidin or a derivative thereof, then [A61K 47/48353](#) being used as classification symbol

- 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~~ *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 47/48738 • • • {rescue therapy; agonist-antagonist; antidote; targeted rescue or protection, e.g. folic acid-folinic acid, conjugated to antibodies both or only one}

U A61K 47/48746 • • • {two or three steps pretargeting systems, wherein an antibody conjugate being used in at least one of the steps; ligand-antiligand therapy}

A61K 47/48753 • • • • {avidin-biotin system wherein at least one avidin- or biotin-conjugated antibody being used in a two- or three-steps pretargeting system}

NOTE

This subgroup ~~covers~~[covers](#) the case wherein M and A in the definition of [A61K 47/48723](#) form a pair of biotin and (strept)avidin, or derivatives of biotin and (strept)avidin

U 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

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~~[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 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 48/00

Medicinal preparations containing genetic material which is inserted into cells of the living body to treat genetic diseases; Gene therapy

NOTES

1. In this group the following expression is used with the meaning indicated:
"gene therapy" means ~~in-vivo~~ *in vivo* delivery of nucleic acids encoding for peptides by administration of these nucleic acids or by implanting cells transfected ex vivo with the nucleic acids encoding for the peptides.
2. Documents relating to new nucleic acids encoding for peptides, e.g. enzymes, and their use in gene therapy are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the encoded peptides, with the appropriate indexing codes relating to gene therapy.
3. Documents relating to new vectors and their use in gene therapy are classified in groups [C12N 15/85](#) - [C12N 15/90](#) according to the vectors, and the appropriate indexing codes, including those relating to gene therapy.
4. Documents describing cells genetically modified to express a gene of interest and their use in gene therapy are classified in [C12N 5/06](#) according to the cells, with the appropriate indexing codes relating to gene therapy.
5. Documents relating to new medical uses of peptides ~~per se~~ *per se*, which peptides may be encoded by nucleic acids, and wherein the nucleic acids may be administered directly or by implanting cells transfected ex vivo with the nucleic acids, are classified in the appropriate groups [A61K 38/00](#) or [A61K 39/00](#) according to the encoded peptides, with the indexing codes relating, inter alia, to gene therapy.

A61K 49/00

Preparations for testing ~~in-vivo~~ *in vivo*

- U A61K 49/001 • {Preparation for luminescence or biological staining}
- U A61K 49/0013 • • {Luminescence}
- A61K 49/0017 • • • {Fluorescence ~~in-vivo~~ *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 49/0041 • • • • • {Xanthene dyes, used ~~in-vivo~~ *in vivo*, e.g. administered to a mice, e.g. rhodamines, rose Bengal (~~in-vivo~~ *in vivo* [G01N](#))}
- A61K 49/0043 • • • • • • {Fluorescein, used ~~in-vivo~~ *in vivo*}
- A61K 49/0045 • • • • • {the fluorescent agent being a peptide or protein used for imaging or diagnosis ~~in-vivo~~ *in vivo*}

- A61K 49/006
- {Biological staining of tissues ~~in-vivo~~*in vivo*, e.g. methylene blue or toluidine blue O administered in the buccal area to detect epithelial cancer cells, dyes used for delineating tissues during surgery}
- NOTE
If the dye used for staining is fluorescent, classification is also given for the appropriate subgroup of [A61K 49/0019](#) }
- 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~~*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~~*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 49/0089
- • • • {Particulate, powder, adsorbate, bead, sphere}
- A61K 49/0091
- • • • {Microparticle, microcapsule, microbubble, microsphere, microbead, i.e. having a size or diameter higher or equal to 1 micrometer}
- NOTE
When the surface of the microparticle encapsulating a fluorescent agent and used ~~in-vivo~~*in vivo* is functionalised by a modifying agent, classification is also made according to the nature of this modifying agent, e.g. a microparticle modified on its surface by a peptide is classified in [A61K 49/0091](#) and [A61K 49/0056](#)
- A61K 49/0097
- • • • {Cells, viruses, ghosts, red blood cells, viral vectors, used for imaging or diagnosis ~~in-vivo~~*in vivo*}
- 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

- A61K 49/08
- • characterised by the carrier
- NOTE
{characterised by the carrier carrying the MRI-active nucleus, e.g. inorganic carrier}]
- A61K 49/10
- • • Organic compounds
- NOTE
the carrier being an organic compound, e.g. ¹³C-labelled molecule or perfluorinated alkane, used as MRI ~~in vivo~~ *in vivo* probe, or a small organic molecule, e.g. a sugar, linked to a Gd-chelate
- A61K 49/101
- • • {the carrier being a complex-forming compound able to form MRI-active complexes with paramagnetic metals}
- NOTE
In the [A61K 49/101](#) subgroups, the MRI-active nucleus being complexed to a complex-forming compound, e.g. chelating group. Classification being made according to the nature of this complex-forming agent, if it being either an uncommon or new complexing agent (not the usual DTPA, DOTA, DOTP, etc...groups) that forms the real contribution to the claimed MRI invention, or if it being not conjugated to any further molecule, e.g. which being not conjugated to a polymer, peptide, protein or antibody. In that latter case, the MRI probe being e.g. a paramagnetic metal chelate}]
- A61K 49/12
- • • • Macromolecular compounds
- NOTE
the carrier being an organic macromolecular compound, i.e. an oligomeric, polymeric, dendrimeric molecule (not being a peptide, protein, polyamino acid ([see see A61K 49/00](#)) or an antibody ([see see A61K 49/00](#) or [A61K 49/16](#))
- A61K 49/14
- • • • Peptides, e.g. proteins
- NOTE
the carrier being a peptide (polyamino acid, [A61K 49/146](#)) or protein (not an antibody, [see see A61K 49/16](#)). If the MRI-active nucleus being linked to the peptide or protein or polyamino acid via a complexing or chelating group, the subgroup [A61K 49/085](#) should also be given. If the peptide or protein or polyamino acid being a dendrimer, a dendron, or hyperbranched, then the [A61K 49/124](#) being also given
- 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}
- U A61K 49/1824
- • • • • {coated or functionalised nanoparticles (liposomes [A61K 49/1812](#); nano-emulsions [A61K 49/1806](#); micelles [A61K 49/1809](#))}

	A61K 49/1827	<ul style="list-style-type: none"> • • • • • {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 49/20	<ul style="list-style-type: none"> • • containing free radicals {, e.g. trityl radical for overhauser}
	A61K 51/00	Preparations containing radioactive substances for use in therapy or testing in-vivo <i>in vivo</i>
U	A61K 51/02	<ul style="list-style-type: none"> • characterised by the carrier, {i.e. characterised by the agent or material covalently linked or complexing the radioactive nucleus}
U	A61K 51/04	<ul style="list-style-type: none"> • • organic compounds <p><u>NOTE</u> Organic compounds used as carriers</p>
	A61K 51/0474	<ul style="list-style-type: none"> • • • {complexes or complex-forming compounds, i.e. wherein a radioactive metal (e.g. ¹¹¹In³⁺) is complexed or chelated by, e.g. a N₂S₂, N₃S, NS₃, N₄ chelating group} <p><u>NOTE</u> Classification is made according to the nature of this complex-forming agent, if it is either an uncommon or new complexing agent (not the usual DTPA, DOTA, DOTP, MAG3 etc...groups) that forms the real contribution to the claimed invention (radioimaging or radiotherapeutic agent), or if it is not conjugated to any further molecule, e.g. which is not conjugated to a polymer, peptide, protein or antibody. In that latter case, the radioactive agent is e.g. a radioactive metal chelate</p>
U	A61K 51/06	<ul style="list-style-type: none"> • • • 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)}
	A61K 51/065	<ul style="list-style-type: none"> • • • • {conjugates with carriers being macromolecules} <p><u>NOTE</u> The compound which bears, complexes or chelates the radioactive nucleus, is covalently linked or complexed to the carrier being a macromolecule (not being a peptide, polyamino acid, protein, antibody). In case of a conjugate comprising a complex-forming compound (chelating group) complexing a radioactive metal linked to the carrier (organic macromolecular compound in A61K 51/065), 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/chelating group, e.g. ¹¹¹In-DTPA-PEG is classified in A61K 51/065 and new DTPA-like derivatives conjugated to PEG and complexing ¹¹¹In for use in-vivo <i>in vivo</i> is classified in A61K 51/0478 and A61K 51/065</p>
U	A61K 51/08	<ul style="list-style-type: none"> • • • Peptides, e.g. proteins, {carriers being peptides, polyamino acids, proteins}
	A61K 51/088	<ul style="list-style-type: none"> • • • • {conjugates with carriers being peptides, polyamino acids, proteins (antibodies A61K 51/10)} <p><u>NOTE</u> 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</p>

classified except if it is the real contribution of the claimed invention and it is an uncommon complexing or chelating group, e.g. 111In-DTPA-interleukin 2 is classified in [A61K 51/088](#); new DTPA-like derivatives conjugated to interleukin 2 and complexing 111In for use ~~in-vivo~~ *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. 111In-DTPA-herceptin being classified in [A61K 51/1093](#) and [A61K 51/1051](#), new DTPA-like derivatives conjugated to herceptin and complexing 111In for use ~~in-vivo~~ *in vivo* being classified in [A61K 51/0478](#), [A61K 51/1093](#) and [A61K 51/1051](#)

- 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 51/1282 . . {Devices used ~~in-vivo~~ *in vivo* and carrying the radioactive therapeutic or diagnostic agent, therapeutic or ~~in-vivo~~ *in vivo* diagnostic kits, stents}
- A61K 51/1286 . . . {Ampoules, glass carriers carrying the therapeutic or ~~in-vivo~~ *in vivo* diagnostic agent}

A61K 2123/00 Preparations for testing ~~in-vivo~~ *in vivo*

Project: N/A (A61L)

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~~ *see* the relevant subclasses for these articles, e.g. [H04R 1/12](#))

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](#) - [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 42/00](#), of surgical drapes [A61B 46/00](#), 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](#) - [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](#)

U A61L 2400/00
A61L 2400/02

Materials characterised by their function or physical properties

- Treatment of implants to prevent calcification or mineralisation *in-vivo* *in vivo*

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

NOTES

1. This subclass *covers* *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

2. Void

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:

[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](#)

U 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](#) - [A61M 5/00](#), [A61M 11/00](#) - [A61M 16/00](#), [A61M 27/00](#) - [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 1/14 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> • with membranes {(A61M 1/30 takes precedence; membranes <i>per se</i> <i>per se</i> B01D 69/00, B01D 71/00)} |
| U | A61M 5/00 | <p>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})</p> |
| U | A61M 5/178 | <ul style="list-style-type: none"> Syringes |
| | A61M 5/1782 | <ul style="list-style-type: none"> • {Devices aiding filling of syringes <i>in situ</i> <i>in situ</i> (combination of a vial and a syringe for transferring or mixing their contents A61J 1/2096, filling of medical containers in general B65B 3/003)} |

- U A61M 5/24
 - Ampoule syringes, i.e. syringes with needle for use in combination with replaceable ampoules or carpules, e.g. automatic (ampoules or carpules [A61J 1/06](#))
- A61M 5/2422
 - • {not used, [see](#) subgroups and [A61M 5/24](#)}
- U A61M 5/28
 - Syringe ampoules or carpules, i.e. ampoules or carpules provided with a needle
- A61M 5/281
 - • {Not used, [see](#) subgroups and [A61M 5/28](#)}
- U A61M 5/31
 - Details
- U A61M 2005/3117
 - • {Means preventing contamination of the medicament compartment of a syringe}
- U A61M 2005/3118
 - • • {via the distal end of a syringe, i.e. syringe end for mounting a needle cannula}
- A61M 2005/312
 - • • • {comprising sealing means, e.g. severable caps, to be removed prior to injection by, e.g. tearing or twisting}
- U 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 25/01
 - Introducing, guiding, advancing, emplacing or holding catheters ([A61M 25/10](#) takes precedence)
- U A61M 25/09
 - Guide wires
- A61M 25/0905
 - • {~~extendable~~; [extendable](#), e.g. mechanisms for extension}
- U A61M 2202/00

Special media to be introduced, removed or treated (applying radioactive material [A61N 5/1028](#))

NOTE

The classification symbols [A61M 2202/0007](#) - [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](#)

A61M 2202/04

- Liquids

NOTE

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

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

- U A61M 2202/0468 • • non-physiological
 A61M 2202/048 • • • Anaesthetics (~~see~~ also [A61M 19/00](#))

A61M 2230/00**Measuring parameters of the user**NOTE

~~+A+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](#)~~

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](#))**

- 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 1/3606 • • • • • {adapted for a particular treatment}
- A61N 1/361 • • • • • {Phantom sensations, e.g. tinnitus}
- A61N 1/36103 • • • • • {Neurorehabilitation; repair and reorganisation of neural tissue, e.g. after stroke}
- A61N 1/36114 • • • • • {Cardiac control, e.g. by vagal stimulation (stimulating the heart [A61N 1/362](#))}

- U **A61N 5/00** **Radiation therapy (ultrasound therapy [A61N 7/00](#); devices or apparatus applicable to both therapy and diagnosis [A61B 6/00](#))**

- U A61N 5/06 • using light
- U A61N 2005/0635 • • {characterised by the body area to be irradiated}
- U A61N 2005/0636 • • • {Irradiating the whole body}
- U A61N 2005/0637 • • • • {in a horizontal position}
- A61N 2005/0639 • • • • • {with additional sources directed at, e.g. the face or the feet}
- U A61N 5/10 • X-ray therapy; Gamma-ray therapy; Particle-irradiation therapy ([A61N 5/01](#) takes precedence; {radiation diagnosis, e.g. combined with radiation therapy [A61B 6/00](#); irradiation devices in general [G21K 1/00](#); X-ray tubes, Lenard tubes [H01J 35/00](#); X-ray techniques, in particular circuits for feeding or controlling X-ray tubes, [H05G](#)})
- U A61N 5/1001 • • {using radiation sources introduced into or applied onto the body; brachytherapy}
- U A61N 5/1014 • • • {Intracavitary radiation therapy}
- A61N 5/1015 • • • • {Treatment of resected cavities created by surgery, e.g. lumpectomy}

Project: N/A (A61Q)**A61Q****SPECIFIC USE OF COSMETICS OR SIMILAR TOILET PREPARATIONS**NOTES

1. This subclass ~~covers~~*covers* the use of cosmetics or similar toilet preparations already classified as such in main group [A61K 8/00](#) or in addition thereto in subclasses [C11D](#) and [C12N](#) or in classes [C01](#), [C07](#) and [C08](#).
2. Since subclass **A61P** is not activated in ECLA, relevant IPC Note (2) is not applicable.

WARNING

The groups of subclass [A61Q](#) are incomplete. See provisionally also **A61K7/00** and subgroups

A61Q 13/00

Formulations or additives for perfume preparations (essential oils or perfumes ~~per se~~*per se* [C11B 9/00](#))

Project: N/A (A62C)**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 2/065

- {having as the main closure device materials, whose characteristics undergo an irreversible change under high temperatures, e.g. intumescent (intumescent materials forming part of the mechanism of another main closure device, ~~see~~*see* the relevant class)}

**A62C 27/00 -
A62C 33/00**

Fire-fighting vehicles ([A62C 31/00](#), [A62C 33/00](#), [A62C 37/00](#) take precedence; vehicle aspects, ~~see~~*see* the appropriate subclasses of [B60](#) - [B64](#), e.g. fire-fighting aircraft [B64D 1/16](#))

U A62C 31/00

Delivery of fire-extinguishing material (pumps [F04](#); {suction or pressure} hoses, {joints or couplings therefor} [F16L](#))

U A62C 31/02

- Nozzles specially adapted for fire-extinguishing

A62C 31/03

- adjustable, e.g. from spray to jet or ~~vice-versa~~*vice versa*

Project: N/A (A62D)**A62D 3/00**

Processes for making harmful chemical substances harmless or less harmful, by effecting a chemical change in the substances (consuming noxious gases by combustion [F23G 7/06](#))

NOTES

1. This group ~~does not cover~~*does not cover*:
 - chemical or physico-chemical type processes where eradicating or diminishing the dangerousness of harmful chemical substances produces useful products (e.g. cement). These types of processes are covered by the appropriate subclass for making the specific product. However, in situations where processes for making products include a subset of process steps with eradicating or diminishing the dangerousness of a harmful chemical substance as its fundamental goal, and this subset is in itself novel and unobvious, this subset is covered by group [A62D 3/00](#).
2. In this group the following term is used with the meaning indicated:

- harmful chemical substances are chemical waste substances which are too hazardous or toxic to be discarded in an ordinary municipal landfill.
3. In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.
 4. In this group, it is desirable to add the indexing code(s) of group [A62D 2101/00](#) relating to the nature of the harmful chemical substance.
 5. This group ~~covers~~[covers](#)
 - Processes for combatting harmful chemical substances or agents or materials containing harmful chemical agents. These processes can be chemical or physico-chemical, e.g. use of special chemical reagents for chemical fixing, and result in the decomposition or transformation of the agents in harmless or less harmful substances, because of the change in its chemical constitution. These processes can comprise the step of dissolving or dispersing the hazardous substances in water for the purpose of treating them or the step of producing a gaseous product from a non-gaseous hazardous substance
 - Treatment of specific hazardous substances in sludge, e.g. residue from industrial processes, with the exception of sludge from (municipal) sewage treatment.
 6. This group ~~does not cover~~[does not cover](#):
 - Chemical or biological purification of smoke or fumes, covered by [B01D 53/34](#)
 - Disposal of solid waste, destroying solid waste or transforming solid waste into something useful or harmless, covered by [B09B](#)
 - Chemical reclamation of contaminated soil, covered by [B09C 1/08](#)
 - Treatment of waste water, sewage or sludge, covered by [C02F](#)
 - Incorporating waste or residues in a glass or vitreous matrix covered by [C03C 1/00](#)
 - Incorporating waste or residues in cement or cementitious compositions, covered by [C04B 7/24](#)
 - Use of waste materials as filler for mortars, concrete or the like covered by [C04B 18/04](#)
 - Destructive distillation, covered by [C10B 53/00](#)
 - Obtaining metals from residues or scrap, covered by [C22B](#)
 - Consuming waste by combustion, covered by [F23G](#)
 - Treatment of radioactively-contaminated waste, covered by [G21F 9/00](#)

Project: N/A (A63B)

U 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 22/14 | • Platforms for reciprocating rotating motion about a vertical axis {, e.g. axis through the middle of the platform} |
| 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)} |

- U 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
- U 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 23/1209 • • {Involving a bending of elbow and shoulder joints simultaneously}
WARNING
 not complete, pending the completion of a reclassification
- A63B 23/1227 • • • {Dips, i.e. push-ups in a vertical position, i.e. eccentric movement, e.g. between parallel bars}
- U A63B 69/00** Training appliances or apparatus for special sports (training of parachutists [B64D 23/00](#))
- A63B 69/0051 • {not used, ~~see~~[see](#) subgroups and [A63B 69/00](#)}
- 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~~[see](#) subgroups and [A63B 69/00](#))}
- U A63B 69/36 • for golf
- A63B 69/3611 • • {not used, ~~see~~[see](#) [A63B 69/36](#) and subgroups}
- U A63B 69/3676 • • {for putting ([A63B 69/3608](#), [A63B 69/3661](#), [A63B 69/3667](#) and [A63B 69/3697](#) take precedence)}
- A63B 69/3685 • • • {Putters or attachments on putters, e.g. for measuring, aligning ([A63B 69/3614](#) takes precedence)}
- U A63B 71/00** Games or sports accessories not covered in groups [A63B 1/00](#) - [A63B 69/00](#) (starting appliances [A63K 3/02](#))
- 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 71/14 • • for the hands, e.g. baseball, boxing or golfing gloves (archer's finger tabs [F41B 5/1473](#))

Project: N/A (A63C)

- U 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](#))
- U A63C 5/06 • with special devices thereon, e.g. steering devices
- A63C 5/075 • • Vibration dampers (vibration dampers ~~per se~~[per se](#) [F16F 7/00](#))

Project: MP0225 (A63D)

- M A63D 13/00** **Bagatelle; Similar**[Bagatelle or similar](#) games {(pinball games [A63F 7/025](#); pachinko [A63F 7/02](#)[A63F 7/022](#); apparatus for projecting or rolling-off the balls [A63F 7/2409](#))}

Project: N/A (A63F)

- U A63F 3/00** Board games; Raffle games (racing games, traffic games, or obstacle games characterised by figures moved by action of the players [A63F 9/14](#))

- U A63F 3/00643
 - {Electric board games; Electric features of board games (electric word or number games [A63F 3/0421](#); computer chess [G06F](#); electric raffle games [A63F 3/081](#))}
- 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](#))**
- A63F 7/0005
 - {played on a table, the ball or other playing body being rolled or slid from one side of the table in more than one direction or having more than one entering position on this same side, e.g. shuffle boards (miniature bowling-alleys [A63D 3/00](#); goalposts ~~per se~~ [per se](#) [A63F 7/305](#))}
- U A63F 7/06
 - Games simulating outdoor ball games, e.g. hockey {or football (if physically beneficial for the human body [A63B 67/00](#))}
- A63F 7/07
 - • in which the playing bodies contact, or are supported by, the playing surface continuously, e.g. using air-cushion support {(not used, ~~see see~~ subgroups of [A63F 7/06](#))}
- A63F 7/20
 - • in which the playing bodies are projected through the air {(not used, ~~see see~~ subgroups of [A63F 7/06](#))}
- A63F 7/22
 - in which the playing bodies are projected through the air {(not used, ~~see see~~ subgroups of [A63F 7/06](#))}
- 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~~ [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](#))}
- U A63F 9/06
 - Patience; Other games for self-amusement
- A63F 9/0613
 - • {Puzzles or games based on the use of optical filters or elements, e.g. coloured filters, polaroid filters, transparent sheets with opaque parts (optical, colour or shadow toys [A63H 33/22](#))}
- U A63F 9/08
 - • Puzzles provided with elements movable in relation, (i.e. movably connected), to each other
- A63F 2009/0884
 - • • {with means for immobilising or stabilising a configuration, ~~e.g. the solution~~; ~~e.g. the solution~~}
- A63F 9/24
 - {Electric games;} Games using electronic circuits not otherwise provided for {(video games [A63F 13/00](#), computers for game playing ~~per se~~ [per se](#) [G06F 19/00](#); computerized gaming systems [G07F 17/32](#))}
- U A63F 2009/2448
 - • {Output devices}
- U A63F 2009/245
 - • • {visual}
- A63F 2009/2451
 - • • • {using illumination; e.g. with lamps}
- 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](#) - [A63F 9/00](#) covering the particular game

- U A63F 2300/00** **Features of games using an electronically generated display having two or more dimensions, e.g. on a television screen, showing representations related to the game**
- U A63F 2300/30
 - characterized by output arrangements for receiving control signals generated by the game device
 - A63F 2300/301
 - • using an additional display connected to the game console, e.g. on the controller
 - U A63F 2300/50
 - characterized by details of game servers
 - U A63F 2300/53
 - • details of basic data processing
 - A63F 2300/534
 - • • for network load management, e.g. bandwidth optimization, latency reduction
 - U A63F 2300/55
 - • Details of game data or player data management
 - U A63F 2300/5526
 - • • Game data structure
 - A63F 2300/5533
 - • • • using program state or machine event data, e.g. server keeps track of the state of multiple players on in a multiple player game
 - U A63F 2300/5546
 - • • using player registration data, e.g. identification, account, preferences, game history
 - A63F 2300/5566
 - • • • by matching opponents or finding partners to build a team, e.g. by skill level, geographical area, background, play style
 - U A63F 2300/60
 - Methods for processing data by generating or executing the game program
 - U A63F 2300/6063
 - • for sound processing
 - A63F 2300/6072
 - • • of an input signal, e.g. pitch and rhythm extraction, voice recognition
 - U A63F 2300/66
 - • for rendering three dimensional images
 - A63F 2300/663
 - • • for simulating liquid objects, e.g. water, gas, fog, snow, clouds
 - U A63F 2300/6661
 - • • for changing the position of the virtual camera
 - A63F 2300/6684
 - • • • by dynamically adapting its position to keep a game object in its viewing frustum, e.g. for tracking a character or a ball

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)}
 - U A63H 33/30
 - Imitations of miscellaneous apparatus not otherwise provided for, e.g. telephones, weighing-machines, cash-registers (savings boxes [A45C 1/12](#); toy ticket punches [G07B 9/02](#))
 - A63H 33/3044
 - • {Loading stations, e.g. with conveyors, elevators, cranes (cranes, winches or the like ~~per se~~ ~~per se~~ [A63H 17/12](#))}

Project: N/A (B)**B****PERFORMING OPERATIONS; TRANSPORTING****NOTES**

1. The following notes are meant to assist in the use of {classes [B01](#) - [B09](#)}; they must not be read as modifying in any way the elaborations.

1. In this sub-section, the separation of different materials, e.g. of different matter, size, or state, is predominantly found in the following subclasses:-

~~B01D~~
~~B03B, B03C, B03D~~
~~B04B, B04C~~
~~B07B, B07C~~

B01D
B03B, B03C, B03D
B04B, B04C
B07B, B07C

2. The classifying characteristics of these subclasses are:

- the physical state of the matter to be separated
- the principle of the process used
- particular kinds of apparatus

The first of these characteristics involves six different aspects, assembled in three groups.

- liquid/liquid or liquid/gas and gas/gas
- solid/liquid or solid/gas
- solid/solid

3. These subclasses are to be used according to the following general rules:

- [B01D](#) is the most general class as far as separation other than solids from solids is concerned.
- Apparatus for separating solids from solids are covered by [B03B](#) when the process concerned is regarded as the equivalent of "washing" in the sense of the mining art, even if such apparatus is a pneumatic one, especially pneumatic tables or jigs. Screens ~~PER-SE~~ PER SE are not covered by this subclass but are classified in [B07B](#), even if they are being used in a wet process. All other apparatus for the separation of solids from solids according to dry methods are classified in [B07B](#).
- If the separation takes place as a result of the detection or measurement of some feature of the material or articles to be sorted it is classified in [B07C](#).
- It should also be noted that the separation of isotopes of the same chemical element is covered by [B01D 59/00](#), whatever process or apparatus is employed.

2. The following scheme illustrates the classification according to these rules.

- LIQUID/LIQUID
LIQUID/GAS
GAS/GAS

Subclasses dealing with Operations Apparatus	Method
General B01D	B01D
by centrifugal force, using centrifuges or free-vortex apparatus B04B , B04C	B01D
using magnetic or electrostatic effect B03C	B03C

- SOLID/LIQUID
SOLID/GAS

Subclasses dealing with Operations Apparatus	Method
---	--------

General	B01D
B01D	
by centrifugal force	B01D
B01D	
using centrifuges or free-vortex apparatus	B01D
B04B , B04C	
using magnetic or electrostatic effect	B03C
B03C	
<hr/>	
C. SOLID/SOLID	
<hr/>	
Dry Methods	
<hr/>	
Subclasses dealing with Operations Apparatus	Method
<hr/>	
General for material in bulk	B07B
B07B	
Individual sorting	B07C
B07C	
Screening, sifting, pneumatic sorting	B07B
B07B	
using pneumatic tables or jigs	B03B
B03B	
by magnetic or electrostatic effect	B03C
B03C	
by centrifugal force	B07B
B07B	
using centrifuges or free-vortex apparatus	B07B
B04B , B04C	
<hr/>	
Wet Methods	
<hr/>	
Subclasses dealing with Operations Apparatus	Method
<hr/>	
General	B03B
B03B	
flotation, differential sedimentation	B03D
B03D	
screening	B07B
B07B	
<hr/>	
Combinations = dry methods - wet methods: B03B	
<hr/>	

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~~ ~~per se~~ for squeezing-out liquid from liquid-containing material [B30B 9/02](#); treatment of water [C02F](#), 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:

B01D 19/0454	covered by	B01D 9/00
B01D 15/04	covered by	B01J 39/00 -
B01J 49/02		
B01D 17/022	covered by	
B01D 17/0202		
B01D 17/025	covered by	
B01D 17/0208		
B01D 17/028	covered by	
B01D 17/0211		

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

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](#) - [B01D 29/43](#) and [B01D 29/50](#) - [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.

U	B01D 5/00	Condensation of vapours; Recovering volatile solvents by condensation (B01D 8/00 takes precedence; condensers F28B)
U	B01D 5/0033	• {Other features}
	B01D 5/0051	• • {Regulation processes; Control systems; e.g. valves}
U	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 9/0063	• {Control or regulation (control per se <u>per se</u> G05)}
U	B01D 11/00	Solvent extraction
U	B01D 11/02	• of solids
		<u>NOTE</u> Combinations of characteristics of individual groups, e.g. B01D 11/0226 and B01D 11/028 are expressed as B01D 11/0226 + B01D 11/028
U	B01D 11/0215	• • {Solid material in other stationary receptacles}
	B01D 11/0223	• • • {Moving bed of solid material (see <u>see</u> also B01D 11/0261)}
	B01D 21/00	Separation of suspended solid particles from liquids by sedimentation ({separation of ores or the like by sedimentation B03B 5/48 - 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)
		<u>WARNING</u> 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 }
U	B01D 21/0039	• {Settling tanks provided with contact surfaces, e.g. baffles, particles}
U	B01D 21/0069	• • {Making of contact surfaces, structural details, materials therefor}
	B01D 21/0072	• • • {Means for adjusting, moving or controlling the position or inclination of the contact surfaces, e.g. for optimising the particle-liquid separation, for removing the settled particles, for preventing fouling}
U	B01D 21/30	• Control equipment
		<u>WARNING</u> Groups B01D 21/302 - B01D 21/34 are not complete, see also B01D 21/30
	B01D 21/302	• • {Active control mechanisms with external energy, e.g. with solenoid valve}

B01D 23/00 - B01D 43/00	<p>Filtration; Filtering material, regeneration thereof ({aquarium filters A01K 63/04; filters for cigars and cigarettes A24D 3/00; filters for coffee or tea-making machines A47J 31/06; filters for frying fat A47J 37/12; filters for suction cleaners A47L 9/10}; blood or infusion liquid filters A61M 5/165; {liquid-liquid separation, e.g. for filtering elements made hydrophilic or hydrophobic, B01D 12/00, B01D 17/00, B01D 43/00; filtering material and its regeneration, as well as filtering aids, B01D 39/00; gas or air filters in general B01D 46/00; filtration devices for laboratory use B01L; "dewatering" ore or coal slurry B03B 5/48; magnetic filters B03C 1/00}; screens or sieves per se per se B07B 1/00; {filters for lubricating and cooling systems in turning, boring or milling machines B23Q 11/10; filters for cooling systems in grinding machines B24B 55/00}; extrusion filters B29C 47/68; {filter presses B30B 9/02; purification of process water, drinking water and waste water C02F; filters for alcoholic beverages C12H 1/00}; filtering spinning solution or melt D01D 1/10; {filters for washing machines D06F 39/10; filters or strainers for papermaking D21D; filters in water collecting systems E03B 3/18, E03B 7/07; subsoil filters for boreholes E21B 43/02; air filters for internal-combustion engines F02M 35/02; filters for pumps F04B 39/16, F04D 29/70; filters in pipe systems F16L 55/24}; filtration of lubricants F16N 39/06; {filters for volume measuring apparatus G01F 15/12})</p>
B01D 23/005	<ul style="list-style-type: none"> • {making filtering elements, not provided for elsewhere (see see also B01D 25/001, B01D 27/005, B01D 29/0093)}
U B01D 24/00	<p>Filters comprising loose filtering material, i.e. filtering material without any binder between the individual particles or fibres thereof (B01D 27/02 takes precedence)</p> <p><u>WARNING</u></p> <p>See WARNING after subclass title, particularly items (7), (8) and (14)</p>
B01D 24/001	<ul style="list-style-type: none"> • {Making filter elements (not provided for elsewhere)(see see also B01D 25/001, B01D 27/005, B01D 29/012, B01D 29/111, B01D 33/0093)}
U B01D 25/00	<p>Filters formed by clamping together several filtering elements or parts of such elements (disc filters B01D 29/39)</p> <p><u>WARNING</u></p> <p>See WARNING after subclass title, particularly items (7), (8), (12), (13) and (14)</p>
B01D 25/001	<ul style="list-style-type: none"> • {Making filtering elements (not provided for elsewhere; see see also B01D 24/001, B01D 27/005, B01D 29/012, B01D 29/111, B01D 33/0093)}
U B01D 27/00	<p>Cartridge filters of the throw-away type</p> <p><u>WARNING</u></p> <p>See WARNING after subclass title, particularly item (14)</p>
B01D 27/005	<ul style="list-style-type: none"> • {Making filter elements (not provided for elsewhere)(see see also B01D 24/001, B01D 25/001, B01D 29/012, B01D 29/111, B01D 33/0093)}
U B01D 29/00	<p>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)}</p> <p><u>WARNING</u></p> <p>See WARNING after subclass title, particularly items (7), (8), (9), (10), (12) and (14)</p>
B01D 29/0093	<ul style="list-style-type: none"> • {Making filtering elements (not provided for elsewhere)(see see also B01D 23/005, B01D 25/001, B01D 27/005)}

- U 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](#) - [B01D 24/36](#); centrifuges [B04B](#))**
- WARNING
See WARNING after subclass title, particularly items (7), (8), (11) and (14)
- B01D 33/0093
 - {Making filter elements (not provided for elsewhere)}([see see](#) also [B01D 24/001](#), [B01D 25/001](#), [B01D 27/005](#), [B01D 29/012](#), [B01D 29/111](#))}
- U B01D 35/00** **Other filtering devices; Auxiliary devices for filtration; Filter housing constructions**
- WARNING
See WARNING after subclass title, particularly item (14)
- B01D 35/16
 - Cleaning-out devices {, e.g. for removing the cake from the filter casing or for evacuating the last remnants of liquid}
- 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](#) - [B01D 35/00](#); filtering material [B01D 39/00](#); their regeneration outside the filters [B01D 41/00](#))**
- 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](#) [per se](#) [C04B 38/0006](#))}
- U B01D 46/42
 - Auxiliary equipment or operation thereof
- B01D 46/48
 - • Removing dust other than cleaning filters {, e.g. by using collecting trays}
- U 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](#) - [B01D 61/58](#) it is desirable to add the indexing codes relating to process operations and control chosen from groups [B01D 2311/00](#) - [B01D 2311/2696](#), to details relating to membrane modules and apparatus indexing codes chosen from [B01D 2313/00](#) - [B01D 2313/90](#), to details relating to the membrane module operation indexing codes chosen from [B01D 2315/00](#) - [B01D 2315/16](#), to details relating to the module arrangement within a plant or an apparatus indexing codes chosen from [B01D 2317/00](#) - [B01D 2317/08](#) and to details relating to the membrane assembly within one housing indexing codes chosen from [B01D 2319/00](#) - [B01D 2319/06](#)
- U B01D 61/42
 - Electrodialysis; Electro-osmosis {Electro-ultrafiltration}
- U B01D 61/44
 - • Ion-selective electrodialysis
- U B01D 61/46
 - • • Apparatus therefor
- B01D 61/48
 - • • • having one or more compartments filled with ion-exchange material {, e.g. electrodeionisation}

- U B01D 67/00** **Processes specially adapted for manufacturing semi-permeable membranes for separation processes or apparatus**
- NOTE
In group [B01D 67/00](#) it is desirable to add the indexing codes relating to membrane preparation chosen from groups [B01D 2323/00](#) - [B01D 2323/42](#)
- U B01D 67/0039** • {Inorganic membrane formation}
- B01D 67/0076** • • {Pretreatment of inorganic membrane material prior to membrane formation, e.g. coating of metal powder}
- 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~~~~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 2239/00** **Aspects relating to filtering material for liquid or gaseous fluids**
- U B01D 2239/02** • Types of fibres, filaments or particles, self-supporting or supported materials
- B01D 2239/025** • • comprising nanofibres (apparatus incorporating such gas filtering material ~~see~~~~see~~ [B01D 46/546](#))
- U B01D 2265/00** **Casings, housings or mounting for filters specially adapted for separating dispersed particles from gases or vapours**
- U B01D 2265/02** • Non permanent measures for connecting different parts of the filter
- B01D 2265/027** • • Quick closing means for, e.g. filter heads, caps, maintenance openings
- U B01D 2275/00** **Filter media structures for filters specially adapted for separating dispersed particles from gases or vapours**
- B01D 2275/50** • Stabilised filter material, stabilised by, e.g. structuring, calendering

Project: N/A (B01F)

- U B01F 3/00** **Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed {(C08J 3/02 takes precedence)}**
- U B01F 3/04** • gases or vapours with liquids (mixing non-alcoholic beverages with gases [A23L 2/54](#); {for medical purposes [A61M 16/14](#)})
- U B01F 3/04007** • • {Introducing a liquid into a gaseous medium, e.g. preparation of aerosols (for air-conditioning [F24F 6/00](#))}
- B01F 3/04021** • • • {by spraying or atomising of the liquid (apparatus for spraying or atomising ~~per se~~ ~~per se~~ [B05B](#); evaporating by spraying [B01D 1/16](#))}
- U B01F 3/08** • liquids with liquids; Emulsifying {(B01F 13/0222 takes precedence; dispensing beverages on draught combined with mixing [B67D 1/0015](#), [B67D 1/0043](#))}
- U B01F 3/0807** • • {Emulsifying (homogenising milk [A01J 11/16](#); for adding a water-fuel emulsion in engine-pertinent apparatus [F02M 25/0228](#); for preparing emulsion of liquid fuel with other fluid(s) for feeding combustion apparatus [F23K 5/12](#))}
- U B01F 2003/0823** • • • {characterized by the internal structure of the emulsion}

- B01F 2003/0838 . . . {Multiple emulsions, in particular double emulsion, e.g. water in oil in water; Three-phase emulsion}
- 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](#))**
- U 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 5/0602 . . {Static mixers, i.e. mixers in which the mixing is effected by moving the components jointly in changing directions, e.g. in tubes provided with baffles or obstructions ([B01F 5/0661](#), [B01F 5/0682](#) take precedence)}
- U B01F 5/0609 . . . {Mixing tubes, e.g. the material being submitted to a substantially radial movement or to a movement partially in reverse direction}
- B01F 5/064 . . . {with means for dividing a flow of material into separate subflows and for repositioning and recombining these subflows; Cross-mixing, e.g. conducting the outer layer of the material nearer to the axis of the tube or ~~vice-versa~~[vice versa](#) ([B01F 5/0496](#) takes precedence; using baffles [B01F 5/061](#), for falling particle mixers [B01F 5/246](#))}
- U B01F 5/18 . Spray-mixers; {Mixing intersecting sheets of material, e.g. conical liquid sheets ([B01F 3/0473](#), [B01F 7/022](#), [B01F 9/025](#) take precedence)}
- B01F 5/20 . . with nozzles {([B01F 3/04049](#) takes precedence; nozzles ~~per se~~[per se](#) [B05B 1/00](#))}
- U B01F 11/00 Mixers with shaking, oscillating, or vibrating mechanisms ([B01F 13/04](#) takes precedence)**
- B01F 11/04 . with pendulum stirrers, {i.e. with stirrers suspended so as to oscillate about fixed points or axes (stirrers ~~per se~~[per se](#) [B01F 11/0091](#))}

Project: RP0295 (B01F)

- B01F 17/00 Use of substances as emulsifying, wetting, dispersing or foam-producing agents {(~~see see~~ for particular applications relevant classes, e.g. lubricant emulsions [C10M](#); fuel emulsions [C10L 1/32](#); detergents [C11D](#); colour and dye dispersions [C09](#); textile applications [D06](#); cosmetics [A61K](#); food ~~A23L 1/035~~[A23L 29/10](#); biocides [A01N](#); petrol winning [E21B](#); hydrometallurgy, metal liquid-liquid extraction [C22B](#); mixers [B01F 3/00](#); polymers mixing; waxes [C08](#); paper [D21H](#); demulsification (anti foam) [B01D 19/04](#))}**

NOTE

A compound is always classified in the last appropriate place

Project: N/A (B01F)

- U B01F 2215/00 Auxiliary or complementary information in relation with mixing**
- U B01F 2215/0001 . Field of application of the mixing device
- B01F 2215/0009 . . Mixing biocide, pesticide, herbicide, ingredients used, e.g. for spraying, in agriculture, horticulture (liquid spraying apparatus for catching or trapping animals [A01M 7/00](#))
- B01F 2215/0049 . . Mixing plastics, polymer material ingredients, monomers or oligomers (hot melt adhesives ~~see see~~ [B01F 2215/0062](#))
- B01F 2215/0073 . . Mixing ingredients for microbiology, enzymology, ~~in-vitro~~[in vitro](#) culture, genetic manipulation (apparatus for microbiology or enzymology [C12M](#))

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

CHEMICAL OR PHYSICAL PROCESSES, e.g. CATALYSIS, COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS (processes or apparatus for specific applications, [see](#) the relevant places for these processes or apparatus, e.g. [F26B 3/08](#))

NOTES

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

- "solid particles" includes such particles whether catalysts, reactants or inert in solid, semi-solid or pasty state;
- "fluidised particles" means finely divided solid particles lifted and agitated by a stream of fluid;
- "fluidised bed-technique" means fluid-solid contacting technique in which finely divided particles are lifted and agitated by a rising stream of fluid, said stream having such a speed as to form a lower dense phase (the "bed") and an upper dilute fluidised phase of "fluidised particles";
- "processes conducted in the presence of solid particles" does not include processes wherein the only solid particles present are formed during the reaction.

2. 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

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:

[B01J 37/025](#) covered by [B01J 37/02](#)

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](#) - [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

U 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 3/004

• {Sight-glasses therefor ([see](#) also [G02B](#))}

U 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 4/02

• for feeding measured {, i.e. prescribed} quantities of reagents

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](#)})

- U 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 8/005
- {Separating solid material from the gas/liquid stream (separation processes ~~per se~~ [B01D](#))}
- U B01J 8/02
- with stationary particles, e.g. in fixed beds
- U B01J 8/04
- • the fluid passing successively through two or more beds
- B01J 8/0492
- • • {Feeding reactive fluids (for solid material, ~~see~~ [B01J 8/0015](#))}
- U B01J 8/08
- with moving particles (with fluidised particles [B01J 8/18](#))
- B01J 8/085
- • {Feeding reactive fluids (for solid material, ~~see~~ [B01J 8/0015](#))}
- 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](#))
- U B01J 13/02
- Making micro-capsules or micro-balloons {(for medical preparations [A61K 9/50](#))}
- U B01J 13/06
- • by phase separation
- U B01J 13/14
- • • Polymerisation; cross-linking
- B01J 13/18
- • • ~~In situ~~ [In situ](#) polymerisation with all reactants being present in the same phase
- U 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](#))}
- B01J 19/0033
- • {Optimisation processes, i.e. processes with adaptive control systems (adaptive control systems ~~per se~~ [G05B 13/00](#))}
- B01J 19/0046
- {Sequential or parallel reactions, e.g. for the synthesis of polypeptides or polynucleotides; Apparatus and devices for combinatorial chemistry or for making molecular arrays (synthesis methods ~~per se~~ [C40B 50/00](#))}
- U B01J 19/0053
- {Details of the reactor}
- B01J 19/0066
- • {Stirrers (mixing ~~per se~~ [B01F](#))}
- B01J 19/0073
- • {Sealings (sealings for pressure vessels ~~per se~~ [F16J 15/00](#))}
- U 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 19/12
- • employing electromagnetic waves
- B01J 19/121
- • • {Coherent waves, e.g. laser beams (lasers ~~per se~~ [H01S 3/00](#))}

**B01J 20/00 -
B01J 38/00****Solid sorbent compositions or filter aid compositions; Sorbents for chromatography; Catalysts****NOTES**

1. In groups [B01J 20/00](#) - [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. Attention is drawn to the definitions of groups of chemical elements following the title of section [G](#).
3. In group [B01J 20/00](#) and in each set of groups [B01J 21/00](#) - [B01J 31/00](#) and [B01J 32/00](#) - [B01J 38/00](#), 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.
4. 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](#).
5. {In groups [B01J 21/00](#) - [B01J 38/00](#), the following term is used with the meaning indicated:
 - "catalyst" covers also a carrier forming part of the catalyst.
6. {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](#) - [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.

- U B01J 20/02 • comprising inorganic material
- U B01J 20/20 • • comprising free carbon; comprising carbon obtained by carbonising processes (active carbon [C01B 31/08](#))
- B01J 20/205 • • {Carbon nanostructures, e.g. nanotubes, nanohorns, nanocones, nanoballs (carbon nanotubes ~~per se~~ [per se](#) [C01B 31/0206](#))}
- U B01J 20/22 • comprising organic material

WARNING

Groups [B01J 20/223](#) and [B01J 20/226](#) are not complete, pending a reorganisation. See also [B01J 20/22](#)

- U B01J 20/223 • • {containing metals, e.g. organo-metallic compounds, coordination complexes}
- B01J 20/226 • • {Coordination polymers, e.g. metal-organic frameworks [MOF], zeolitic imidazolate frameworks [ZIF] (preparation of metal complexes containing carboxylic acid moieties [C07C 51/418](#); MOF's ~~per se~~ [per se](#) [C07F](#))}
- U B01J 20/26 • • Synthetic macromolecular compounds

WARNING

Groups [B01J 20/261](#) - [B01J 20/268](#) are not complete, pending a reorganisation. See also this group

- B01J 20/261
- • {obtained by reactions only involving carbon to carbon unsaturated bonds (macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds ~~per se~~ ~~per se~~ C08F)}
- B01J 20/262
- • {obtained otherwise than by reactions only involving carbon to carbon unsaturated bonds, e.g. obtained by polycondensation (macromolecular compounds obtained otherwise than by reactions only involving unsaturated carbon-to-carbon bonds ~~per se~~ ~~per se~~ C08G)}
- U B01J 20/28
- characterised by their form or physical properties
- WARNING
- Groups [B01J 20/281](#) - [B01J 20/29](#) might be incomplete. A number of documents presently classified in [G01N 30/48](#) and [G01N 30/482](#) still need reclassification to one or more of these groups
- U B01J 20/28014
- {characterised by their form}
- B01J 20/2805
- • {Sorbents inside a permeable or porous casing, e.g. inside a container, bag or membrane}
- U **B01J 21/00**
- Catalysts comprising the elements, oxides, or hydroxides of magnesium, boron, aluminium, carbon, silicon, titanium, zirconium, or hafnium**
- U B01J 21/18
- Carbon
- B01J 21/185
- • {Carbon nanotubes (carbon nanotubes ~~per se~~ ~~per se~~ C01B 31/0206)}
- U **B01J 27/00**
- Catalysts comprising the elements or compounds of halogens, sulfur, selenium, tellurium, phosphorus or nitrogen; Catalysts comprising carbon compounds**
- NOTE
- Metal catalysts or metal oxide catalysts activated or conditioned by halogens, sulfur or phosphorus, or compounds thereof are classified in the appropriate groups for metal or metal oxide catalysts
- U B01J 27/14
- Phosphorus; Compounds thereof
- B01J 27/16
- • containing oxygen {, i.e. acids, anhydrides and their derivatives with N, S, B or halogens without carriers or on carriers based on C, Si, Al or Zr; also salts of Si, Al and Zr}
- B01J 29/00**
- Catalysts comprising molecular sieves {(molecular sieves ~~per se~~ ~~per se~~ C01B)}**
- NOTES
- In this group, the following term is used with the meaning indicated:
 - "zeolites" means:
 - crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional, microporous lattice framework structure of tetrahedral oxide units;
 - 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.
 - If metals are introduced into the framework of the molecular sieve already in the synthesis stage, [B01J 29/86](#) - [B01J 29/89](#) take precedence.
 - Mixtures of molecular sieves are classified in [B01J 29/005](#) or [B01J 29/80](#) and receive indexing codes chosen from groups [B01J 29/03](#) - [B01J 29/89](#) to identify the individual constituents of these mixtures

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

1. Group [B01J 31/003](#) takes precedence over groups [B01J 31/02](#) - [B01J 31/24](#) (catalytic antibodies [C12N 9/0002](#))
2. In this group, the following terms or expressions are used with the meanings indicated:
 - "Organic compound" a compound in which carbon is bonded to
 - (1) a second carbon;
 - (2) at least one atom of hydrogen or halogen; or
 - (3) nitrogen by a single or double bond; except cyanic acid (HOCN), cyanogen (NCCN), cyanamide (H₂N-CN), 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](#) - [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-CR₃)_n 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](#) - [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](#) - [B01J 31/10](#); other compounds comprising anionic organonitrogen, organooxygen and organosulfur fragments with a metal bonded to these heteroatoms [B01J 31/02](#) - [B01J 31/0254](#)).
 - "Organometallic complexes" includes all coordination complexes comprising a M-C bond, e.g. metal carbonyls (complex cyanides such as M₄[Fe(CN)₆] [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](#) - [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* *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 - 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 - 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 31/0234 | • • {Nitrogen-, phosphorus-, arsenic- or antimony-containing compounds} |
| U | B01J 31/0235 | • • • {Nitrogen containing compounds} |
| U | B01J 31/0245 | • • • • {being derivatives of carboxylic or carbonic acids} |
| | B01J 31/0249 | • • • • • {Ureas ($R_2NR_2N-C(=O)-NR_2NR_2$)} |
| | B01J 31/0251 | • • • • • {Guanidides ($R_2NR_2N-C(=NR)-NR_2NR_2$)} |
| U | B01J 31/0255 | • • • {Phosphorus containing compounds} |
| U | B01J 31/0264 | • • • • {Phosphorus acid amides} |
| | B01J 31/0265 | • • • • • {Phosphazenes, oligomers thereof or the corresponding phosphazanium salts (polyphosphazenes <i>per se</i> <i>per se</i> C07F 9/067)} |
| | B01J 31/0277 | • • {comprising ionic liquids, as components in catalyst systems or catalysts <i>per se</i> <i>per se</i> , the ionic liquid compounds being used in the molten state at the respective reaction temperature} |
| U | B01J 31/16 | • containing coordination complexes |
| | B01J 31/1691 | • • {Coordination polymers, e.g. metal-organic frameworks [MOF] (preparation of metal complexes containing carboxylic acid moieties C07C 51/418; MOF's <i>per se</i> <i>per se</i> C07F)} |
| U | 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 31/1845 | • • • {the ligands containing phosphorus (phosphines B01J 31/24)} |
| | B01J 31/1875 | • • • • {Phosphinites ($R_2PR_2P(OR)$), their isomeric phosphine oxides ($R_3PR_3P=O$) and RO-substitution derivatives thereof} |

B01J 31/24

- • Phosphines {, i.e. phosphorus bonded to only carbon atoms, or to both carbon and hydrogen atoms, including sp²-hybridised phosphorus compounds such as phosphabenzene, phosphole or anionic phospholide ligands (complexes with parent phosphine PH₃ [B01J 31/1845](#))}

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 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](#) - [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](#) - [B01J 49/00](#), 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.

3. {In groups [B01J 39/00](#) - [B01J 49/00](#), it is desirable to classify other constituents by using Combination sets with symbols chosen from [B01J 39/00](#) and subgroups and [B01J 41/00](#) and subgroups.}

U **B01J 2219/00**

Chemical, physical or physico-chemical processes in general; Their relevant apparatus

U B01J 2219/08

- Processes employing the direct application of electric or wave energy, or particle radiation; Apparatus therefor

U B01J 2219/12

- • Processes employing electromagnetic waves

U B01J 2219/1203

- • • Incoherent waves

U B01J 2219/1206

- • • • Microwaves

U B01J 2219/1209

- • • • • Features relating to the reactor or vessel

B01J 2219/1221

- • • • • the reactor *per se* *per se*

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 2231/40

- Substitution reactions at carbon centres, e.g. C-C or C-X, i.e. carbon-hetero atom, cross-coupling, C-H activation or ring-opening reactions

U B01J 2231/42

- • Catalytic cross-coupling, i.e. connection of previously not connected C-atoms or C- and X-atoms without rearrangement

U B01J 2231/4205

- • • C-C cross-coupling, e.g. metal catalyzed or Friedel-Crafts type

B01J 2231/4272

- • • • via enolates or aza-analogues, added as such or made in-situ, e.g. ArY + R₂C=C(OM)Z -> ArR₂C-C(O)Z, in which R is H or alkyl, M is Na, K or SiMe₃, Y is the leaving group, Z is Ar or OR' and R' is alkyl

B01J 2531/00**Additional information regarding catalytic systems classified in [B01J 31/00](#)****NOTE**

In this group the term "Metals" refers to the central metal in the coordination complexes ([B01J 31/16](#) - [B01J 31/24](#)), as used for the respective catalytic reaction, excluding carboxylates ([see see B01J 31/04](#)) and other simple salts or organometallic compounds ([see see B01J 31/12](#)). As to components, only those metals or solvents are indexed which are explicitly mentioned in the claims or the worked examples. As to compositional aspects, only those are provided for in the scheme below and are intended to be indexed, which provide additional information regarding the complexes and/or ligands classified in [B01J 31/16](#) - [B01J 31/24](#); indexing codes [B01J 2531/0286](#) - [B01J 2531/0297](#) are only used if these aspects are described as essential. Indexing codes [B01J 2531/0213](#) - [B01J 2531/0277](#) characterise the complexes on the basis of bond-type (linkage-type) thereby specifying the structural geometry of the complexes, while classification entries [B01J 31/16](#) - [B01J 31/24](#) are purely compositional subdivisions. The individual metals, the compositional aspects of complexes used and the solvents are indexed for each explicit alternative, according to the guideline above

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 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~~; [electrical or optical apparatus, see the relevant classes in Sections G and H](#))

NOTE

This subclass ~~covers~~[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.

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:

- [B01L 3/14](#) covered by [B01L 3/50](#)

U 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](#))

B01L 3/14

- Test tubes {(devices for taking samples of blood [A61B 5/14](#))} (not used, [see see B01L 3/50](#) and subgroups)]

WARNING

This is no longer used for the classification of new documents as from 1 April 2012. The back-file is being transferred to [B01L 3/50](#) and subgroups

U B01L 3/50

- {Containers for the purpose of retaining a material to be analysed, e.g. test tubes (devices for taking samples of blood [A61B 5/14](#))}

- U B01L 3/508 • • {rigid containers not provided for above}
- B01L 3/5082 • • • {Test tubes ~~per se~~ ~~per se~~}
- U B01L 7/00 **Heating or cooling apparatus (evaporators [B01D 1/00](#); drying gases or vapours, e.g. desiccators, [B01D 53/26](#); autoclaves [B01J 3/04](#); drying ovens [F26B](#); furnaces, ovens [F27](#)); Heat insulating devices**
- B01L 7/52 • {with provision for submitting samples to a predetermined sequence of different temperatures, e.g. for treating nucleic acid samples (amplification or hybridisation processes ~~per se~~ ~~per se~~ [C12Q 1/68](#); controlling sequential reactions for synthesis [B01J 19/0046](#))}

Project: N/A (B02B)

- U B02B 1/00 **Preparing grain for milling or like processes (hulling, husking, decorticating, polishing, removing the awns, or degerming [B02B 3/00](#))**
- B02B 1/04 • Wet treatment, e.g. ~~e.g.~~ washing, wetting, softening

Project: N/A (B03B)

- B03B **SEPARATING SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS (removing fluids from solids [B01D](#); magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields [B03C](#); flotation differential sedimentation [B03D](#); separating by dry methods [B07](#); screening or sifting [B07B](#); by picking [B07C](#); separating peculiar to particular materials and provided for in other single classes, ~~see~~ ~~see~~ the relevant classes)**
- B03B 11/00 **Feed or discharge devices integral with washing or wet-separating equipment (filling or emptying devices ~~per se~~ ~~per se~~ [B65G 65/30](#))**

Project: N/A (B03C)

- B03C **MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS (filters making use of electricity or magnetism [B01D 35/06](#); separating isotopes [B01D 59/00](#); combinations of magnetic or electrostatic separation with separation of solids by other means [B03B](#), [B07B](#); separating sheets from piles [B65H 3/00](#); magnets or magnet coils ~~per se~~ ~~per se~~ [H01F](#))**
- U B03C 2201/00 **Details of magnetic or electrostatic separation**
- B03C 2201/16 • Magnetic separating gases from gases, e.g. oxygen from air

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 1/02](#)
- [B03D 1/025](#), see also [B03D 1/02](#)
- [B03D 1/026](#), see also [B03D 1/02](#)
- [B03D 1/028](#), see also [B03D 1/02](#)
- [B03D 1/082](#), see also [B03D 1/08](#)
- [B03D 1/085](#), see also [B03D 1/08](#)
- [B03D 1/087](#), see also [B03D 1/08](#)
- [B03D 1/1406](#), see also [B03D 1/14](#)
- [B03D 1/1443](#), see also [B03D 1/14](#)

[B03D 1/145](#), see also [B03D 1/14](#)
[B03D 1/1456](#), see also [B03D 1/14](#)
[B03D 1/1462](#), see also [B03D 1/14](#)
[B03D 1/1468](#), see also [B03D 1/14](#)
[B03D 1/1475](#), see also [B03D 1/14](#)
[B03D 1/1487](#), see also [B03D 1/14](#)
[B03D 1/1493](#), see also [B03D 1/14](#)
[B03D 1/242](#), see also [B03D 1/24](#)
[B03D 1/247](#), see also [B03D 1/24](#) †

Project: N/A (B04B)

B04B

CENTRIFUGES (high-speed drum mills [B02C 19/11](#); domestic spin driers [D06F](#); analysing, measuring or monitoring physical or chemical properties of samples during centrifuging, **see** [see](#) the relevant subclasses for these procedures, e.g. [G01N](#))

NOTE

This subclass covers machines or apparatus for separating, mixing, drying, extracting, purifying, or like treating in which centrifugal effects are generated by rotary bowls or other rotors. Where such machines or apparatus involve pumping effects, such effects must be incidental or subsidiary to the treating.

- U B04B 1/00** **Centrifuges with rotary bowls provided with solid jackets for separating predominantly liquid mixtures with or without solid particles**
- U B04B 1/20
 - discharging solid particles from the bowl by a conveying screw coaxial with the bowl axis and rotating relatively to the bowl
- B04B 2001/205
 - • {with special construction of screw thread, e.g. segments, height}
- U B04B 7/00** **Elements of centrifuges (drives [B04B 9/00](#); feeding, charging, or discharging appurtenances or devices [B04B 11/00](#))**
- U B04B 7/02
 - Casings; Lids (shock absorbers, vibration dampers [F16F](#))
- U B04B 7/06
 - • Safety devices; {Regulating}
- B04B 2007/065
 - • • {Devices and measures in the event of rotor fracturing, e.g. lines of weakness, stress regions}

Project: N/A (B04C)

- U B04C 5/00** **Apparatus in which the axial direction of the vortex is reversed {(combined with other devices [B04C 9/00](#))}**
- B04C 5/02
 - Construction of inlets by which the vortex flow is generated {, e.g. tangential admission, the fluid flow being forced to follow a downward path by spirally wound bulkheads, or with slightly downwardly-directed tangential admission} (fluid dynamics in general [F15D](#))
- B04C 11/00** **Accessories, e.g. safety or control devices, not otherwise provided for {, e.g. regulators, valves in inlet or overflow ducting}{with electrostatic precipitating arrangements [B03C 3/14](#)}**

Project: N/A (B05)**B05**

SPRAYING OR ATOMISING IN GENERAL; APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL (domestic cleaning [A47L](#); cleaning in general by methods essentially involving the use or presence of liquid [B08B 3/00](#); sand-blasting [B24C](#); coating of articles during shaping of substances in a plastic state [B29C 39/10](#), [B29C 39/18](#), [B29C 41/20](#), [B29C 41/30](#), [B29C 43/18](#), [B29C 43/28](#), [B29C 45/14](#), [B29C 47/02](#); for further classification of forming layered products, [see see B32B](#); printing, copying [B41](#); conveying articles or workpieces through baths of liquid [B65G](#), e.g. [B65G 49/02](#); handling webs or filaments in general [B65H](#); surface treatment of glass by coating [C03C 17/00](#), [C03C 25/10](#); coating or impregnation of mortars, concrete, stone or ceramics [C04B 41/45](#); paints, varnishes, lacquers [C09D](#); enamelling of metals, applying a vitreous layer to metals, chemical cleaning or de-greasing of metallic objects [C23](#); electroplating [C25D](#); treating of textile materials by liquids, gases or vapours [D06B](#); laundering [D06F](#); treating roads [E01C](#); apparatus or processes for the preparation or treatment of photosensitive materials [G03](#); apparatus or processes, restricted to a purpose fully provided for in a single other class, [see see](#) the relevant class covering the purpose)

NOTE

In this class, the following terms are used with the meanings indicated:

- "other fluent materials" includes semiliquids, pastes, melts, solutions, dispersions, suspensions, particulate materials, gases or vapours;
- "particulate materials" includes powders, granules, short fibres or chips;
- "coating" means the materials applied. The coating may be a liquid having become solid after drying, e.g. paint.

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 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

Project: MP0193 (B05B)

- U 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](#))
- M B05B 1/005 • {Nozzles or other outlets specially adapted for discharging one or more gases}
nnn

Project: N/A (B05B)

- B05B 1/28 • with integral means for shielding the discharged liquid or other fluent material, e.g. to limit area of spray; with integral means for catching drips or collecting surplus liquid or other fluent material (means for any of these purposes, per se per se, [B05B 15/04](#))
- U B05B 1/30 • designed to control volume of flow, e.g. with adjustable passages
- U B05B 1/3033 • • {the control being effected by relative coaxial longitudinal movement of the controlling element and the spray head ([B05B 1/3026](#) takes precedence)}
- B05B 1/3073 • • • {the controlling element being a deflector acting as a valve in co-operation with the outlet orifice ([B05B 1/308](#) takes precedence; deflectors per se per se [B05B 1/262](#))}
- 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 3/10 • • discharging over substantially the whole periphery of the rotating member, {i.e. the spraying being effected by centrifugal forces ([B05B 3/082](#) takes precedence)}
- B05B 3/1092 • • • {Means for supplying shaping gas}
WARNING
 not complete, see [B05B 3/10](#) and subgroups]
- 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)**
- B05B 9/002 • {incorporating means for heating or cooling; e.g. the material to be sprayed}
- U 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](#))}**
- B05B 11/0002 • {incorporating means for heating or cooling; e.g. the material to be sprayed}
WARNING
 Not complete pending reclassification; see also [B05B 11/00](#) and subgroups

Project: MP0193 (B05B)

- U B05B 12/00 **Arrangements or special adaptations of delivery controlling means in spraying systems (controlling in general [G05](#) {; valves in spray head or nozzles [B05B 1/30](#) and sub-groups })**
- M B05B 12/08
 - responsive to condition of liquid or other fluent material *{to be}* discharged, of ambient medium or of target {; responsive to condition of spray *device**devices* or of supply means, e.g. pipes, pumps; *or* their drive *means*}
- M B05B 12/085
 - {responsive to flow or pressure of liquid or other fluent material *to be* 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)}

Project: N/A (B05B)

- 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
- 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~~ *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](#) - [B05B 11/00](#) ({[B05B 5/08](#) takes precedence } ; means for supplying or discharging liquid or other fluent material for this purpose, *see 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)
- U B05B 13/04
 - • the spray heads being moved during {spraying} operation
- B05B 13/0463
 - • • {Installation or apparatus for applying liquid or other fluent material to moving work of indefinite length}
- WARNING
Not complete pending reclassification; see also groups [B05B 13/0421](#), [B05B 13/0426](#) }
- 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 15/12
 - Spray booths
- B05B 15/1214
 - • {characterised by their construction, e.g. floor, walls, ceiling (filtering ceilings for the air inlet [B05B 15/1222](#))}

Project: RP0307 (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 20/15](#), [A23P 1/085](#) [A23P 20/17](#), [A23P 20/18](#), 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](#)

Project: N/A (B05C)**U B05C 11/00**

Component parts, details or accessories not specifically provided for in groups [B05C 1/00](#) - [B05C 9/00](#) (means for manipulating or holding work [B05C 13/00](#); enclosures for apparatus, booths [B05C 15/00](#); spray booths [B05B 15/12](#))

U B05C 11/10

• Storage, supply or control of liquid or other fluent material; Recovery of excess liquid or other fluent material {([B05C 1/0813](#), [B05C 5/0225](#), [B05C 17/002](#) and [B05C 19/06](#) take precedence)}

U B05C 11/1002

• {Means for controlling supply, i.e. flow or pressure, of liquid or other fluent material to the applying apparatus, e.g. valves}

WARNING

not complete, see [B05C 11/10](#)

U B05C 11/1026

• • {Valves (in general [F16K](#); [B05C 5/0225](#) takes precedence)}

B05C 11/1028

• • • {Lift valves}

WARNING

not complete, see [B05C 11/1026](#)

B05C 11/1031

• • • {Gate valves; Sliding valves}

WARNING

not complete, see [B05C 11/1026](#)

U B05C 19/00

Apparatus specially adapted for applying particulate materials to surfaces

U B05C 19/001

• {Flocking}

B05C 19/002

• {Electrostatic flocking ([see see](#) for electrostatic projection or pulverisation [B05B](#))}

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](#) - [B05C 19/00](#) (accessories or implements for use in connection with painting or artistic drawing and fully provided for in [B44D 3/02](#) - [B44D 3/38](#), [see see](#) subgroups of [B44D 3/00](#))

Project: RP0307 (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 20/17](#), [A23P 1/085](#) [A23P 20/15](#), [A23P 20/18](#)})

NOTES

1. This subclass ~~covers~~[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](#).

Project: N/A (B05D)**U B05D 1/00**

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

U B05D 1/36

- Successively applying liquids or other fluent materials, e.g. without intermediate treatment

B05D 1/38

- with intermediate treatment (intermediate treatment ~~per se~~ [per se](#) [B05D 3/00](#))

Project: RP0307 (B05D)**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 20/17](#), [A23P 1/085](#) [A23P 20/15](#), [A23P 20/18](#)})

Project: N/A (B05D)

B05D 7/50

- {Multilayers}

NOTE

A possible inorganic pretreatment or coating on the substrate such as chromatation, phosphatation, plating, is not counted as a layer. This group ~~covers~~[covers](#) mostly multilayers characterised by each layer and the succession of them (laminates in general [B32B](#))

U B05D 2401/00

Form of the coating product, e.g. solution, water dispersion, powders or the like

U B05D 2401/30

- the coating being applied in other forms than involving eliminable solvent, diluent or dispersant

B05D 2401/33

- applied as vapours polymerising ~~in situ~~ [in situ](#)

NOTE

A process should be classified or coded in [B05D 1/60](#) or [B05D 1/62](#)

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 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](#))

- U B06B 1/00** **Methods or apparatus for generating mechanical vibrations of infrasonic, sonic, or ultrasonic frequency**
- U B06B 1/02**
 - making use of electrical energy ([B06B 1/18](#), [B06B 1/20](#) take precedence)
- B06B 1/0207**
 - {Driving circuits (specially adapted for particular applications, **see see** the relevant subclass, e.g. [G01](#); circuits for steering transducer arrays [G10K 11/34](#); basic circuits [H03](#))}
- B06B 1/06**
 - operating with piezo-electric effect or with electrostriction (piezo-electric or electrostrictive devices **per se per se** [H01L 41/00](#))
- B06B 1/08**
 - operating with magnetostriction (magnetostrictive devices **per se per se** [H01L 41/00](#))
- B06B 1/20**
 - making use of a vibrating fluid {(whistles or sirens **per se per se** [G10K](#))}

Project: N/A (B07)**B07**

SEPARATING SOLIDS FROM SOLIDS; SORTING (separation in general [B01D](#); wet separating processes, sorting by processes using fluent material in the same way as liquid [B03](#); using liquids [B03B](#), [B03D](#); sorting by magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields [B03C](#); centrifuges or vortex apparatus for carrying out physical processes [B04](#); sorting peculiar to particular materials or articles and provided for in other classes, **see see** the relevant classes)

Project: N/A (B07C)**B07C**

POSTAL SORTING; SORTING INDIVIDUAL ARTICLES, OR BULK MATERIAL FIT TO BE SORTED PIECE-MEAL, e.g. BY PICKING (specially adapted for a specific purpose covered by another class, **see see** the relevant place, e.g. [A43D 33/06](#), [B23Q 7/12](#))

NOTE

This subclass **covers covers** sorting of materials or articles by hand or by devices actuated, manually or automatically, as a result of inspection or of detection or measurement of some feature of the material or articles

- U B07C 1/00** **Measures preceding sorting according to destination**
- B07C 1/18**
 - Orientating articles other than in a stream {, e.g. turning, deflecting or changing direction}
- U B07C 3/00** **Sorting according to destination {(collating the pages of a book [B42C 1/00](#))}**
- U B07C 3/003**
 - {Destination control; Electro-mechanical or electro- magnetic delay memories}

- B07C 3/006
- {Electric or electronic control circuits, e.g. delay lines (delay devices ~~per se~~ ~~per se~~ [H03H 7/30](#), [H03H 11/26](#))}
- U B07C 5/00** **Sorting according to a characteristic or feature of the articles of material being sorted, e.g. by control effected by devices which detect or measure such characteristic or feature; Sorting by manually actuated devices, e.g. switches (sorting by hand only [B07C 7/00](#); separating solids from solids by sieving, screening, or sifting or by using gas currents or other separating by dry methods applicable to bulk material [B07B](#))**
- U B07C 5/04
- Sorting according to size {(sorting devices as a component of the automatic supply and removal of workpieces [B23Q 7/12](#))}
- U B07C 5/12
- • characterised by the application to particular articles, not otherwise provided for ({[B07C 9/00](#) takes precedence}; sorting eggs [A01K 43/00](#); {measuring and sorting devices for shoe components [A43D 119/00](#); sorting cartridges [F42B 35/02](#))}
- B07C 5/14
- • Sorting timber or logs {, e.g. tree trunks, beams, planks or the like}
- B07C 5/16
- Sorting according to weight (sorting eggs [A01K 43/00](#); weighing apparatus ~~per se~~ ~~per se~~ [G01G](#))
- B07C 5/32
- • with associated check-weighing means {(check-weighing ~~per se~~ ~~per se~~ [G01G 15/00](#))}
- B07C 5/34
- Sorting according to other particular properties {(material testing ~~per se~~ ~~per se~~ [G01N](#); quality control [G07C 3/14](#))}
- U B07C 7/00** **Sorting by hand only {e.g. of mail}**
- B07C 7/02
- Compartmented furniture, e.g. pigeon-holes ({[B07C 7/005](#) takes precedence; furniture ~~per se~~ ~~per se~~ [A47B](#)}; storage racks [B65G](#))
- 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 57/60](#); cleaning grips of bats on rackets [A63B 60/36](#)} ; 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 conveyors [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~~ ~~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](#).

- 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
B08B 3/08
- Cleaning involving contact with liquid
 - • the liquid having chemical or dissolving effect (substances used, [see](#) [see](#) the relevant classes)
- U B08B 5/00** **Cleaning by methods involving the use of air flow or gas flow ([B08B 6/00](#) takes precedence)**
- B08B 5/02
- Cleaning by the force of jets, e.g. blowing-out cavities {(airguns or nozzles [per se](#) [per se](#) [B05B 1/005](#))}
- U B08B 9/00** **Cleaning hollow articles by methods or apparatus specially adapted thereto ([B08B 3/12](#), [B08B 6/00](#) take precedence)**
- U 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
- 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 9/047
- • • • the cleaning devices having {internal} motors {, e.g. turbines} for powering cleaning tools
- B08B 9/049
- • • • having self-contained propelling means for moving the cleaning devices along the pipes {, i.e. self-propelled}
- B08B 9/051
- • • • the cleaning devices having {internal} motors {, e.g. turbines} for powering cleaning tools
- 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~~ ~~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 9/0852 . {Drainage racks (~~see~~~~see~~ also [A47J 47/20](#))}
- B08B 9/20 . . by using apparatus into or on to which containers, e.g. bottles, jars, cans are brought {(washing or rinsing crockery or tableware [A47L 15/00](#))}

Project: N/A (B09B)

B09B

DISPOSAL OF SOLID WASTE

NOTES

1. This subclass ~~covers~~~~covers~~ only single or combined, e.g. multistage, operations not fully classifiable in a single other subclass
2. In this subclass the following terms or expressions are added with the meanings indicated :
 - "disposal" means the discarding, e.g. dumping, or destroying of waste or its transformation into something useful or harmless;
 - "solid waste" includes waste which, although it has liquid content, is for practical purposes handled as solid
3. Attention is drawn to the following places:

- [A23J 1/16](#) Obtaining proteins from waste water of starch manufacturing plants of like wastes
- [A23K 10/38](#) Animal feeding-stuffs from distillers' or brewers' waste
- [A23K 10/28](#) Animal feeding-stuffs from waste products of dairy
- [A23K 10/20](#) Animal feeding-stuffs from kitchen waste
- [A43B 1/12](#) Footwear made of rubber waste
- [A61L 11/00](#) Disinfection or sterilisation methods specially adapted for refuse
- [A62D 3/00](#) Chemical means for combatting harmful chemical agents; processes for making harmful chemical agents harmless
- [B01D 53/34](#) Chemical purification of smoke or fumes, e.g. flue gas
- [B02C 18/0084](#) Disintegrating by knives or other cutting or tearing members, which chop material into fragments, specially adapted for disintegrating garbage, waste or sewage
- [B03B 7/00](#) Combinations of wet processes or apparatus with other processes or apparatus, e.g. for dressing ores or garbage
- [B03B 9/06](#) General arrangement of separating plant, e.g. flow sheets, specially adapted for refuse
- [B05B 15/04](#) Control of spray area of spraying plant, e.g. masking, side shields; Means for collection or re-use of excess material
- [B08B 15/00](#) Prevent escape of dirt or fumes from the area where they are produced; Collecting or removing dirt or fumes from that area
- [B23D 25/14](#) Machines or arrangements for shearing stock while the latter is travelling otherwise than in the direction of the cut without regard to the exact dimensions of the resulting material, e.g. for cutting up scrap
- [B27B 33/20](#) Edge trimming saw blades or tools combined with

means to disintegrate waste

[B29B 17/00](#) Recovery of plastics or other constituents of waste material containing plastics

[B30B 9/32](#) Presses for consolidating scrap metal or for compacting used cars

[B63B 17/06](#) Refuse discharge from vessels, e.g. for ash
{[B63J 4/006](#)} Arrangements of installation for treating waste water or sewage on vessels

[B65F 1/00](#) Refuse receptacles

[B65F 3/00](#) Vehicles particularly adapted for collecting refuse

[B65F 5/00](#) Gathering or removal of refuse otherwise than by receptacles or vehicles

[B65F 7/00](#) Cleaning or disinfecting devices combined with refuse receptacles or refuse vehicles

[C03C 1/00](#) Ingredients generally applicable to manufacture of glasses, glazes or vitreous enamels

[C04B 7/24](#) Hydraulic cements from oil shales, residues or waste other than slag

[C04B 11/26](#) Calcium sulfate cements from phosphogypsum or from waste, e.g. purification products of smoke

[C04B 18/04](#) Waste materials or refuse used as fillers for mortars, concrete, artificial stone or the like

[C04B 22/0006](#) Waste inorganic materials used as active ingredients for mortars, concrete, artificial stone or the like

[C04B 24/001](#) Waste organic materials used as active ingredients for mortars, concrete, artificial stone or the like

[C05F 9/00](#) Fertilisers made from household or town refuse

[C08J 11/00](#) Recovery of waste materials of macromolecular substances

[C08L 17/00](#) Compositions of reclaimed rubber

[C10B 53/00](#) Destructive distillation, specially adapted for particular solid raw materials or solid raw materials in special form

[C10B 57/00](#) Other processes not covered before; Features of destructive distillation processes in general

[C10G 1/10](#) Production of liquid hydrocarbon mixtures from rubber or rubber waste

[C10L 5/46](#) Solid fuels essentially based on sewage, house or town refuse

[C10L 5/48](#) Solid fuels essentially based on industrial residues and waste materials

[C10M 175/02](#) Working-up used lubricants based on mineral oils

[C11B 13/00](#) Recovery of fats, fatty oils, or fatty acids from waste materials

[C11D 19/00](#) Recovery of glycerol from a saponification liquor

[C12F 3/00](#) Recovery of by-products

[C12F 3/08](#) Recovery of alcohol from press residues or other waste material

[C12P 7/08](#) Biochemical production of ethanol from waste

[C22B 7/00](#) Working-up raw materials other than ores, e.g. scrap, to produce non-ferrous metals or compounds thereof

[C22B 19/28](#) Obtaining zinc or zinc oxide from muffle furnace residues

[C22B 19/30](#) Obtaining zinc or zinc oxide from metallic residues or scrap
[C22B 25/06](#) Obtaining tin from scrap
[D01B](#) Mechanical treatment of natural fibrous or filamentary material to obtain fibres or filaments, e.g. for spinning
[D01C 5/00](#) Carbonising rags to recover animal fibres
[D01F 13/00](#) Recovery of starting material, waste material or solvents during the manufacture of artificial filaments or the like
[D01G 11/00](#) Disintegrating fibre-containing articles to obtain fibres for re-use
[D01H 11/00](#) Arrangements for confining or removing dust, fly, or the like
[D06L 1/10](#) Regeneration of used chemical baths used for dry-cleaning or washing fibres, fabrics or the like
[D21B 1/08](#) Dry treatment of waste paper or rags for making paper or for the production of cellulose
[D21B 1/32](#) Defibrating waste paper
[D21C 5/02](#) Processes for obtaining cellulose by working-up waste paper
[D21C 11/14](#) Regeneration of pulp liquors by wet combustion
[D21F 1/66](#) Re-use of pulp-water in wet end machines for making continuous webs of paper
[D21H 17/01](#) Waste products added to the pulp or used in paper-impregnating material
[E03F](#) Sewers, Cesspools
[E04F 17/10](#) Arrangements in building for the disposal of refuse
[F23B 5/00](#) Combustion apparatus arrangements for burning uncombusted material from primary combustion
[F23G](#) Consuming waste products by combustion
[F23J](#) Removal or treatment of combustion products or combustion residues
[G03C 11/24](#) Removing emulsion from waste photographic material
[H01B 15/00](#) Apparatus or processes for salvaging material from electric cables
[H01M 6/52](#) Reclaiming serviceable parts of waste cells or batteries
[H01M 10/54](#) Reclaiming serviceable parts of waste accumulators

U B09B 1/00

B09B 1/008

Dumping solid waste

• {Subterranean disposal, e.g. in boreholes or subsurface fractures}

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 

B09C 2101/00

~~In situ~~ *In situ*

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.

U B21B 1/00

Metal-rolling methods or mills for making semi-finished products of solid or profiled cross-section ([B21B 17/00](#) - [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

U B21B 1/16

• for rolling {wire rods, bars, merchant bars, rounds} wire or material of like small cross-section

B21B 1/163

• {Rolling or cold-forming of concrete reinforcement bars or wire (reinforcement bars ~~per se~~ *per se* [E04C 5/03](#)); Rolls therefor}

B21B 13/00

Metal-rolling stands, i.e. an assembly composed of a stand frame, rolls, and accessories ([B21B 17/00](#) - [B21B 23/00](#) take precedence; details, component parts, accessories, auxiliary means, procedures in connection with metal rolling, ~~see~~ [see](#) the relevant groups)

Project: N/A (B21C)

U B21C 1/00

Manufacture of metal sheets, metal wire, metal rods, metal tubes by drawing

U B21C 1/02

• Drawing metal wire or like flexible metallic material by drawing machines or apparatus in which the drawing action is effected by drums

B21C 1/12

• • Regulating or controlling speed of drawing drums, e.g. to influence tension; Drives; Stop or relief mechanisms (couplings for drums [B21C 1/14](#); design or construction of electrical equipment, ~~see~~ [see](#) the relevant classes)

- B21C 31/00** Control devices, e.g. for regulating the pressing speed or temperature of metal (**B21C 25/08** takes precedence); Measuring devices, e.g. for temperature of metal, combined with or specially adapted for use in connection with extrusion presses (measuring devices of more general interest within subclass **B21C**, **see see** group **B21C 51/00**)
- B21C 37/00** Manufacture of metal sheets, bars, wire, tubes or like semi-manufactured products, not otherwise provided for (by rolling **B21B**; by working or processing semi-finished sheet metal, profiles, tubes, or wire **B21D** or **B21F**; by casting **B22**; by material-removing machine tools **B23**; by welding, e.g. cladding or plating **B23K**; by grinding or polishing **B24**; by electroforming **C25D 1/00**; by drawing or extruding, **see see** the relevant groups); Manufacture of tubes of special shape
- U **B21C 37/06**
 - of tubes or metal hoses; Combined procedures for making tubes, e.g. for making multi-wall tubes (bending sheets for making tubes **B21D 5/00**; seaming by folding **B21D 39/02**)
 - U **B21C 37/10**
 - • Making tubes with riveted seams {or with non-welded and non-soldered seams}
 - B21C 37/107**
 - • • {Tube treating or manipulating combined with or specially adapted for use in connection with tube-making machines, e.g. drawing-off devices, cutting-off}
 - U **B21C 37/12**
 - • Making tubes or metal hoses with helically arranged seams
 - B21C 37/122**
 - • • {with welded or soldered seams (welding and soldering helically arranged seams, **per se per se** **B23K**)}

B21C 45/00 Separating mandrels from work or **vice-versa vice versa**

 - U **B21C 47/00** Winding-up, coiling or winding-off metal wire, metal band or other flexible metal material characterised by features relevant to metal processing only (coiling wire into particular form **B21F 3/00**; hot coilers in connection with heat-treatment apparatus **C21D 9/68**)
 - U **B21C 47/24**
 - Transferring coils to or from winding apparatus or to or from operative position therein; Preventing uncoiling during transfer
 - B21C 47/242**
 - • {Devices for swinging the coil from horizontal to vertical, or **vice-versa vice versa**}
 - B21C 47/245**
 - • {Devices for the replacement of full reels by empty reels or **vice-versa vice versa**, without considerable loss of time}

Project: N/A (B21D)

- 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 in situ** **E21B**; {straightening rails or rail joints **E01B 31/08**})
- U **B21D 24/00** Special deep-drawing arrangements in, or in connection with, presses
- B21D 24/16**
 - Additional equipment in association with the tools, e.g. for shearing, for trimming
- B21D 37/00** Tools as parts of machines covered by this subclass (forms or constructions of tools uniquely adapted for particular operations, **see see** the relevant groups for the operations)
- U **B21D 45/00** Ejecting or stripping-off devices arranged in machines or tools dealt with in this subclass
- U **B21D 45/06**
 - Stripping-off devices

B21D 45/065

- {for deep-drawn cans, *e.g. using stripping fingers*}; ~~e.g. using stripping fingers~~

Project: N/A (B21F)

U B21F 27/00

Making wire network, i.e. wire nets (meshed-ring network [B21F 31/00](#); in making bands [B21F 43/00](#); using looms [D03D](#))

B21F 27/005

- {Wire network ~~per se~~ *per se*}

Project: N/A (B21H)

B21H

MAKING PARTICULAR METAL OBJECTS BY ROLLING, e.g. SCREWS, WHEELS, RINGS, BARRELS, BALLS (essentially from sheet metal [B21D](#))

NOTE

This subclass ~~covers~~ *covers* rolling operations which are specially adapted for use in the manufacture of particular objects and which are not essentially combined with any different metal-working operation unless the latter is a subsidiary operation performed in the same machine.

B21H 8/00

Rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects {*e.g. checkered sheets*}

Project: N/A (B21J)

B21J 7/00

Hammers; Forging machines with hammers or die jaws acting by impact (hand hammers [B25D](#); ~~electrical features in section H~~; *electrical features in section H*)

U B21J 7/02

- Special design or construction

B21J 7/18

- Forging machines working with die jaws, e.g. pivoted, movable laterally of the forging or pressing direction, *e.g. for swaging*

Project: N/A (B21K)

U B21K 25/00

Uniting components to form integral members, e.g. turbine wheels and shafts, caulks with inserts, with or without shaping of the components (uniting by interference- or press-fitting [B23P 11/02](#), [B21K 19/02](#))

B21K 25/005

- {by friction heat forging ([B21J 15/027](#) takes precedence; friction heat forging ~~per se~~ *per se* [B21J 5/063](#))}

B21K 29/00

Arrangements for heating or cooling during processing (for preparing metal stock to be forged or pressed [B21J 1/06](#); heating equipment ~~per se~~ *per se*, ~~see see~~ the appropriate classes, e.g. [H05B](#))

Project: N/A (B21L)

B21L 21/00

Tools or implements for repairing chains using metal-working operations, *e.g. for detaching deformed chain links*

Project: N/A (B22C)

B22C 5/00

Machines or devices specially designed for dressing or handling the mould material so far as specially adapted for that purpose (of general applicability, ~~see see~~ the relevant places, e.g. for material with water-setting properties [B28C](#))

Project: N/A (B22D)

U B22D 17/00

Pressure die casting or injection die casting, i.e. casting in which the metal is forced into a mould under high pressure

- U B22D 17/20 • Accessories: Details
- B22D 17/22 • • Dies (manufacture, [see see](#) the appropriate class, e.g. [B23P 15/24](#)); Die plates; Die supports; Cooling equipment for dies; Accessories for loosening and ejecting castings from dies
- U B22D 21/00 **Casting non-ferrous metals or metallic compounds so far as their metallurgical properties are of importance for the casting procedure; selection of compositions therefor {(non-ferrous ingots [B22D 7/005](#))}**
- U B22D 21/02 • Casting exceedingly oxidisable non-ferrous metals, e.g. in inert atmosphere (use of inert atmosphere in casting metals in general [B22D 23/00](#); apparatus for vacuum casting [B22D 27/15](#))
- B22D 21/04 • • Casting aluminium or magnesium {(no material; [see see](#) [B22D 21/007](#))}
- B22D 35/00 **Equipment for conveying molten metal into beds or moulds ([B22D 37/00](#) - [B22D 41/00](#) take precedence; specially adapted to particular processes or machines, [see see](#) the relevant groups)**
- 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 see](#) the relevant groups of this subclass)**
- B22D 39/00 **Equipment for supplying molten metal in rations (specially adapted to particular processes or machines, [see see](#) the relevant groups of this subclass)**

Project: N/A (B22F)

B22F

WORKING METALLIC POWDER; MANUFACTURE OF ARTICLES FROM METALLIC POWDER; MAKING METALLIC POWDER (processes or devices for granulating materials in general [B01J 2/00](#); making ceramics by compacting or sintering [C04B](#), e.g. [C04B 35/64](#); for the production of metals as such, [see see](#) class [C22](#); reduction or decomposition of metal compounds in general [C22B](#); making alloys by powder metallurgy [C22C](#); electrolytic production of metal powder [C25C 5/00](#))

NOTES

1. This subclass [covers covers](#) the making of metallic powder only insofar as powder with specific physical characteristics is made;
2. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "metallic powder" covers powders containing a substantial proportion of non-metallic material;
 - "powder" includes somewhat larger particles which are worked, obtained or behave in a manner similar to powder, e.g. fibres.

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:

[B22F 3/035](#) covered by [B22F 3/03](#)

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](#) [per se](#), e.g. mixtures of particles of different composition ([C04](#), [C08](#) take precedence; {amorphous powder [B22F 9/002](#))}

B22F 1/0003

- {Metallic powders [per se](#) [per se](#); Mixtures of metallic powders; Metallic powders mixed with a lubricating or binding agent (making ferrous alloys using a mixture of prealloyed powders [C22C 33/0207](#))}

- U B22F 1/0059
 - {Metallic powders mixed with a lubricating or binding agent or organic material}
- B22F 1/0074
 - • {Organic materials comprising a solvent, e.g. for slip casting}
- 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]}
- U B22F 5/00** **Manufacture of workpieces or articles from metallic powder characterised by the special shape of the product**
- B22F 5/006
 - {of flat products, e.g. sheets ([B22F 3/1103](#) takes precedence; by using pressure rollers only [see see B22F 3/18](#))}
- 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 see C23C](#))}**
- U B22F 9/00** **Making metallic powder or suspensions thereof**
- U B22F 9/02
 - using physical processes
- B22F 9/04
 - • starting from solid material, e.g. by crushing, grinding or milling ({[C22C 1/1084](#) takes precedence}; crushing, grinding or milling, in general, [see see](#) the relevant subclasses, e.g. [B02C](#))
- U B22F 9/06
 - • starting from liquid material
- U B22F 9/08
 - • • by casting, e.g. through sieves or in water, by atomising or spraying (using electric discharge [B22F 9/14](#))
- U B22F 9/082
 - • • • {atomising using a fluid (using centrifugal force [B22F 9/10](#))}
- B22F 2009/0888
 - • • • {casting construction of the melt process, apparatus, intermediate reservoir, e.g. tundish, devices for temperature control}

Project: N/A (B23B)

- U B23B 3/00** **General-purpose turning-machines or devices, e.g. centre lathes with feed rod and lead screw; Sets of turning-machines**
- B23B 3/06
 - Turning-machines or devices characterised only by the special arrangement of constructional units ([B23Q 37/00](#) takes precedence; structural features of details, [see see](#) the relevant groups; such features of general applicability [B23Q](#))
- U B23B 31/00** **Chucks {(allowing axial oscillation of percussion tool bits [B25D 17/08](#))}; Expansion mandrels; Adaptations thereof for remote control (faceplates [B23Q 1/50](#); devices for securing work or tools to spindles in general [B23Q 3/12](#); rotary devices holding by magnetic and/or electrical force acting directly on work [B23Q 3/152](#))**
- U B23B 31/02
 - Chucks
- U B23B 31/10
 - • characterised by the retaining or gripping devices or their immediate operating means
- NOTE**
- Group [B23B 31/12](#) takes precedence over groups {[B23B 31/101](#), [B23B 31/102](#),} [B23B 31/103](#) - [B23B 31/117](#)
- U B23B 31/117
 - • • Retention by friction only, e.g. using springs, resilient sleeves, tapers
- B23B 31/1171
 - • • • {not used, [see see](#) subgroups and [B23B 31/117](#)}

- U B23B 31/40 · Expansion mandrels
- B23B 31/404 · · {Gripping the work or tool by jaws moving radially controlled by conical surfaces ([see see](#) also [B23B 31/16158](#))}

Project: N/A (B23C)

- U B23C 1/00 **Milling machines not designed for particular work or special operations**
- B23C 1/16 · specially designed for control by copying devices {(not used; [see see](#) [B23Q 35/00](#))}

Project: N/A (B23D)

- B23D 7/00 **Planing or slotting machines characterised only by constructional features of particular parts (constructional features of these parts [per se](#) [per se](#) [B23Q](#))**
- B23D 21/00 **Machines or devices for shearing or cutting tubes (by sawing, [see see](#) the relevant groups for sawing machines or sawing devices; as additional equipment for deep drawing presses [B21D 24/16](#))**
- U B23D 35/00 **Tools for shearing machines or shearing devices; Holders or chucks for shearing tools**
- B23D 35/008 · {Means for changing the cutting members (mounting [per se](#) [per se](#) [B23D 35/002](#))}
- B23D 41/00 **Broaching machines or broaching devices characterised only by constructional features of particular parts (constructional features of these parts [per se](#) [per se](#) [B23Q](#))**
- U B23D 45/00 **Sawing machines or sawing devices with circular saw blades or with friction saw discs (shearing machines with rotary discs [B23D 19/00](#) - [B23D 25/00](#))**
- U B23D 45/02 · with a circular saw blade or the stock mounted on a carriage
- U B23D 45/021 · · {with the saw blade mounted on a carriage ([B23D 45/06](#), [B23D 45/046](#) take precedence)}
- B23D 45/027 · · · {the saw carriage being mounted on a carriage, e.g. gantry-type sawing machines}
- B23D 47/00 **Sawing machines or sawing devices working with circular saw blades, characterised only by constructional features of particular parts (constructional features of these parts [per se](#) [per se](#) [B23Q](#); details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))**
- U B23D 49/00 **Machines or devices for sawing with straight reciprocating saw blades, e.g. hacksaws**
- U B23D 49/10 · Hand-held or hand-operated sawing devices with straight saw blades
- B23D 49/14 · · Pad saws {([B23D 49/105](#), [B23D 49/11](#), [B23D 49/16](#) take precedence)}
- B23D 51/00 **Sawing machines or sawing devices working with straight blades, characterised only by constructional features of particular parts (constructional features of these parts [per se](#) [per se](#) [B23Q](#); details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#)); Carrying or attaching means for tools, covered by this subclass, which are connected to a carrier at both ends**

- B23D 55/00** **Sawing machines or sawing devices working with strap saw blades, characterised only by constructional features of particular parts (constructional features of these parts ~~per se~~ *per se* B23Q)**
- U B23D 57/00** **Sawing machines or sawing devices not covered by one of the preceding groups B23D 45/00 - B23D 55/00**
- B23D 57/003 • {Sawing machines or sawing devices working with saw wires, characterised only by constructional features of particular parts (constructional features of these parts ~~per se~~ *per se* B23Q)}
- U B23D 61/00** **Tools for sawing machines or sawing devices (tools for trepanning B23B 51/04); Clamping devices for these tools**
- U B23D 61/12 • Straight saw blades; Strap saw blades
- U B23D 61/121 • • {Types of set; Variable teeth, e.g. variable in height or gullet depth; Varying pitch; Details of gullet}
- B23D 69/00** **Filing or rasping machines or devices. characterised only by constructional features of particular parts, e.g. guiding arrangements, drives (constructional features of these parts ~~per se~~ *per se* B23Q); Accessories for filing or rasping (attached to the tool B23D 71/10)**
- U B23D 73/00** **Making files or rasps**
- B23D 73/04 • Methods or machines for the manufacture of files or rasps (non-mechanical methods, ~~see~~ *see* the relevant classes)

Project: N/A (B23F)

- B23F 3/00** **Making gear teeth involving copying operations controlled by templates having a profile which matches that of the required tooth face or part thereof or a copy thereof to a different scale (copying systems or devices ~~per se~~ *per se* B23Q 35/00)**
- B23F 23/00** **Accessories or equipment combined with or arranged in, or specially designed to form part of, gear-cutting machines (tool-guiding mechanisms, ~~see~~ *see* the relevant groups for making gear teeth; accessories or equipment not restricted to gear-cutting machines B23Q)**
- U B23F 23/12 • Other devices, e.g. tool holders; Checking devices for controlling workpieces in machines for manufacturing gear teeth
- B23F 23/1225 • • {Arrangements of abrasive wheel dressing devices on gear-cutting machines (dressing devices ~~per se~~ *per se* B24B 53/00)}

Project: N/A (B23G)

- U B23G 1/00** **Thread cutting; Automatic machines specially designed therefor**
- B23G 1/26 • Manually-operated thread-cutting devices (features of the threading tool ~~per se~~ *per se* B23G 5/00)

Project: N/A (B23H)

- U B23H 7/00** **Processes or apparatus applicable to both electrical discharge machining and electrochemical machining**
- U B23H 7/26 • Apparatus for moving or positioning electrode relatively to workpiece; Mounting of electrode
- B23H 7/32 • • Maintaining desired spacing between electrode and workpiece {, e.g. by means of particulate material}

Project: N/A (B23K)

B23K 1/00 - B23K 3/00	<u>Soldering, e.g. brazing, or unsoldering (essentially requiring the use of welding machines or welding equipment, seesee the relevant groups for the welding machines or welding equipment)</u>
B23K 1/20	<ul style="list-style-type: none"> • Preliminary treatment of work or areas to be soldered, e.g. in respect of a galvanic coating (preparation of surfaces in particular ways, seesee the relevant classes for the treatments or the materials treated, e.g. C04B, C23C)
U B23K 9/00	Arc welding or cutting (electro-slag welding B23K 25/00; welding transformers H01F; welding generators H02K)
U B23K 9/20	<ul style="list-style-type: none"> • Stud welding
B23K 9/207	<ul style="list-style-type: none"> • {Features related to studs (welding studs per se per se B23K 35/0288)}
U B23K 35/00	Rods, electrodes, materials, or media, for use in soldering, welding, or cutting
B23K 35/40	<ul style="list-style-type: none"> • Making wire or rods for soldering or welding (processes involving a single technical art, seesee 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 26/706; } protective shields for other welding methods F16P 1/06)

Project: N/A (B23P)

B23P **OTHER WORKING OF METAL; COMBINED OPERATIONS; UNIVERSAL MACHINE TOOLS (arrangements for copying or controlling [B23Q](#))**

NOTES

1. This subclass covers:
 - combinations of work-modifying operations covered by different subclasses of classes [B21](#) - [B24](#);
 - combinations of metal-working operations with non-mechanical treatments of metal not provided for elsewhere, for example in [C21D](#), [C22C](#), [C22F](#) or [C23](#).
2. This subclass does not cover
 - non-mechanical operations on non-metallic materials unless such operations are specially mentioned in this subclass;
 - subsidiary operations performed in conjunction with main operations covered by a single subclass, e.g. assembling of parts as an essential feature of a following metal-working operation, since they are not regarded as operations ~~per se~~ [per se](#).
3. Attention is drawn to the Notes following the title of class [B23](#).

B23P 6/00	Restoring or reconditioning objects (straightening or restoring form of sheet metal, metal rods, metal tubes, metal profiles, or specific articles made therefrom B21D 1/00, B21D 3/00; repairing defective or damaged objects by casting techniques B22D 19/10; procedures or apparatus covered by a single other subclass, seesee the relevant subclass)
B23P 9/00	Treating or finishing surfaces mechanically, with or without calibrating, primarily to resist wear or impact, e.g. smoothing or roughening turbine blades or bearings (treatment covered by a single other subclass, seesee the relevant subclass, e.g. B24C, C21D 7/00, C22F 1/00); Features of such surfaces not otherwise provided for, their treatment being unspecified

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 per se , see 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)
U B23P 15/00	Making specific metal objects by operations not covered by a single other subclass or a group in this subclass
B23P 15/001	• {valves or valve housings (welding B23K ; valve housings per se per se F16K)}
B23P 15/003	• {bearings (see see also F16C 33/00)}
B23P 19/00	Machines for simply fitting together or separating metal parts, or metal and non-metal parts, whether or not involving some deformation (connecting metal parts or objects by metal-working procedures B23P 11/00, B21J, B23K); Tools or devices therefor so far as not provided for in other classes (hand tools in general B25)

Project: N/A (B23Q)

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)}
U B23Q 5/22	• Feeding members carrying tools or work
U B23Q 5/34	• • Feeding other members supporting tools or work, e.g. saddles, tool-slides, through mechanical transmission
U B23Q 5/341	• • • {cam-operated}
B23Q 5/342	• • • • {Cam followers (see see also B23Q 35/26)}
B23Q 5/344	• • • • {Cams (see see also B23Q 35/42)}
B23Q 5/345	• • • • {Cam assembly (see see also B23Q 35/46)}
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 11/10	• Arrangements for cooling or lubricating tools or work (incorporated in tools, see 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)}
U B23Q 35/00	Control systems or devices for copying directly from a pattern or a master model; Devices for use in copying manually {(copy milling classified also in B27C 5/003)}
U B23Q 35/04	• using a feeler or the like travelling along the outline of the pattern, model or drawing; Feelers, patterns, or models therefor
B23Q 35/06	• • specially adapted for controlling successive operations, e.g. separate cuts, on a workpiece
B23Q 37/00	Metal-working machines, or constructional combinations thereof, built-up from units designed so that at least some of the units can form parts of different machines or combinations; Units therefor in so far as the feature of interchangeability is important (features relating to particular metal-working operations, see see the relevant subclass, e.g. B23P 23/00)

B23Q 39/00

Metal-working machines incorporating a plurality of sub-assemblies, each capable of performing a metal-working operation ([B23Q 33/00](#), [B23P 23/00](#) take precedence; if the operations are similar and the kind of operation is essential, [see see](#) the relevant subclass for the operation)

Project: N/A (B24B)**B24B 3/00**

Sharpening cutting edges, e.g. of tools; Accessories therefor, e.g. for holding the tools (non-abrasive sharpening devices for scythes, sickles, or the like [A01D 3/00](#); sharpening devices designed as components of machines with cutters, [see see](#) the relevant places for the machines, e.g. [A01D 75/08](#), {[B23F 23/1225](#),} [B26D 7/12](#); sharpening of saw teeth [B23D 63/12](#); sharpening of files or rasps [B23D 73/00](#); grinding of die-stocks or chasers [B23G 1/36](#))

U B24B 5/00

Machines or devices designed for grinding surfaces of revolution on work, including those which also grind adjacent plane surfaces; Accessories therefor ([B24B 11/00](#) - [B24B 21/00](#) take precedence; honing machines or devices using abrading blocks performing axial and rotary movements superimposed on one another [B24B 33/00](#))

U B24B 5/36

- Single-purpose machines or devices

B24B 5/363

- • {for grinding surfaces of revolution [in-situ](#)[in situ](#)}

U B24B 5/42

- • for grinding crankshafts or crankpins

B24B 5/425

- • • {[in-situ](#)[in situ](#)}

B24B 17/00

Special adaptations of machines or devices for grinding controlled by patterns, drawings, magnetic tapes or the like (machines or devices so-controlled for grinding the edges of lenses [B24B 9/14](#); for grinding or polishing optical lens surfaces [B24B 13/06](#); for grinding non-circular cross-sections [B24B 19/08](#); for grinding trochoidal surfaces [B24B 19/09](#); for grinding cams [B24B 19/12](#); for grinding turbine blades or the like [B24B 19/14](#); such control means [per se](#) [per se](#) [B23Q 33/00](#), [B23Q 35/00](#), [G05](#)); Accessories therefor

U B24B 27/00

Other grinding machines or devices

B24B 27/0069

- {with means for feeding the work-pieces to the grinding tool, e.g. turntables, transfer means ([see see](#) also [B24B 27/0023](#), [B24B 7/16](#))}

U B24B 39/00

Burnishing machines or devices, i.e. requiring pressure members for compacting the surface zone (modifying the physical properties or structure of metal by burnishing [C21D 7/08](#), [C22F 1/00](#)); Accessories therefor

B24B 39/003

- {the working tool being composed of a plurality of working rolls or balls ([see see](#) also [B24B 39/023](#), [B24B 39/045](#))}

U B24B 39/02

- designed for working internal surfaces of revolution

B24B 39/023

- • {the working tool being composed of a plurality of working rolls or balls ([see see](#) also [B24B 39/003](#), [B24B 39/045](#))}

U B24B 39/04

- designed for working external surfaces of revolution

B24B 39/045

- • {the working tool being composed of a plurality of working rolls or balls ([see see](#) also [B24B 39/003](#), [B24B 39/045](#))}

B24B 41/00 - B24B 47/00 Component parts of grinding machines or devices so far as specially adapted to grinding (if applicable to other machine tools, [B23Q](#) takes precedence; if peculiar to a particular type of machine or device, [see](#) [see](#) the relevant group therefor)

- 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})

Project: N/A (B24C)**B24C****ABRASIVE OR RELATED BLASTING WITH PARTICULATE MATERIAL**NOTES

1. This subclass ~~covers~~[covers](#):-

- the use of a blast of any particles or pellets dispersed in air, gas, or liquid for the treatment of surfaces or cutting of materials, the particles usually being of abrasive material;
- the equivalent use of a jet of particles or pellets projected or energised by means other than a stream of air
- {the equivalent use of material without particles or pellets for deburring, removal of extended surface areas or jet milling of local recessions, e.g. grooves}

2. In this subclass, the following terms are used with the meanings indicated:

- "abrasive" covers any material used in the manner mentioned in Note (1) above;
- "blast" covers any equivalent jet of material mentioned in Note (1) above

- U B24C 1/00** **Methods for use of abrasive blasting for producing particular effects; Use of auxiliary equipment in connection with such methods**
- B24C 1/003 • {using material which dissolves or changes phase after the treatment, e.g. ice, CO₂}

Project: N/A (B25B)

- U B25B 23/00** **Details of, or accessories for, spanners, wrenches, screwdrivers (bolt tensioners [B25B 29/02](#))**
- B25B 23/14 • Arrangement of torque limiters or torque indicators in wrenches or screwdrivers (couplings for transmitting rotation or clutches [F16D](#); devices for measuring torque ~~per se~~[per se](#) [G01L](#))
- B25B 23/1415 • • {Break members; Arrangements specially adapted for break-bolts (break-bolts ~~per se~~[per se](#) [F16B 31/00](#))}

Project: N/A (B25C)

- B25C 1/00** **Hand-held nailing tools (hammers ~~per se~~[per se](#) [B25D](#); nailing machines [B27F 7/02](#)); Nail feeding devices**
- U B25C 1/08 • operated by combustion pressure
- U B25C 1/10 • • generated by detonation of a cartridge
- B25C 1/16 • • • Cartridges specially adapted for impact tools; Cartridge and bolts units (bolts ~~per se~~[per se](#) [F16B 19/14](#))

- 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
- 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 (B25F)**B25F**

COMBINATION OR MULTI-PURPOSE TOOLS NOT OTHERWISE PROVIDED FOR; DETAILS OR COMPONENTS OF PORTABLE POWER-DRIVEN TOOLS NOT PARTICULARLY RELATED TO THE OPERATIONS PERFORMED AND NOT OTHERWISE PROVIDED FOR {(machines or arrangements of machines for performing specified combinations of different metal-working operations not covered by a single other subclass [B23P 23/00](#) and subgroups)}

NOTE

This subclass ~~does not cover~~ *does not cover* tools having a clear primary function as well as one or more secondary functions. Those tools are covered by the relevant subclass for tools having such primary function and are, thus, not classified in group [B25F 1/00](#) or [B25F 3/00](#) of this subclass.

Project: N/A (B25H)

- U B25H 3/00** Storage means or arrangements for workshops facilitating access to, or handling of, work tools or instruments (containers or packages with special means for dispensing contents [B65D 83/00](#); {nail dispensers [B25C 3/00](#)})
- B25H 3/006 • {Storage means specially adapted for one specific hand apparatus, e.g. an electric drill}

Project: N/A (B25J)

- U 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 19/0075 • {Means for protecting the manipulator from its environment or ~~vice-versa~~ *vice versa*}

Project: N/A (B26B)

- U B26B 13/00** Hand shears; Scissors
- B26B 13/22 • combined with auxiliary implements, e.g. with cigar cutter, with manicure instrument (cigar cutters ~~per se~~ *per se* [A24F 13/24](#))

- B26B 17/00** Hand cutting tools {, i.e. with the cutting action actuated by muscle power} with two jaws which come into abutting contact (nail clippers or cutters [A45D 29/02](#); joints therefor [B25B 7/06](#))
- U B26B 19/00** Clippers or shavers operating with a plurality of cutting edges, e.g. hair clippers, dry shavers
- B26B 19/28 • Drive layout for hair clippers or dry shavers, e.g. providing for electromotive drive (electric motors ~~per se~~ [per se H02](#))
- U B26B 19/38** • Details of, or accessories for, hair clippers, or dry shavers, e.g. housings, casings, grips, guards (cutters, cutting heads [B26B 19/04](#), [B26B 19/12](#), [B26B 19/14](#); cleaning or disinfecting devices [A45D 27/46](#); drying devices [A45D 27/48](#); casings for electric apparatus in general [H05K](#))
- B26B 19/42 • • providing for straightening the hair to be cut, e.g. by means of bristles; providing for tensioning the skin, e.g. by means of rollers, ledges (skin-stretchers for shaving ~~per se~~ [per se A45D 27/38](#))
- B26B 19/48 • • Accessory implements for carrying out a function other than cutting hair, e.g. attachable appliances for manicuring (massage means ~~per se~~ [per se A61H 7/00](#) - [A61H 23/00](#))
- U B26B 29/00** Guards or sheaths {or guides} for hand cutting tools; Arrangements for guiding hand cutting tools (guards for hair clippers or dry shavers [B26B 19/38](#))
- B26B 29/04 • Guards or sheaths for scissors, e.g. combined with manicuring appliances (manicuring implements ~~per se~~ [per se A45D 29/00](#))
- B26B 29/06 • Arrangements for guiding hand cutting tools (guiding equipment or arrangements for specific cutting tools, ~~see~~ [see](#) the particular places, e.g. for hair trimming devices [A45D 24/36](#), for saw blades [B27B 11/02](#), [B26B 13/10](#))

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~~; ~~civil engineering, building, mining, see Section E~~; for light guides [G02B 6/25](#); cutting processed photographic material [G03D 15/04](#))

NOTES1. 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 1/00

Cutting through work characterised by the nature or movement of the cutting member {or particular materials not otherwise provided for}; Apparatus or machines therefor; Cutting members therefor

U B26D 1/01

- involving a cutting member which does not travel with the work

U B26D 1/547

- • having a wire-like cutting member (endless wire [B26D 1/46](#); severing using a heated wire [B26F 3/12](#))

B26D 1/5475

- • • {for thin material, e.g. for sheets, strips or the like}

B26D 1/56

- involving a cutting member which travels with the work {otherwise than in the direction of the cut}, i.e. flying cutter (flying shears for metal [B23D 25/00](#); flying saws for metal [B23D 45/18](#))

U B26D 3/00

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

U B26D 3/24

- to obtain segments other than slices, e.g. cutting pies

B26D 3/245

- • {having means to change the number of equal segments, e.g. for pies}

Project: N/A (B26F)

U B26F 1/00

Perforating; Punching; Cutting-out; Stamping-out; Apparatus therefor (subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency [B24B 1/04](#), perforating by sand-blasting [B24C](#); {e.g. abrasive blasting used for cutting [B24C 1/045](#)}; punching cards or tapes for statistical and record purposes [G06K 1/00](#))

U B26F 1/38

- Cutting-out; Stamping-out

B26F 1/386

- • {Draw punches, i.e. punch and die assembled on opposite sides of a workpiece via a connecting member passing through an aperture in the workpiece}

Project: N/A (B27B)

U B27B 17/00

Chain saws; Equipment therefor {(slotting or mortising machines equipped with chain cutters [B27F 5/06](#))}

B27B 17/0091

- {Wheeled chain saws; Chain saws mounted on or driven by vehicles, e.g. for sawing trees [in-situ](#) [in situ](#)}

B27B 29/00

Gripping, clamping, or holding devices for the trunk or log in saw mills or sawing machines (for other timber, [see](#) [see](#) the relevant groups for the machines; safety guards or devices specially designed for wood saws [B27G 19/00](#)); Travelling trunk or log carriages {(for logs being held in a cantilever manner [B27B 17/0075](#))}

- U 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](#)})
- B27B 31/06 • Adjusting equipment, e.g. using optical projection {(see also [B27L 5/022](#))}

Project: N/A (B27D)

- U B27D 1/00** Joining wood veneer with any material; Forming articles thereby (in conjunction with moulding of wood particles or fibres [B27N 3/06](#)); Preparatory processing of surfaces to be joined, e.g. scoring
- U B27D 1/04** • to produce plywood or articles made therefrom; Plywood sheets {(making a layered veneer cutting block [B27L 5/00](#))}
- B27D 1/06 • • Manufacture of central layers; Form of central layers {(see also [B27M 3/002](#) and [B27M 3/0026](#))}
- B27D 1/10 • Butting blanks of veneer; Joining same along edges; Preparatory processing of edges, e.g. cutting {(see also [B27M 3/002](#) and [B27M 3/0026](#))}

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](#)}

- U B27F 5/00** **Slotted or mortised work (hand mortising chisels [B25D 3/00](#))**
- U B27F 5/02** • Slotting or mortising machines {tools therefor}
- B27F 5/10 • • equipped with chisel cutters {, e.g. hollow chisel cutters equipped with drills}

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

ACCESSORY MACHINES OR APPARATUS; TOOLS; SAFETY DEVICES, e.g. THOSE FOR SAWS (clamping devices for mitre joints, presses for producing frames, press frames, or cages equipped with clamping devices [B25B](#); woodworkers' benches [B25H](#))

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:

[B27G 17/08](#) covered by [B25D 3/00](#)

- 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 (B27L)

- U B27L 1/00** Debarking or removing vestiges of branches from trees or logs (debarking by chemical treatment [B27L 3/00](#); {peeling osier rods [B27J 3/00](#)}); Machines therefor

NOTE

Tree-feeding devices are covered by group [B27B 25/00](#)

- B27L 1/12 • using pliable tools {, e.g. chains, cables}

- U B27L 5/00** **Manufacture of veneer (working veneer or plywood [B27D](#))**{Preparatory processing therefor (drying [F26B](#))}

- U B27L 5/02** • Cutting strips from a rotating trunk or piece; Veneer lathes {([B27L 5/004](#) takes precedence)}

- B27L 5/022 • • {Devices for determining the axis of a trunk (~~see~~[see](#) also [B27B 31/06](#)); Loading devices for veneer lathes}

- U B27L 7/00** **Arrangements for splitting wood**

- B27L 7/005 • {Hand tools therefor (wedges, knives, spreaders, anvils ~~per se~~ [per se](#) [B27L 7/06](#))}

Project: N/A (B27M)

- 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](#)})**

- U B27M 3/04** • of flooring elements, e.g. parqueting blocks (assembling wooden elements on backings of other substances [B32B](#), {e.g. [B32B 21/042](#), [E04F 15/16](#); furniture joints [F16B 12/00](#))}

- B27M 3/06 • • of composite floor plates ~~per se~~ [per se](#) by assembling or jointing the parqueting blocks

Project: N/A (B27N)**B27N**

MANUFACTURE BY DRY PROCESSES OF ARTICLES, WITH OR WITHOUT ORGANIC BINDING AGENTS, MADE FROM PARTICLES OR FIBRES CONSISTING OF WOOD OR OTHER LIGNOCELLULOSIC OR LIKE ORGANIC MATERIAL (containing cementitious material [B28B](#); shaping of substances in a plastic state [B29C](#); fibreboards made from fibrous suspensions [D21J](#); drying [F26B 17/00](#))

NOTE

This subclass ~~does not cover~~ [does not cover](#) treatment of compositions which are in a plastic state, or worked by the same type of process or apparatus as plastics, which is covered by subclass [B29B](#) or [B29C](#).

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~~; ~~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](#)

- U B28B 1/00** **Producing shaped {prefabricated} articles from the material (using presses [B28B 3/00](#); shaping on moving conveyors [B28B 5/00](#); producing tubular articles [B28B 21/00](#); {producing articles with embedded elements [B28B 23/00](#)})**
- U B28B 1/08** • by vibrating or jolting {(of moulding sand [B22C 15/10](#); of concrete in general [E04G 21/063](#))}
- B28B 1/093** • • by means directly acting on the material, e.g. by cores wholly or partly immersed in the material {or elements acting on the upper surface of the material} {([B28B 1/084](#) takes precedence; } internal vibrators for compacting concrete ~~in situ~~ ~~in situ~~ [E04G 21/08](#))}
- B28B 5/00** **Producing shaped articles from the material in moulds or on moulding surfaces, carried or formed by, in, or on conveyers irrespective of the manner of shaping (shaping aspects ~~see~~ ~~see~~ the relevant groups)**
- 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~~ ~~in situ~~ [E04G 9/00](#) - [E04G 15/00](#)})**
- B28B 7/22** • Moulds for making units for prefabricated buildings {, i.e. units each comprising an important section of at least two limiting planes of a room or space, e.g. cells (for making rooms or entire buildings ~~in situ~~ ~~in situ~~ [E04G 11/02](#))}; Moulds for making prefabricated stair units
- B28B 7/225** • • {for making stairs or stair units comprising more than one step (~~in situ~~ ~~in situ~~ [E04G 13/06](#))}
- B28B 7/26** • Assemblies of separate moulds {, i.e. of moulds or moulding space units, each forming a complete mould or moulding space unit independently from each other}
- 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~~ ~~in situ~~ [E04G 15/04](#); for making recesses [E04G 15/06](#))}

- 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 situ* in connection with building [E04G 21/06](#); drying [F26](#))
- 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 see* the relevant groups for the apparatus)
- 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 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~~; *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 21/02** • by casting into moulds
- B28B 21/06** • • into moulds having sliding parts ([B28B 21/26](#) takes precedence; forms, shutterings, or falsework for making rooms as a whole, whole stories, or whole buildings ~~in-situ~~ *in situ* [E04G 11/02](#))

Project: N/A (B28C)

- U 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 1/02** • for producing or processing clay suspensions {, e.g. slip}(producing or processing suspensions in general [B01](#))
- B28C 1/06** • • Processing suspensions {, i.e. after mixing}
- U 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](#)})
- U 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
- B28C 5/12** • • • with stirrers sweeping through the materials {, e.g. with incorporated feeding or discharging means or with oscillating stirrers}
- B28C 5/1238** • • • {for materials flowing continuously through the mixing device and with incorporated feeding or discharging devices (feeding or discharging devices ~~per se~~ *per se* [B28C 5/0818](#))}
- B28C 5/34** • • Mixing on or by conveyors {, e.g. by belts or chains provided with mixing elements}

- B28C 5/36
- • • Endless-belt mixers {, i.e. for mixing while transporting the material on an endless belt, e.g. with stationary mixing elements}
- U 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)}
- U B28C 7/06
- • Supplying the solid ingredients, e.g. by means of endless conveyors or jiggling conveyors
- B28C 7/067
- • • {by means of stationary hoppers, chambers or bins from which the material is fed gravitationally, e.g. having agitating means therein (hoppers or bins ~~per se~~ ~~per se~~ B28C 7/0053)}
- B28C 7/10
- • • by means of rotary members {, e.g. inclinable screws}

Project: N/A (B28D)

- U B28D 1/00 **Working stone or stone-like materials, e.g. brick, concrete {or glass}, not provided for elsewhere; machines, devices, tools therefor (fine working of gems, jewels, crystals B28D 5/00; working by grinding or polishing B24; devices or means for dressing or conditioning abrasive surfaces B24B 53/00)**
- U B28D 1/02
- by sawing
- B28D 1/08
- • with saw-blades of endless cutter-type, e.g. chain saws {, i.e. saw chains}, strap saws (B28D 1/10 takes precedence)
- B28D 1/088
- • • {Sawing ~~in situ~~ ~~in situ~~, e.g. stones from rocks, grooves in walls}
- U B28D 1/18
- by milling, e.g. channelling by means of milling tools
- B28D 1/186
- • {Tools therefor, e.g. having exchangeable cutter bits (B28D 1/181 takes precedence; bits for picks or pick-holders for mining or quarrying E21C 35/18)}
- U B28D 1/26
- by impact tools, e.g. by chisels or other tools having a cutting edge (portable percussive tools B25D)
- B28D 1/28
- • without cutting edge {, e.g. chiseling machines}

Project: N/A (B29)**B29**

WORKING OF PLASTICS; WORKING OF SUBSTANCES IN A PLASTIC STATE, IN GENERAL (processing doughs A21C; working chocolate A23G; casting of metals B22; working cement, clay B28; chemical aspects, ~~see see~~ section G, particularly C08; working glass C03B; candle making C11C 5/02; making soap C11D 13/00; manufacture of artificial filaments, threads, fibres, bristles or ribbons D01D, D01F; manufacture of articles from cellulosic fibrous suspensions or from papier-mâché D21J)

NOTES

1. This class ~~does not cover~~ ~~does not cover~~ the working of plastics sheet material in a manner analogous to the working of paper, which is covered by class B31.
2. In this class, the following term is used with the meaning indicated:
 - "plastics" means macromolecular compounds or compositions based on such compounds.
3. In this class, the following rules apply:

- a. The working of plastics is, as far as possible, classified primarily according to the particular shaping technique used, e.g. in subclass [B29C](#).
- b. Classification according to production of particular articles in subclass [B29D](#) is restricted to:
 - i. aspects which are characteristic for the production of a particular article, and not classifiable in subclass [B29B](#) or [B29C](#);
 - ii. combined operations for making the particular article which are not fully classifiable in subclass [B29C](#).
- c. Products ~~per se~~ *per se* are not classified in this class. However, if a product is characterised by the way it is produced and not by its structure or composition, the production method should be classified in this class.

Project: N/A (B29B)

- | | | |
|---|-------------------|--|
| U | B29B 7/00 | Mixing; Kneading ({for preparation of dough A21C 1/00;} in general B01F; combined with calendering B29C 43/24, with injection B29C 45/46, with extrusion B29C 47/36) |
| U | B29B 7/30 | • continuous, with mechanical mixing or kneading devices |
| U | B29B 7/34 | • • with movable mixing or kneading devices |
| U | B29B 7/52 | • • • with rollers or the like, e.g. calenders |
| | B29B 7/56 | • • • • with co-operating rollers {, e.g. with repeated action, i.e. the material leaving a set of rollers being reconducted to the same set or being conducted to a next set} |
| U | B29B 7/80 | • Component parts, details or accessories; Auxiliary operations (B29B 7/22 , B29B 7/58 take precedence, {cleaning mixers B01F 15/00019 }) |
| U | B29B 7/84 | • • Venting or degassing {; Removing liquids, e.g. by evaporating components} |
| U | B29B 7/88 | • • Adding charges, {i.e. additives} |
| | B29B 7/90 | • • • Fillers or reinforcements {, e.g. fibres} |
| U | 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 11/14 | • characterised by structure or composition |
| | B29B 11/16 | • • comprising fillers or reinforcement {(non-woven fabrics per se <i>per se</i> D04H 1/00 , D04H 3/00)} |
| U | B29B 15/00 | Pretreatment of the material to be shaped, not covered by groups B29B 7/00 - B29B 13/00 |
| U | B29B 15/08 | • of reinforcements or fillers (chemical aspects C08J , C08K) |
| U | B29B 15/10 | • • Coating or impregnating {independently of the moulding or shaping step} (applying liquids in general B05) |
| | | NOTE
Where the coating or impregnating is combined with moulding the documents are classified in B29C 53/8066 , B29C 70/00 |
| | B29B 15/105 | • • • {of reinforcement of definite length with a matrix in solid form, e.g. powder, fibre or sheet form (calendering B29C 70/506)} |

Project: N/A (B29C)

- | | | |
|---|-------------------|---|
| U | B29C 33/00 | Moulds or cores; Details thereof or accessories therefor |
| U | B29C 33/20 | • Opening, closing or clamping |

- U B29C 33/202
 - • {Clamping means operating on closed or nearly closed mould parts, the clamping means being independently movable of the opening or closing means (clamping devices for injection moulding machines [B29C 45/64](#))}
- B29C 2033/205
 - • • {mould clamping by membranes, e.g. inflatable membranes or cushions}
- U 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](#))
- U 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](#))}
- U B29C 35/08
 - • by wave energy or particle radiation {([B29C 67/0051](#), [B29C 71/04](#) take precedence)}
- U B29C 35/0866
 - • • {using particle radiation}
- B29C 2035/0872
 - • • • {using ion-radiation, e.g. alpha-rays}
- B29C 2035/0877
 - • • • {using electron radiation, e.g. beta-rays}
- U 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 41/02
 - for making articles of definite length, i.e. discrete articles
- B29C 41/12
 - • Spreading-out the material on a substrate {, e.g. on the surface of a liquid}
- U B29C 41/34
 - Component parts, details or accessories; Auxiliary operations
- U B29C 41/36
 - • Feeding the material on to the mould, core or other substrate
- B29C 41/365
 - • • {Construction of spray-up equipment, e.g. spray-up guns (spraying apparatus in general [B05B](#))}
- 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 43/04
 - • using movable moulds
- U B29C 43/06
 - • • continuously movable {in one direction, e.g. mounted on chains, belts}
- B29C 43/08
 - • • • with circular movement {, e.g. mounted on rolls, turntables}
- U B29C 43/10
 - • Isostatic pressing, i.e. using non-rigid pressure-exerting members against rigid parts or dies {(in general [B30B 11/001](#))}
- U B29C 43/102
 - • • {using rigid mould parts specially adapted for moulding articles having an axis of symmetry}
- B29C 43/104
 - • • • {the mould cavity lying totally outside the axis of symmetry, e.g. toroidal moulds}
- U B29C 43/22
 - of articles of indefinite length {(for articles with reinforcements of substantial or continuous length [B29C 70/50](#))}
- B29C 43/228
 - • {using endless belts feeding the material between non-rotating pressure members, e.g. vibrating pressure members}
- U B29C 43/32
 - Component parts, details or accessories; Auxiliary operations
- U B29C 43/36
 - • Moulds for making articles of definite length, i.e. discrete articles

- 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](#))}
- U B29C 43/44
 - • Compression means for making articles of indefinite length
- U B29C 43/46
 - • • Rollers
- U B29C 2043/461
 - • • • {the rollers having specific surface features}
- B29C 2043/465
 - • • • • {having one or more cavities, e.g. for forming distinct products}
- 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 44/20
 - for articles of indefinite length
- U B29C 44/28
 - • Expanding the moulding material on continuous moving surfaces {without restricting the upwards growth of the foam}
- B29C 44/285
 - • • {Rising trough lateral side members, e.g. following the foam expansion}
- U B29C 44/34
 - Auxiliary operations
- U B29C 44/3469
 - • {Cell or pore nucleation}
- B29C 44/3476
 - • • {by, e.g. compression stress}
- U B29C 44/35
 - • {Component parts; Details or accessories}
- B29C 44/353
 - • • {Means for guiding the foaming in, e.g. a particular direction}
- U B29C 44/56
 - • After-treatment of articles, e.g. for altering the shape
- B29C 44/5681
 - • • {Covering the foamed object with, e.g. a lining}
- 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 45/0017
 - {moulding interconnected elements which are movable with respect to one another, e.g. chains or hinges}
- B29C 2045/0018
 - • {moulding containers with handle, e.g. buckets}
- U B29C 45/0025
 - {Preventing defects on the moulded article, e.g. weld lines, shrinkage marks (preventing defects on the preformed parts or layers [B29C 45/14836](#))}
- B29C 2045/0031
 - • {Movable mould wall parts in contact with weld lines, e.g. rotating pins for stirring the weld line}
- B29C 2045/0094
 - {injection moulding of small-sized articles, e.g. micro articles, ultra thin articles}
- B29C 2045/0096
 - {drying the moulding material before injection, e.g. by heating}
- B29C 2045/0098
 - {shearing of the moulding material, e.g. for obtaining molecular orientation or reducing the viscosity ([B29C 45/0082](#) takes precedence)}
- U B29C 45/03
 - Injection moulding apparatus (transfer moulding [B29C 45/02](#))
- U B29C 45/04
 - • using movable moulds {or mould halves}([B29C 45/08](#) takes precedence)
- B29C 45/06
 - • • {mounted} on a turntable {, i.e. on a rotating support having a rotating axis parallel to the mould opening, closing or clamping direction}
- 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 2045/1486
 - • {Details, accessories and auxiliary operations}

- U B29C 2045/14901 . . . {Coating a sheet-like insert smaller than the dimensions of the adjacent mould wall}
- B29C 2045/14909 {the edge of the sheet-like insert being hidden, e.g. in a groove or protruding into the injected material}
- B29C 2045/14991 . . . {Submerged burrs, e.g. using protruding mould parts forming a cavity in which the burr on the insert is formed for preventing surface defects}
- U B29C 45/16 . Making multilayered or multicoloured articles {(B29C 45/0062 takes precedence; feeding colouring materials into the injection unit B29C 45/1816)}
- U B29C 45/1615 . . {The materials being injected at different moulding stations}
- U B29C 45/162 . . . {using means, e.g. mould parts, for transferring an injected part between moulding stations}
- B29C 2045/1621 {the transfer means operating independently from the injection mould cavity, i.e. during injection the transfer means are completely outside the mould cavity}
- B29C 2045/169 . . {injecting electrical circuits, e.g. one layer being made of conductive material}
- U B29C 45/17 . Component parts, details or accessories; Auxiliary operations
- U B29C 45/1703 . . {Introducing an auxiliary fluid into the mould (B29C 45/1701 takes precedence)}
- U B29C 45/1704 . . . {the fluid being introduced into the interior of the injected material which is still in a molten state, e.g. for producing hollow articles (B29C 45/1732 and B29C 45/1734 take precedence; injection blow-moulding B29C 49/06)}
- U B29C 45/1706 {using particular fluids or fluid generating substances}
- B29C 2045/1707 {using a liquid, e.g. water}
- B29C 45/1756 . . {Handling of moulds or mould parts, e.g. mould exchanging means (moulds ~~per se~~ *per se* B29C 45/26)}
- U B29C 2045/1784 . . {Component parts, details or accessories not otherwise provided for; Auxiliary operations not otherwise provided for}
- B29C 2045/1786 . . . {Electric wire or cable guides, e.g. for manifolds}
- B29C 2045/1791 . . . {Means for spacing or distancing mould supporting plates, e.g. for mould exchange}
- U B29C 2045/1792 . . . {Machine parts driven by an electric motor, e.g. electric servomotor}
- B29C 2045/1794 {by a rotor or directly coupled electric motor, e.g. using a tubular shaft motor (for driving axially movable screws B29C 2045/5024)}
- U B29C 45/20 . . Injection nozzles {(B29C 45/1603 takes precedence)}
- U B29C 45/23 . . . Feed stopping equipment
- B29C 2045/238 {Injection nozzles extending into the sprue channel or ~~vice versa~~ *vice versa*}
- U B29C 45/26 . . Moulds
- B29C 2045/2695 . . . {injecting articles with varying wall thickness, e.g. for making a tear line}
- U B29C 45/27 . . . Sprue channels {Runner channels or runner nozzles}
- U B29C 45/2701 {Details not specific to hot or cold runner channels (B29C 45/2725 takes precedence)}
- U B29C 45/2708 {Gates (B29C 45/2703 takes precedence)}
- B29C 2045/2714 {elongated, e.g. film-like, annular}
- U 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 47/08 . Component parts, details or accessories; Auxiliary operations

- U B29C 47/10
 - • Feeding the material to the extruder
- U B29C 47/1027
 - • • {in solid form, e.g. powder or granules}
- B29C 47/1045
 - • • • {of fibrous, filamentary or filling materials, e.g. thin fibrous reinforcements or fillers}
- U B29C 47/12
 - • Extrusion nozzles or dies
- U B29C 47/14
 - • • with broad opening, e.g. for sheets
- B29C 47/16
 - • • • {being} adjustable {, i.e. having adjustable exit sections}
- U B29C 47/20
 - • • with annular opening, e.g. for tubular articles
- B29C 47/22
 - • • • {being} adjustable {, i.e. having adjustable exit sections}
- U B29C 47/36
 - • Means for plasticising or homogenising the moulding material or forcing it through the nozzle or die
- U B29C 47/38
 - • • using screws {surrounded by a cooperating barrel}
- B29C 47/46
 - • • • using screws extruding in opposite directions {, e.g. separate screws arranged after each other and feeding in opposite directions}
- U B29C 47/78
 - • Heating or cooling the material to be extruded or the stream of extruded material {or of a preformed part}
- U B29C 47/88
 - • • Heating or cooling the stream of extruded material

NOTE

{Attention is drawn to Note (3) following the subclass title}

- U B29C 47/90
 - • • • with calibration or sizing
- B29C 47/907
 - • • • ~~{using adjustable calibrators;}~~ **{using adjustable calibrators,}** e.g. the dimensions of the calibrator being changeable

U 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 49/08
 - Biaxial stretching during blow-moulding {with or without prestretching}
- U B29C 49/10
 - • using mechanical means {for prestretching}
- U B29C 49/12
 - • • Stretching rods
- U B29C 2049/1223
 - • • • {Stretching rod configuration, e.g. geometry; Stretching rod material}
- B29C 2049/1242
 - • • • • {Material for parts or the whole stretching rod, e.g. heat insulating material}
- U B29C 49/42
 - Component parts, details or accessories; Auxiliary operations
- U B29C 49/58
 - • Blowing means {([B29C 45/1734](#) takes precedence)}
- U B29C 49/60
 - • • Blow-needles
- U B29C 2049/6009
 - • • • {Constructional features}
- U B29C 2049/6018
 - • • • • {related to the air outlet}
- B29C 2049/6027
 - • • • • • {Having several air outlets, e.g. for directing the blowing fluid in different directions}

U 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 51/26
 - Component parts, details or accessories; Auxiliary operations
- U B29C 51/30
 - • Moulds
- B29C 51/306
 - • • {with means for forming a rim (combined with cutting [B29C 51/325](#); rim rolling ~~per se~~ **per se** [B29C 53/34](#))}

- U B29C 53/00** **Shaping by bending, folding, twisting, straightening or flattening; Apparatus therefor (B29C 61/10 takes precedence)**
- U B29C 53/56 · Winding and joining, e.g. winding spirally {(winding in general [B65H](#))}
 - U B29C 53/58 · · helically
 - U B29C 53/583 · · · {for making tubular articles with particular features}
 - B29C 53/588 · · · · {having a non-linear axis, e.g. elbows, toroids}
 - U B29C 53/60 · · · using internal forming surfaces, e.g. mandrels
 - U B29C 53/62 · · · · rotatable about the winding axis
 - B29C 53/66 · · · · · with axially movable winding feed member {e.g. lathe type winding}
- U B29C 55/00** **Shaping by stretching, e.g. drawing through a die; Apparatus therefor (B29C 61/08 takes precedence)**
- U B29C 55/02 · of plates or sheets
 - U B29C 55/04 · · uniaxial, e.g. oblique
 - B29C 55/045 · · · {in a direction which is not parallel or transverse to the direction of feed, e.g. oblique}
- 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](#))}**
- U B29C 59/08 · by flame treatment; {using hot gases}
 - B29C 59/085 · · {of profiled articles, e.g. hollow or tubular articles}
 - B29C 59/14 · by plasma treatment (in general [H05H](#) {; plasma tubes ~~per se~~ [H01J](#)})
 - U B29C 59/16 · by wave energy or particle radiation, {e.g. infra-red heating ([B29C 59/007](#) takes precedence)}
 - B29C 59/165 · · {of profiled articles, e.g. hollow or tubular articles}
- U 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 63/0073 · {of non-flat surfaces, e.g. curved, profiled ([B29C 63/042](#) takes precedence)}
 - B29C 63/0078 · · {having local protrusions, e.g. rivet heads}
 - U B29C 63/38 · by liberation of internal stresses
 - U B29C 63/42 · · using tubular layers or sheathings
 - U B29C 63/423 · · · {specially applied to the mass-production of externally coated articles, e.g. bottles}
 - B29C 63/426 · · · · {in combination with the ~~in-situ~~ [in situ](#) shaping of the external tubular layer}

- U 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](#) - [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
- B29C 65/04** **• • Dielectric heating, e.g. high-frequency welding {, i.e. radio frequency welding of plastic materials having dielectric properties, e.g. PVC}**
- U 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](#) - [B29C 65/1496](#) are not complete pending a reorganisation; see also this group and its subgroups
- U B29C 65/16** **• • • Laser beams**
- WARNING**
Subgroups of [B29C 65/16](#) are not complete, pending a reorganisation; see also this group and its subgroups
- U B29C 65/1629** **• • • • {characterised by the way of heating the interface}**
- B29C 65/1645** **• • • • {heating both sides of the joint, e.g. by using two lasers or a split beam}**
- U 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](#) - [B29C 65/4895](#) are not complete, pending a reorganisation; see also this group and [B29C 65/4895](#)
- B29C 65/50** **• • using adhesive tape {, e.g. thermoplastic tape; using threads or the like ([B29C 65/3444](#) takes precedence)}**
- 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~~ covers only techniques involving the use of a mould

- 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 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](#))}
- U B29C 66/90**
- {Measuring or controlling the joining process}
- WARNING
Group [B29C 66/90](#) and subgroups are not complete, pending a reorganisation; see also this group and its subgroups
- U B29C 66/91**
- • {by measuring or controlling the temperature, the heat or the thermal flux}
- U B29C 66/912**
- • • {by measuring the temperature, the heat or the thermal flux}
- U B29C 66/9121**
- • • • {by measuring the temperature}
- U B29C 66/91211**
- • • • • {with special temperature measurement means or methods}
- U B29C 66/91212**
- • • • • {involving measurement means being part of the welding jaws, e.g. integrated in the welding jaws}
- B29C 66/91213**
- • • • • • {and measuring the electrical resistance of a resistive element belonging to said welding jaws, said element being, e.g. a thermistor}
- B29C 66/91214**
- • • • • • {by measuring the electrical resistance of a resistive element belonging to one of the parts to be welded, said element acting, e.g. as a thermistor}
- U B29C 67/00** **Shaping techniques not covered by groups [B29C 39/00](#) - [B29C 65/00](#), [B29C 70/00](#) or [B29C 73/00](#)**
- U 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
- B29C 67/0074**
- • {using only solid materials, e.g. laminating sheet material precut to local cross sections of the 3D object}
- U B29C 67/20**
- for porous or cellular articles, e.g. of foam plastics, coarse-pored {(chemical aspects of working up macro-molecular substances to porous or cellular articles [C08J 9/00](#))}
- U B29C 67/22**
- • by internal pressure generated in the material, e.g. swelling, foaming {not used}
- WARNING
From 1st April 1995 on the groups [B29C 67/22](#) - [B29C 67/2295](#) are no longer used for the classification of new documents. Documents from the backlog of these groups are in the process of being systematically transferred to [B29C 44/00](#)

- B29C 67/223 • • • {for articles of indefinite length (not used, [see see B29C 44/20](#))}
- B29C 67/225 • • • • {on preformed parts (not used, [see see B29C 44/32](#))}
- B29C 67/228 • • • {Component parts, details or accessories; auxiliary operations (not used, [see see B29C 44/34](#))}
- 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](#) [per se](#) [C04B](#))}
- U B29C 69/00 Combinations of shaping techniques not provided for in a single one of main groups [B29C 39/00](#) - [B29C 67/00](#), e.g. associations of moulding and joining techniques; Apparatus therefore {(B29C 47/0038 takes precedence)}**
- U 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 50/545](#); [B29C 49/4278](#), [B29C 51/268](#) take precedence)}
- U B29C 69/002 • • {Winding (cutting of individual length [B26D](#))}
- B29C 69/003 • • • {and cutting longitudinally, e.g. for making O-rings; chain links, insulation tubes}
- 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 see B65C](#), in combination with box-making [B31B 1/90](#); labelling in general [B65C](#))}
- U 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 70/04 • comprising reinforcements only, e.g. self-reinforcing plastics
- U B29C 70/06 • • Fibrous reinforcements only
- U B29C 70/10 • • • characterised by the structure of fibrous reinforcements, {e.g. hollow fibres}
- B29C 70/12 • • • • using fibres of short length, e.g. in the form of a mat {(non-woven fabrics [per se](#) [per se](#) [D04H 1/00](#))}
- B29C 70/16 • • • • using fibres of substantial or continuous length {(non-woven fabrics [per se](#) [per se](#) [D04H 3/00](#))}
- B29C 70/22 • • • • • oriented in at least two directions forming a two dimensional structure {(woven fabrics [per se](#) [per se](#) [D03D](#); knitted fabrics [per se](#) [per se](#) [D04D](#); braid [per se](#) [per se](#) [D04C](#))}
- B29C 70/28 • • Shaping operations therefor

NOTES

1. This group [covers](#) [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~~ *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~~ *per se*, i.e. independently of their shaping, which is covered by group [B29B 15/08](#)

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~~ *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.

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~~ *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~~ *per se*, i.e. independently of their shaping, which is covered by group [B29B 15/00](#)

U 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](#))

U B29C 71/02 • Thermal after-treatment {([B29C 71/0063](#) and [B29C 71/0072](#) take precedence)}

B29C 2071/025 • • {Quenching, i.e. rapid cooling of an object}

B29C 2071/027 • • {Tempering, i.e. heating an object to a high temperature and quenching it}

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](#) }

B29C 73/16 • Auto-repairing or self-sealing arrangement or agents (sealing compositions, ~~see see~~ section [G](#), e.g. [C09K 3/10](#) {; incorporating auto-repairing or self-sealing arrangements or agents on or into tyres [B29D 30/0685](#))}

U B29C 2947/00 Indexing scheme relating to extrusion moulding

U B29C 2947/92 • Measuring, controlling or regulating

U B29C 2947/92504 • • Controlled parameter

B29C 2947/92685 • • Density, e.g. per unit length or area

Project: N/A (B29D)

- U 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](#)})
- U B29D 11/00009 · {Production of simple or compound lenses}
- U B29D 11/00432 · · {Auxiliary operations, e.g. machines for filling the moulds ([B29D 11/00125](#) takes precedence)}
- B29D 11/00461 · · · {Adjusting the refractive index, e.g. after implanting}
- U B29D 11/00605 · {Production of reflex reflectors}
- B29D 11/00615 · · {moulded by partially embedding reflective elements, e.g. glass beads, into the surface of a support, e.g. to make prefabricated road markings (dispensing reflective beads on road markings ~~in-situ~~ [in situ](#) [E01C 23/163](#))}
- 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)}
- U B29D 30/0601 · · {Vulcanising tyres; Vulcanising presses for tyres}
- U B29D 30/0606 · · · {Vulcanising moulds not integral with vulcanising presses (for solid tyres [B29D 30/02](#))}
- U B29D 2030/0607 · · · · {Constructional features of the moulds (moulds or cores in general [B29C 33/00](#))}
- B29D 2030/0616 · · · · {Surface structure of the mould, e.g. roughness, arrangement of slits, grooves or channels}
- U B29D 30/08 · · Building tyres
- U B29D 30/20 · · · by the flat-tyre method, i.e. building on cylindrical drums
- U B29D 30/24 · · · · Drums
- B29D 30/244 · · · · · {for manufacturing substantially cylindrical tyre components with cores or beads, e.g. carcasses (mechanisms for folding layers around cores or blades ~~per se~~ [per se](#) [B29D 30/32](#))}
- B29D 30/36 · · Expansion of tyres in a flat form {, i.e. expansion to a toroidal shape independently of their building-up process}, e.g. of tyre built by the flat-tyre method or by jointly covering two bead-rings

Project: N/A (B29K)

- B29K 2059/00** Use of polyacetals {, e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, as moulding material {(as such [C08L 59/00](#))}
- B29K 2259/00** Use of polyacetals {, e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, as reinforcement {(as such [C08L 59/00](#))}
- B29K 2459/00** Use of polyacetals {, e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, as filler {(as such [C08L 59/00](#))}
- B29K 2659/00** Use of polyacetals {, e.g. POM, i.e. polyoxymethylene; or derivatives thereof}, for preformed parts, e.g. inserts {(as such [C08L 59/00](#))}
- B29K 2859/00** {Use of polyacetals, e.g. POM, i.e. polyoxymethylene; or derivatives thereof , as mould material (as such [C08L 59/00](#))}

Project: N/A (B29L)**U B29L 2031/00**

B29L 2031/56

Other particular articles

- Stoppers or lids for bottles, jars, or the like {, e.g. closures}

Project: N/A (B30B)**U B30B 9/00**

U B30B 9/02

Presses specially adapted for particular purposes

- 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 9/22

- • using a flexible member, e.g. diaphragm, urged by fluid pressure

U B30B 15/00

B30B 15/16

Details of, or accessories for, presses; Auxiliary measures in connection with pressing (safety devices [F16P](#))

- Control arrangements for fluid-driven presses (pumps [per se](#) [per se](#) [F04](#); hydraulic accumulators [per se](#) [per se](#) [F15B](#); valves [per se](#) [per se](#) [F16K](#); control devices in general [G05](#))

Project: N/A (B31B)

B31B 1/00

Box, carton, envelope or bag making machinery characterised by performing specific operations (machinery for performing operations of general application, [see see](#) the appropriate subclasses)**NOTE**

Envelope or bag making machinery characterised by performing specific operations is classified in the respective subgroups of group [B31B 19/00](#) (or of groups [B31B 23/00](#) - [B31B 29/00](#), [B31B 37/00](#) - [B31B 41/00](#))

U B31B 1/14

- Cutting, e.g. perforating, punching, slitting, trimming {(means for removing cut-out material or waste [B26D 7/18](#))}

B31B 1/20

- • Cutting sheets or blanks {, e.g. cutting corners, or involving scoring or printing or embossing (surface scoring [per se](#) [per se](#) [B31B 1/25](#); printing or embossing [per se](#) [per se](#) [B31B 1/88](#))}

U B31B 3/00**Machinery characterised by making boxes or cartons by folding single-piece sheets, blanks, or webs ([B31B 5/00](#) takes precedence)**

B31B 3/02

- and having means for feeding or positioning sheets, blanks, or webs {(not used; [see see](#) [B31B 1/02](#))}

B31B 3/14

- and having means for cutting, e.g. perforating, punching, slitting, trimming {(not used; [see see](#) [B31B 1/14](#))}

U B31B 3/26

- and having means for folding sheets, blanks, or webs

U B31B 3/28

- • around mandrels, including bottom-forming operations

B31B 3/30

- • • the mandrels moving {, e.g. with independent mandrels or with mandrels fixed on an endless chain}

B31B 3/32

- • • • in circular paths {, e.g. with radially extending mandrels on a rotating drum}

U B31B 5/00**Machinery characterised by making boxes or cartons by folding single-piece sheets which can be set-up from a collapsed condition, including setting-up and recollapsing to break creases**

B31B 5/02

- and having means for feeding or positioning sheets {(not used; [see see](#) [B31B 1/02](#))}

- B31B 5/14 • and having means for cutting, e.g. perforating, punching, slitting, trimming {(not used; [see see B31B 1/14](#))}
- U B31B 5/74 • and having means for effecting auxiliary operations
- B31B 5/76 • • Opening or distending flattened articles {, e.g. collapsed blanks, including arrangements therefor; Setting-up of boxes}
- B31B 5/80 • • • pneumatically {, i.e. with suction cups for totally or partially opening the collapsed blanks or by introducing a jet of gas into the collapsed blanks, e.g. with means for recollapsing or breaking creases}
- 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](#) - [B31B 37/00](#) take precedence; {[B31B31/00](#), [B31B33/00](#), [B31B35/00](#) takes precedence})**
- B31B 41/00 Machinery characterised by making envelopes or bags of other specific form or construction {, i.e. not particularly otherwise provided for}**

Project: N/A (B31D)

- U **B31D 1/00 Multiple-step processes for making flat articles; {Making flat articles}**
- B31D 1/0037 • {the articles being toilet seat covers (toilet seat covers [per se per se A47K 13/14](#))}
- U B31D 1/0075 • {by assembling, e.g. by laminating ([B31D 1/0012](#) - [B31D 1/0068](#) take precedence)}
- U B31D 1/0081 • • {by attaching individual objects to webs or sheets}
- B31D 1/0087 • • • {the webs or sheets being provided with apertures for the objects, e.g. with means for making the apertures}
- U **B31D 3/00 Making articles of cellular structure, e.g. insulating board**
- B31D 3/02 • Honeycombed structures {, i.e. the cells having an essentially hexagonal section}

Project: N/A (B31F)

- U **B31F 1/00 Mechanical deformation of paper or cardboard without removing material, e.g. in combination with laminating**
- U B31F 1/0003 • {Shaping by bending, folding, twisting, straightening, flattening or rim-rolling; Shaping by bending, folding or rim-rolling combined with joining; Apparatus therefor (shaping of tube ends [B31F 1/008](#))}
- B31F 1/0006 • • {Bending or folding; Folding edges combined with joining; Reinforcing edges during the folding thereof; (creasing [B31F 1/08](#), crêping paper [B31F 1/12](#), corrugating [B31F 1/20](#); bending and joining [B31F 1/0045](#); Reinforcing edges [per se per se B31F 5/08](#); making wound articles [B31C](#), folding thin material [per se per se B65H 45/00](#))}
- U B31F 1/0045 • • {Bending or folding combined with joining (Folding edges combined with joining [B31F 1/0016](#), [B31F 1/0029](#))}
- U B31F 1/0048 • • • {Bending plates, sheets or webs at right angles to the axis of the article being formed and joining the edges}
- U B31F 1/0061 • • • • {for making articles of indefinite length}
- B31F 1/0064 • • • • • {using internal forming surfaces, on, e.g. mandrels}

- U B31F 1/20 • Corrugating; Corrugating combined with laminating to other paper or cardboard layers
- U B31F 1/24 • • Making webs in which the channel of each corrugation is transverse to the web feed
- B31F 1/30 • • • Tools secured to endless chains {, e.g. toothed belts; combined with uniting the corrugated web to flat webs}

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~~**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~~**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](#), [B32B 11/04](#), [B32B 13/04](#), [B32B 15/04](#), [B32B 19/04](#), [B32B 21/04](#), [B32B 23/046](#) - [B32B 23/12](#), [B32B 25/04](#), [B32B 27/06](#), [B32B 29/002](#).

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](#). For a cellulosic plastic layer next to a metal layer or to a wood layer [B32B 23/042](#) or [B32B 23/044](#), 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](#).

WARNING

The following IPC are not used in the CPC scheme Subject matter covered by theses 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](#)

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.

U B32B 5/18 **B32B 5/20**

- characterised by features of a layer {of} foamed material
- • foamed ~~in-situ~~ *in situ*

U	B32B 17/00	Layered products essentially comprising sheet glass, or glass, slag, or like fibres
U	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)}
U	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 - 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}
U	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)}
U	B32B 17/1044	• • • • • {Invariant transmission}
	B32B 17/10449	• • • • • • {Wavelength selective transmission (filters per se per se G02B 5/20)}
	B32B 17/10458	• • • • • • {Polarization selective transmission (polarizing elements per se per se G02B 5/30)}
	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 covers all synthetic resins except those covered by B32B 25/00 or B32B 23/00
U	B32B 27/30	• comprising vinyl {(co)polymers; comprising acrylic (co)polymers}
	B32B 27/304	• • {comprising vinyl halide (co)polymers, e.g. PVC, PVDC, PVF , PVDF}
	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 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)}

Project: MP0245 (B32B)

U	B32B 38/00	Ancillary operations in connection with laminating processes
M	B32B 38/0012	• {Mechanical treatment, e.g. roughing roughening , deforming, stretching}
		NOTE
		When classifying in group B32B 38/0012 , the treatment can be further indexed by using the classified into indexing codes chosen from B32B 38/0012 and subgroups B32B 2038/0016-B32B 2038/0028

Project: N/A (B32B)

- U B32B 2262/00** **Composition of fibres which form a fibrous or filamentary layer or are present as additives**
- U B32B 2262/02 · Synthetic macromolecular fibres
 - U B32B 2262/0223 · · Vinyl resin fibres
 - B32B 2262/0238 · · · Vinyl halide, e.g. PVC, PVDC, PVF, PVDF

Project: MP0207 (B32B)

- U B32B 2262/10 · Inorganic fibres (layered products comprising a layer of natural mineral fibres [B32B 19/00](#))
- M B32B 2262/106 · · Carbon fibres, e.g. graphite fibres

Project: N/A (B32B)

- 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](#)
 - U B32B 2264/0228 · · · Vinyl resin particles
 - B32B 2264/0242 · · · · Vinyl halide, e.g. PVC, PVDC, PVF, PVDF
- U B32B 2266/00** **Composition of foam**
- U B32B 2266/02 · Organic
 - U B32B 2266/0214 · · Materials belonging to [B32B 27/00](#)
 - U B32B 2266/0221 · · · Vinyl resin
 - B32B 2266/0235 · · · · Vinyl halide, e.g. PVC, PVDC, PVF, PVDF

Project: MP0227 (B32B)

- U B32B 2310/00** **Treatment by energy or chemical effects**
- D B32B 2310/02 · Not used
 - M B32B 2310/021 · · using electrical effects ([B32B 2310/08](#) and [B32B 2310/12](#) take precedence)
 - M B32B 2310/022 · · · Electrical resistance
 - M B32B 2310/024 · · · Peltier effect
 - M B32B 2310/025 · · · Electrostatic charges
 - M B32B 2310/027 · · using friction
 - M B32B 2310/028 · · using vibration, e.g. sonic or ultrasonic
 - M B32B 2310/04 · · using liquids, gas or steam
 - M B32B 2310/0409 · · · using liquids
 - M B32B 2310/0418 · · · · other than water
 - M B32B 2310/0427 · · · · Liquified gases
 - M B32B 2310/0436 · · · · Oil
 - M B32B 2310/0445 · · · using gas or flames ([B32B 2310/0427](#) takes precedence)
 - M B32B 2310/0454 · · · · Hot air
 - M B32B 2310/0463 · · · · other than air
 - M B32B 2310/0472 · · · · · inert gas
 - M B32B 2310/0481 · · · · · Ozone
 - M B32B 2310/049 · · using steam or damp

- M B32B 2310/08 • ▸ by wave energy or particle radiation
- M B32B 2310/0806 • • ▸ using electromagnetic radiation
- M B32B 2310/0812 • • • ▸ using induction
- M B32B 2310/0818 • • • • ▸ using eddy currents
- M B32B 2310/0825 • • • ▸ using IR radiation
- M B32B 2310/0831 • • • ▸ using UV radiation
- M B32B 2310/0837 • • • ▸ using actinic light
- M B32B 2310/0843 • • • ▸ using laser
- M B32B 2310/085 • • • ▸ using X-ray
- M B32B 2310/0856 • • • ▸ using gamma-ray
- M B32B 2310/0862 • • • ▸ using micro-wave
- M B32B 2310/0868 • • • ▸ using radio frequency
- M B32B 2310/0875 • • ▸ using particle radiation
- M B32B 2310/0881 • • • ▸ using ion-radiation, e.g. alpha-rays
- M B32B 2310/0887 • • • ▸ using electron radiation, e.g. beta-rays
- M B32B 2310/0893 • • • ▸ using neutron radiation
- M B32B 2310/12 • ▸ using dielectric properties
- M B32B 2310/14 • ▸ Corona, ionisation, electrical discharge, plasma treatment

Project: N/A (B41C)**U B41C 1/00**

B41C 1/055

Forme preparation

- 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](#)})

Project: N/A (B41F)

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 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 33/00

Indicating, counting, warning, control, or safety devices (ink supply or metering devices [B41F 31/02](#); such devices in general, [see see](#) the relevant subclasses, e.g. counting in general [G06M](#))

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 see](#) the relevant subclasses)

NOTES

1. This subclass ~~covers~~[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~~[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.

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~~[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 2/21
 - • • for multi-colour printing
- B41J 2/2103
 - • • • {Features not dealing with the colouring process *per se*, e.g. construction of printers or heads, driving circuit adaptations}
- 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 11/48
 - Apparatus for condensed record, tally strip, or like work using two or more papers, or sets of papers, {e.g. devices for switching over from handling of copy material in sheet form to handling of copy material in continuous form and *vice-versa* or point-of-sale printers comprising means for printing on continuous copy material, e.g. journal for tills, and on single sheets, e.g. cheques or receipts ([B41J 15/042](#) takes precedence; simultaneous conveyance of sheets or strips [B41J 3/62](#))}

Project: N/A (B41L)

B41L

APPARATUS OR DEVICES FOR MANIFOLDING, DUPLICATING, OR PRINTING FOR OFFICE OR OTHER COMMERCIAL PURPOSES; ADDRESSING MACHINES OR LIKE SERIES-PRINTING MACHINES (printing presses or machines for industrial purposes [B41F](#); stamps, stamping or numbering devices [B41K](#))

NOTES

1. This subclass ~~does not cover~~ *does not cover* constituent parts common to manifolding by means of pressure-sensitive layers or intermediaries, to apparatus or machines for duplicating or printing for office or other commercial purposes, or to addressing machines or like series-printing machines, which are covered by subclass [B41F](#).
2. In this subclass, as indicated by the references, groups [B41L 15/00](#) and [B41L 17/00](#) are intended to cover letterpress and lithographic printing apparatus only in so far as it is specially adapted for office or other commercial purposes; the general constructions or features of apparatus of these types are classified in subclass [B41F](#).

~~Constructions or features determining classification in these groups are, for example:—
ease of operation by clerical staff, cleanliness of operation in non-industrial environments, the use of printing surfaces constructed for the production of a limited number of copies.~~
Constructions or features determining classification in these groups are, for example: ease of operation by clerical staff, cleanliness of operation in non-industrial environments, the use of printing surfaces constructed for the production of a limited number of copies.

3. In this subclass, the following terms are used with the meanings indicated:

- "manifolding" means the obtaining of several copies simultaneously by means of pressure-sensitive layers when making an original;
- "duplicating" means the obtaining of successive copies from a master, e.g. a hectographic image;
- "stencilling" involves the use of a printing surface which is perforated to form the image, the ink flowing through the perforations on the copy material.

B41L 23/00 Devices for treating the surfaces of sheets, webs, or other articles in connection with printing (as a final step in the manufacture of such articles, **see** the relevant places, e.g. [B29C 71/00](#), [D21H 23/00](#) or [D21H 25/00](#); after-treatment of prints [B41M 7/00](#))

B41L 39/00 Indicating, counting, warning, control, or safety devices (ink-level control devices [B41L 27/04](#); such devices in general, **see** relevant subclasses, e.g. counting in general [G06M](#))

Project: N/A (B41M)

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](#))

U 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 5/0023 • {Digital printing methods characterised by the inks used (inks **per se** [C09D 11/00](#))}

U 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](#))}

B41M 9/00 Processes wherein make-ready devices are used (make-ready devices **per se** [B41N 6/00](#))

Project: N/A (B41N)

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** [G03F 7/32](#))}

Project: N/A (B42B)

U B42B 5/00 Permanently attaching together sheets, quires or signatures otherwise than by stitching (by deformation thereof [B31F](#); by adhesive peculiar to bookbinding [B42C 9/00](#))

- U B42B 5/08
 - by finger, claw or ring-like elements passing through the sheets, quires or signatures
- U B42B 5/10
 - • the elements being of castellated or comb-like form
- U B42B 5/103
 - • • {Devices for assembling the elements with the stack of sheets}
- B42B 5/106
 - • • • {combined with manufacturing of the elements (manufacturing from wire ~~per se~~ ~~per se~~ [B21F 1/04](#), [B21F 45/16](#))}
- U B42B 5/12
 - • the elements being coils
- U B42B 5/123
 - • • {Devices for assembling the elements with the stack of sheets}
- B42B 5/126
 - • • • {combined with manufacturing of the elements (manufacturing from wire ~~per se~~ ~~per se~~ [B21F 3/04](#), [B21F 45/16](#))}

Project: N/A (B43L)

- U B43L 7/00

Straightedges (guides; curve rulers or templates [B43L 13/20](#); straightedges characterised by the provision of indicia or the like for measuring, e.g. rulers or tapes with measuring scales or marks for direct reading, [G01B](#))

NOTE

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

- "straightedge" means an instrument or its edge serving the purpose of acting as a guide for the drawing of a straight line.

- B43L 7/08
 - with arrangements for attaching additional drawing equipment, e.g. for hatching, dotting

Project: N/A (B43M)

- B43M 1/00

Fixing seals on documents (embossing dies [B44B](#); seals ~~per se~~ ~~per se~~ [G09F 3/00](#))

Project: N/A (B44C)

- U B44C 3/00

Processes, not specifically provided for elsewhere, for producing ornamental structures
- U B44C 3/04
 - Modelling plastic materials, e.g. clay
- B44C 3/046
 - • {using a modelling surface, e.g. plate}

Project: N/A (B44D)

- B44D

PAINTING OR ARTISTIC DRAWING, NOT OTHERWISE PROVIDED FOR; PRESERVING PAINTINGS; SURFACE TREATMENT TO OBTAIN SPECIAL ARTISTIC SURFACE EFFECTS OR FINISHES (surface treatment in general, ~~see~~ ~~see~~ the relevant places, e.g. applying liquids or other fluent materials [B05](#))

Project: N/A (B60B)

- B60B 5/00

Wheels, spokes, disc bodies, rims, hubs, wholly or predominantly made of non-metallic material (wheel cover discs [B60B 7/00](#); wheels of high resiliency [B60B 9/00](#) {; wheel bodies comprising rail-engaging elements characterised by use of non-metallic material [B60B 17/0003](#))}
- B60B 7/00

Wheel cover discs, rings, or the like, for ornamenting, protecting, {venting,} or obscuring, wholly or in part, the wheel body, rim, hub, or tyre sidewall {, e.g. wheel cover discs, wheel cover discs with cooling fins (wheels with cooling fins not provided on the wheel cover disc [B60B 19/10](#); apparatus or tools for removing or attaching cover discs hub caps or the like [B60B 31/06](#))}

- U B60B 9/00** **Wheels of high resiliency {, e.g. with conical interacting pressure-surfaces (resilient wheels comprising rail-engaging elements [B60B 17/0027](#))}**
 B60B 9/005 · {Comprising a resilient hub (hubs ~~per se~~ ~~per se~~ [B60B 27/00](#))}
- U B60B 29/00** **Apparatus or tools for mounting or dismounting wheels {(mounting of wheels at assembly lines [B62D 65/12](#))}**
 B60B 29/003 · {Wrenches, e.g. of the ratchet type ([B60B 29/001](#) takes precedence; wrenches ~~per se~~ ~~per se~~ [B25B 13/00](#))}
 B60B 29/005 · · {hand-driven operating with multiplicated forces ([B60B 29/004](#) takes precedence; hand-driven gear-operated wrenches ~~per se~~ ~~per se~~ [B25B 17/00](#), with torque amplification [B25B 17/02](#))}
 B60B 29/006 · · {with electric or pneumatic drive (power-driven nut setting or loosening tool ~~per se~~ ~~per se~~ [B25B 21/00](#))}
- U B60B 31/00** **Apparatus or tools for assembling or disassembling wheels**
 B60B 31/02 · for tightening or straightening wire spokes ~~in situ~~ *in situ*; for extracting spokes from wheels

Project: N/A (B60C)

- B60C 9/00** **Reinforcements or ply arrangement of pneumatic tyres (inserts having reinforcing means [B60C 5/08](#); bead structure, e.g. turnup or overlap construction, [B60C 15/00](#); tyre cords ~~per se~~ ~~per se~~ [D02G 3/48](#); fabrics ~~per se~~ ~~per se~~ [D03D](#), [D04H](#); metal ropes or cables ~~per se~~ ~~per se~~ [D07B 1/06](#)){B}**
NOTE
 When classifying in this group, classification is also made in subclass [B32B](#) insofar as any layered product is concerned
- U B60C 11/00** **Tyre tread bands; Tread patterns; Anti-skid inserts**
 U B60C 11/14 · Anti-skid inserts, e.g. vulcanised into the tread band
 U B60C 11/16 · · of plug form, e.g. made from metal, textile
 B60C 11/1637 · · · {Attachment of the plugs into the tread, *e.g. screwed*}; ~~e.g. screwed~~
- U B60C 19/00** **Tyre parts or constructions not otherwise provided for**
 B60C 19/12 · Puncture preventing arrangements ([B60C 9/00](#) takes precedence; inflatable inserts having reinforcing means [B60C 5/08](#) {; sealing compositions ~~per se~~ ~~per se~~ [B29C 73/163](#); devices for introducing sealing compositions into the tyre [B29C 73/166](#))}
- U B60C 23/00** **Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles (measuring in general [G01](#), e.g. [G01L 17/00](#); remote signalling in general [G08](#)); Arrangement of tyre inflating devices on vehicles, e.g. of pumps, of tanks {(supplying air for tyre inflation [B60S 5/04](#))}; Tyre cooling arrangements**
 U B60C 23/02 · Signalling devices actuated by tyre pressure {(hand-held tyre pressure gauges [G01L 17/00](#))}
 U B60C 23/04 · · mounted on the wheel or tyre
 U B60C 23/0408 · · · {transmitting the signals by non-mechanical means from the wheel or tyre to a vehicle body mounted receiver}
 U B60C 23/0422 · · · · {characterised by the type of signal transmission means}
 U B60C 23/0433 · · · · · {Radio signals}
 U B60C 23/0435 · · · · · {Vehicle body mounted circuits, e.g. transceiver or antenna fixed to central console, door, roof, mirror or fender}

B60C 23/0437	• • • • • {Means for detecting electromagnetic field changes not being part of the signal transmission per se <i>per se</i> , e.g. strength, direction, propagation or masking}
B60C 23/0438	• • • • • {comprising signal transmission means; <i>{comprising signal transmission means</i> , e.g. for a bidirectional communication with a corresponding wheel mounted receiver}
U B60C 23/0447	• • • • • {Wheel or tyre mounted circuits}
B60C 23/045	• • • • • {Means for detecting electromagnetic field changes being not part of the signal transmission per se <i>per se</i> , e.g. strength, direction, propagation or masking}; e.g. strength, direction, propagation or masking}
U B60C 23/0455	• • • • • {Transmission control of wireless signals}
B60C 23/0461	• • • • • {externally triggered; <i>{externally triggered</i> , e.g. by wireless request signal, magnet or manual switch}
B60C 23/18	• Tyre cooling arrangements {, e.g. heat shields (wheels with cooling fins B60B 19/10)}
U 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 25/0509	• • {for inserting additional parts; <i>{for inserting additional parts</i> , e.g. support rings, sensors}
B60C 25/0512	• • {Integrated systems performing multiple operations, e.g. assembly lines}
U B60C 25/0563	• • {Tools interacting with the tyre and moved in relation to the tyre during operation}
B60C 25/0593	• • • {Multi-functional tools for performing at least two operations, e.g. bead breaking and bead seeking}
U B60C 25/14	• Apparatus or tools for spreading or locating tyre beads
B60C 25/145	• • {for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims, <i>e.g. air filling bell</i> }; e.g. air filling bell}
U B60C 27/00	Non-skid devices temporarily attachable to resilient tyres or resiliently-tyred wheels {(vehicle mounted non-skid chains B60B 39/00)}
U B60C 27/02	• extending over restricted arcuate parts of the circumference of the tread (B60C 27/20 takes precedence)
B60C 27/0207	• • {involving lugs or rings taking up wear, e.g. chain links, chain connectors (chain couplings for, e.g. hoisting F16G 15/00)}
U B60C 27/06	• extending over the complete circumference of the tread, e.g. made of chains {or cables}(B60C 27/20 takes precedence)
B60C 27/067	• • {Special chain layout; , i.e. distribution of chain portions over the tread, e.g. arranged in polygon pattern}
B60C 27/08	• • involving lugs or rings taking up wear, {, e.g. chain links, chain connectors (chain couplings for, e.g. hoisting F16G 15/00)}
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 <i>per se</i>, valve dust caps F16K)

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 1/01
- B60D 1/06
- Traction couplings or hitches characterised by their type
 - • Ball-and-socket hitches {, e.g. constructional details, auxiliary devices, their arrangement on the vehicle}
- U B60D 1/24
- B60D 1/28
- characterised by arrangements for particular functions
 - • for preventing unwanted disengagement, {e.g. safety appliances
- U B60D 1/30
- • for sway control, {e.g. stabilising or anti-fishtail devices; Sway alarm means}
- U B60D 1/32
- • • involving damping devices
- B60D 1/322
- • • • {using fluid dampers (fluid dampers ~~per se~~ ~~per se~~ [F16F 9/00](#))}
- B60D 1/325
- • • • {using friction dampers (friction dampers ~~per se~~ ~~per se~~ [F16F 7/02](#) - [F16F 7/08](#))}
- U B60D 1/34
- • • involving springs
- B60D 1/345
- • • • {the springs being of the bar or leaf type (torsion bars ~~per se~~ ~~per se~~ [F16F 1/14](#), leaf springs ~~per se~~ ~~per se~~ [F16F 1/18](#))}
- U B60D 1/48
- characterised by the mounting
- B60D 1/50
- • resiliently mounted ([B60D 1/30](#) takes precedence {; [B60D 1/182](#) takes precedence; springs or dampers ~~per se~~ ~~per se~~ [F16F](#))}
- U B60D 1/58
- Auxiliary devices
- B60D 1/60
- • Covers, caps or guards {, e.g. comprising anti-theft devices}

Project: N/A (B60G)

- B60G 3/00** Resilient suspension for a single wheel (pivoted suspension arms ~~per se~~ ~~per se~~, attachment thereof to sprung part of the vehicle, buffer means for limiting movement of arms [B60G 7/00](#); {rigid axle suspensions [B60G 9/00](#);} characterised by arrangement, location or type of springs [B60G 11/00](#))
- U B60G 5/00** Resilient suspensions for a set of tandem wheels or axles having interrelated movement
- U B60G 5/04
- with two or more pivoted arms, the movements of which are resiliently interrelated, {e.g. the arms being rigid}
- B60G 5/06
- • the arms turning on a common pivot {, e.g. being rigid}
- U B60G 7/00** Pivoted suspension arms; Accessories thereof (means for maintaining substantially constant wheel camber during suspension movement [B60G 3/26](#); {articulations for wheels [B60G 5/00](#); leaf spring attaching means [B60G 11/10](#), [B60G 11/12](#); trailing arm twist beam axle attaching means [B60G 21/052](#); articulations in general [F16C](#)})
- B60G 7/005
- {Ball joints ([B60G 7/006](#) takes precedence; for steering linkage [B62D 7/16](#); ball joints ~~per se~~ ~~per se~~ [F16C 11/06](#))}
- B60G 11/00** Resilient suspensions characterised by arrangement, location or kind of springs (single wheel suspension by pivoted arm resilient in itself [B60G 3/00](#); adjusting spring characteristic [B60G 17/00](#); springs ~~per se~~ ~~per se~~ [F16F](#))

NOTE

The term "torsion bar" includes torsion tube or the like. The term "rubber" includes synthetic substitutes of a similar nature.

	B60G 13/00	Resilient suspensions characterised by arrangement, location or type of vibration dampers (adjusting damping effect B60G 17/06; vibration dampers per se per se F16F)
	B60G 15/00	Resilient suspensions characterised by arrangement, location or type of combined spring and vibration damper, e.g. telescopic type (combined spring and vibration-dampers per se per se F16F)
U	B60G 17/00	Resilient suspensions having means for adjusting the spring or vibration-damper characteristics, for regulating the distance between a supporting surface and a sprung part of vehicle or for locking suspension during use to meet varying vehicular or surface conditions, e.g. due to speed or load {(levelling or stabilising systems for tippers B60P 1/045)}
U	B60G 17/015	• the regulating means comprising electric or electronic elements (B60G 17/002 , B60G 17/005 take precedence)
U	B60G 17/016	• • characterised by their responsiveness, when the vehicle is travelling, to specific motion, a specific condition, or driver input {(B60G 17/017 takes precedence)}
	B60G 17/0165	• • • { NPC8 } to an external condition, e.g. rough road surface, side wind
	B60G 17/02	• Spring characteristics {, e.g. mechanical springs and mechanical adjusting means}(B60G 17/005 , B60G 17/015 take precedence)
U	B60G 17/04	• • fluid spring characteristics
	B60G 17/052	• • • Pneumatic spring characteristics (B60G 17/048 takes precedence {; valves per se per se F16K })
U	B60G 17/0523	• • • • {Regulating distributors or valves for pneumatic springs}
	B60G 17/0526	• • • • • {Distributor units, e.g. for retractable wheels (vehicles with retractable wheels per se per se B62D 61/12)}
	B60G 17/056	• • • Regulating distributors or valves {for hydropneumatic systems} (B60G 17/044 - B60G 17/048 , { B60G 17/0416 } take precedence; {Fluid interconnection systems to control vehicle inclination B60G 21/06 , B60G 21/10 }; valves per se per se F16K)
	B60G 17/06	• Characteristics of dampers {, e.g. mechanical dampers}(B60G 17/015 takes precedence)
	B60G 2204/00	Indexing codes related to suspensions per se per se or to auxiliary parts

Project: N/A (B60H)

U	B60H 1/00	Heating, cooling or ventilating devices (heating, cooling or ventilating devices providing other air treatment, the other treatment being relevant, B60H 3/00; ventilating solely by opening windows, doors, roof parts, or the like B60J; heating or ventilating devices for vehicle seats B60N 2/56; vehicle window or windscreen cleaners using air, e.g. defrosters, B60S 1/54)
		<u>NOTE</u> In this group and its subgroups, as well as in patent documents, the following abbreviation is used: • HVAC Heating, Ventilating and Air Conditioning
U	B60H 1/00007	• {Combined heating, ventilating, or cooling devices (control systems or mechanisms B60H 1/00642)}
U	B60H 1/00021	• • {Air flow details of the heating, ventilating and cooling [HVAC] devices}
U	B60H 1/00035	• • • {for sending an air stream of uniform temperature into the passenger compartment}

- B60H 1/0005
 - • • {the air being firstly cooled and subsequently heated or ~~vice-versa~~[vice versa](#)}
- U B60H 1/00357
 - {Air-conditioning arrangements specially adapted for particular vehicles}
- B60H 1/00371
 - • {for vehicles carrying large numbers of passengers, e.g. buses}
- B60H 1/00421
 - {Driving arrangements for parts of a vehicle air-conditioning ([B60H 1/3222](#) takes precedence; auxiliary drives ~~per se~~[per se](#) for vehicles [B60K 25/00](#))}
- B60H 1/00485
 - {Valves for air-conditioning devices, e.g. thermostatic valves (valves ~~per se~~[per se](#) [F16K](#); thermostatic valves ~~per se~~[per se](#) [G05D 23/02](#))}
- U B60H 1/02
 - the heat being derived from the propulsion plant {([B60H 1/00492](#) takes precedence)}
- B60H 1/14
 - • otherwise than from cooling liquid of the plant {, e.g. heat from the grease oil, the brakes, the transmission unit ([B60H 1/03](#) takes precedence)}
- U B60H 1/24
 - Devices purely for ventilating or where the heating or cooling is irrelevant (nozzles, air-diffusers [B60H 1/34](#))
- U B60H 1/26
 - • Ventilating openings in vehicle exterior; Ducts for conveying ventilating air
- B60H 1/265
 - • • {Openings in window or door past or pillars (door pasts ~~per se~~[per se](#) [B62D 25/14](#); [B60H 1/248](#) takes precedence)}

Project: N/A (B60J)

- U B60J 1/00
 - Windows; Windscreens; Accessories therefor ([B60J 10/00](#) takes precedence; air curtains instead of windows [B60J 9/04](#); {sealing strips for windshields [B60J 10/70](#); sealing sash guides for sliding window panes [B60J 10/74](#); glass partitions inside vehicles to protect occupants against personal attack [B60R 21/12](#))}**
- B60J 1/02
 - arranged at the vehicle front {, e.g. structure of the glazing, mounting of the glazing (on windscreen mounted antenna wire [H01Q 1/1271](#))}
- U B60J 5/00
 - Doors ([B60J 10/00](#) takes precedence; window aspects [B60J 1/00](#); {side board or tailgate structures for open load compartments [B62D 33/023](#))}**
- U B60J 5/04
 - arranged at the vehicle sides {(panel mounted arm-rests [B60N 2/466](#); wall liners [B60R 13/02](#); door edge guards [B60R 13/043](#); padded linings associated with the side doors [B60R 21/0428](#))}
- U B60J 5/0486
 - • {Special type}
- B60J 5/0487
 - • • {simplified doors related to cabins of, e.g. golf carts, tractors, jeeps, cranes, forklifts, etc.}
- B60J 7/00
 - 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](#))**
- B60J 7/02
 - of sliding type {, e.g. comprising guide shoes}
- B60J 7/04
 - • with rigid plate-like element or elements {, e.g. open roofs with harmonica-type folding rigid panels ([B60J 7/061](#) takes precedence)}
- B60J 7/053
 - • • sliding with final closing motion having vertical component to attain closed and sealed condition {, e.g. sliding under the roof}

Project: N/A (B60K)

- B60K 1/00 - B60K 8/00** Arrangement or mounting of propulsion units in vehicles (of control devices for such units [B60K 26/00](#); elastic mountings ~~per se~~ ~~per se~~ [F16F](#); propulsion units or their control ~~per se~~ ~~per se~~, ~~see~~ ~~see~~ the relevant classes)
- B60K 1/00** Arrangement or mounting of electrical propulsion units ([B60K 7/00](#) takes precedence; arrangement or mounting of plural diverse prime-movers for mutual or common propulsion [B60K 6/00](#); electric transmission arrangements [B60K 17/12](#); electric equipment or propulsion of electrically-propelled vehicles ~~per se~~ ~~per se~~ [B60L](#); current-collectors for power supply lines of electrically-propelled vehicles [B60L 5/00](#))
- 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~~ ~~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~~ ~~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

- B60K 11/00** Arrangement in connection with cooling of propulsion units (heating the interior space [B60H](#); cooling internal combustion engines ~~per se~~ ~~per se~~ [F01P](#))

- U B60K 13/00** Arrangement in connection with combustion air intake or gas exhaust of propulsion units (extensions for melting snow or ice on roads or like surfaces [E01H 5/00](#), [E01H 6/00](#); forming part of the engine [F01N](#); supplying combustion engines with combustible mixtures or constituents [F02M](#))

B60K 13/04	<ul style="list-style-type: none"> concerning exhaust ({collecting exhaust gases with central suction systems not forming part of vehicles, e.g. in workshops or tunnels B08B 15/002, otherwise along carriageways E01C 1/005;} extensions for melting snow on roads E01H 5/00, E01H 6/00; exhaust or silencing apparatus for internal combustion engines per se per se F01N; {pipes, joints or supports therefor F16L})
B60K 17/00	Arrangement or mounting of transmissions in vehicles (clutches per se per se , e.g. construction thereof, F16D ; gearing per se per se , e.g. construction thereof, F16H)
B60K 20/00	Arrangement or mounting of change-speed gearing control devices in vehicles (movable cabs having special adaptations of vehicle control devices B62D 33/06 ; such control devices per se per se F16H)
B60K 23/00	Arrangement or mounting of control devices for vehicle transmissions, or parts thereof, not otherwise provided for (movable cabs having special adaptations of vehicle control devices B62D 33/06 ; such control devices per se per se F16D , F16H)
U B60K 28/00	Safety devices for propulsion-unit control, specially adapted for, or arranged in, vehicles, e.g. preventing fuel supply or ignition in the event of potentially dangerous conditions (for electrically-propelled vehicles B60L 3/00 ; road vehicle drive control systems for purposes not related to the control of a particular sub-units B60W 30/00)
B60K 28/02	<ul style="list-style-type: none"> responsive to conditions relating to the driver ({see see provisionally also B60K 28/00})
B60K 28/08	<ul style="list-style-type: none"> responsive to conditions relating to the cargo, e.g. overload ({see see provisionally also B60K 28/00})
B60K 28/10	<ul style="list-style-type: none"> responsive to conditions relating to the vehicle ({see see provisionally also B60K 28/00})
B60K 28/12	<ul style="list-style-type: none"> responsive to conditions relating to doors or doors locks, e.g. open door ({see see provisionally also B60K 28/00})
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 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.

B60K 2350/00 -
B60K 2704/00

Arrangement or mounting of propulsion units in vehicles (of control devices for such units [B60K 26/00](#); elastic mountings ~~per se~~ ~~per se~~ [F16F](#); propulsion units or their control ~~per se~~ ~~per se~~, ~~see~~ ~~see~~ the relevant classes)

Project: N/A (B60L)

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](#))

B60L 13/00

Electric propulsion for monorail vehicles, suspension vehicles or rack railways; Magnetic suspension or levitation for vehicles ({tracks for Maglev-type trains [E01B 25/30](#);} electromagnets ~~per se~~ ~~per se~~ [H01F 7/06](#); linear motors ~~per se~~ ~~per se~~ [H02K 41/00](#))

U B60L 2240/00

Control parameters of input or output; Target parameters

B60L 2240/70

- Interactions with external data bases, e.g. traffic centres

U B60L 2260/00

Operating Modes

U B60L 2260/40

- Control modes

U B60L 2260/50

- by future state prediction

B60L 2260/52

- drive range estimation, e.g. of estimation of available travel distance

B60L 2260/56

- Temperature prediction, e.g. for pre-cooling

Project: N/A (B60N)

U 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](#)})

U 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](#))}

U B60N 2/50

- Seat suspension devices

U B60N 2/54

- using mechanical springs {(springs in general [F16F](#))}

B60N 2/548

- {Torsion springs, e.g. torsion helicoidal springs}

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](#))

B60N 3/08

- of receptacles for refuse, e.g. ash-trays (ashtrays ~~per se~~ ~~per se~~ [A24F](#))

B60N 3/16

- of cooking or boiling devices (cooking of boiling devices ~~per se~~ ~~per se~~ [A47](#), [F24C](#))

Project: N/A (B60P)

U B60P 1/00

Vehicles predominantly for transporting loads and modified to facilitate loading, consolidating the load, or unloading (vehicles for carrying harvested crops with means for self-loading or self-unloading [A01D 90/00](#); peculiar to refuse collecting-vehicles [B65F](#); loading or unloading vehicles by means not incorporated therein [B65G](#))

B60P 1/43

- using a loading ramp mounted on the vehicle (loading ramps ~~per se~~ ~~per se~~ [B65G 69/28](#))

Project: N/A (B60Q)**B60Q**

VEHICLE LIGHTING OR SIGNALLING (arrangement of signalling or lighting devices, the mounting or supporting thereof for rail vehicles [B61D](#), for cycles [B62J](#), for ships [B63B](#), for aircrafts [B64D](#); lighting in general, lighting devices ~~per se~~ [per se](#) [F21](#), [H05B](#); signalling in general [G08](#); electric switches ~~per se~~ [per se](#) [H01H](#))

NOTES

1. This subclass ~~covers~~ [covers](#) also:-
 - electric signalling of lighting circuits so far as specially arranged in vehicles;
 - arrangements or adaptations of lighting switches or signal-initiating means
2. Attention is drawn to the Note following the title of class [B60](#)
3. Attention is drawn to the following places :

B60K 28/00	Safety devices, e.g. sleeping driver
B60R 25/00	Anti theft
B62D	Driving assistance
B62D 15/02	Steering aids
B60K 31/0008	Cruise control
F21S 48/00	Lighting devices or systems specially adapted for vehicles
G01S	Infra red night vision
G01S 13/931	Anti Collision
G05D 1/00	Automatic pilot
G06K 9/00	Pattern recognition
G06T 3/00	Image transformation
G06T 5/00	Image enhancement
G06T 7/00	Image analysis
G08B 21/00	Alarms in general
G08G	Traffic control
G08G 1/16	Anti-collision systems
H04N	Television systems

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:

B60Q 1/128	covered by	B60Q 1/124
B60Q 1/132	covered by	B60Q 1/124
B60Q 1/136	covered by	B60Q 1/124

U 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~~ [per se](#) [G02B 6/0001](#))}

U 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~~ [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

- U B60Q 1/14 • • • having dimming means {(lighting power supply circuits in general [H05B](#))}
- B60Q 1/1407 • • • • {General lighting circuits comprising dimming circuits (dimming circuits ~~per se~~ ~~per se~~ [B60Q 1/1415](#))}
- B60Q 1/1438 • • • • {Actuating means for dimming masks or screens (adjustable screens ~~per se~~ ~~per se~~ [F21V 11/04](#))}
- U B60Q 3/00 Arrangements or adaptations of lighting devices for vehicle interior**
- U B60Q 3/02 • for lighting passenger or driving compartment
- 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~~ ~~per se~~ [B60J 1/00](#), sun roofs ~~per se~~ ~~per se~~ [B60J 7/00](#))}
- B60Q 3/0223 • • • {on or for seats, arm rests or head rests (vehicle seats ~~per se~~ ~~per se~~ [B60N 2/00](#))}
- B60Q 3/0226 • • • {on or for sun visors (sun visors ~~per se~~ ~~per se~~ [B60J 3/0204](#))}
- B60Q 3/023 • • • {on or for rear view mirrors (rear view mirror ~~per se~~ ~~per se~~ [B60R 1/00](#))}
- B60Q 3/0233 • • • {on or for door handles or hand grabs (door handles ~~per se~~ ~~per se~~ [B60N 3/02](#))}

Project: N/A (B60R)

- B60R 1/00 Optical viewing arrangements ({house mirrors and spies [A47G 1/00](#); } antiglare equipment, e.g. polarising, for windscreens or windows [B60J 3/00](#); {visual aids for tractors [B62D 49/0614](#); } devices ~~per se~~ ~~per se~~ [G02B](#))}**
- U B60R 1/02 • Rear-view mirror arrangements (periscope arrangements [B60R 1/10](#))
- 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}
- U B60R 11/00 Arrangements for holding or mounting articles, not otherwise provided for**
- B60R 11/04 • Mounting of cameras operative during drive; Arrangement of controls thereof relative to the vehicle (cameras ~~per se~~ ~~per se~~ [G03B](#))
- U 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](#))}**
- U 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 19/26 • • • comprising yieldable mounting means ({[B60R 19/38](#) takes precedence; } springs, shock absorbers, or means for damping vibrations ~~per se~~ ~~per se~~ [F16F](#))

- U 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](#))
- U B60R 21/01** • Electrical circuits for triggering {passive} safety arrangements, (e.g. airbags, safety belt tighteners,) in case of vehicle accidents or impending vehicle accidents {(electrical circuits for transmission of signals between steering wheel and the vehicle itself [B60R 16/027](#); for electrically actuating belt retractor locking means [B60R 22/343](#))}
- U B60R 21/013** • • including means for detecting collisions, impending collision or roll-over
- B60R 21/0132** • • • responsive to vehicle motion parameters {, e.g. to vehicle longitudinal or transversal deceleration or speed value}
- B60R 21/0134** • • • responsive to imminent contact with an obstacle {, e.g. using radar systems}
- U B60R 22/00** **Safety belts or body harnesses in vehicles (safety belts or body harnesses in general [A62B 35/00](#))**
- 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](#) - [B60R 22/48](#) take precedence over group [B60R 22/10](#)
- U B60R 22/18** • Anchoring devices
- U B60R 2022/1818** • • {Belt guides}
- B60R 2022/1837** • • • {comprising a universal mounting, e.g. spherical or cardan-type}
- U B60R 22/20** • • adjustable in position, e.g. in height
- B60R 22/206** • • • {Adjustable stop members for restraint systems comprising belt anchor vehicle mounted tracks, e.g. for passive seat belts}
- 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](#))

Project: N/A (B60S)

- U B60S 1/00** **Cleaning of vehicles (by apparatus not integral with vehicle [B60S 3/00](#); cleaning in general [B08B](#); de-icing of aircraft [B64D](#); heating arrangements specially adapted for transparent or reflecting areas [H05B 3/84](#))**
- U B60S 1/02** • Cleaning windscreens, windows or optical devices {(wind deflectors specially adapted for preventing soiling of windows or windscreens [B60J 1/2002](#))}
- U B60S 1/46** • • using liquid; Windscreen washers
- U B60S 1/48** • • • Liquid supply therefor
- B60S 1/52** • • • • Arrangement of nozzles; {Liquid spreading means} (nozzles ~~per se~~ [per se](#) [B05B](#))
- U 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 3/04 • for exteriors of land vehicles {([B60S 3/002](#), [B60S 3/004](#) take precedence; specially adapted for railway vehicles [B60S 3/006](#))}
- B60S 3/045 • • {Other hand-held cleaning arrangements, e.g. with sponges, brushes, scrapers or the like (brushes ~~per se~~ [per se](#) [A46B](#))}
- B60S 13/00** **Vehicle-manoeuving devices separate from the vehicle (vehicle lifting {e.g. liftable turntables} or pushing devices [B66F](#); {workshop equipment [B25H](#)})**

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~~ [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 1/00** **Arrangements of braking elements, i.e. of those parts where braking effect occurs {specially for vehicles}**
- U B60T 1/02 • acting by retarding wheels
- B60T 1/10 • • by utilising wheel movement for accumulating energy, e.g. driving air compressors (using propulsion unit as braking means, ~~see~~ [see](#) the relevant class)
- 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](#))**
- U B60T 8/17 • Using electrical or electronic regulation means to control braking {(detecting or indicating faulty operation [B60T 8/885](#))}
- B60T 8/174 • • characterised by using special control logic, e.g. fuzzy logic {,neural computing}

	B60T 8/32	<ul style="list-style-type: none"> 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 per se G01P 3/00)
U	B60T 8/34	<ul style="list-style-type: none"> having a fluid pressure regulator responsive to a speed condition
	B60T 8/42	<ul style="list-style-type: none"> having expanding chambers for controlling pressure {, i.e. closed systems}
	B60T 8/44	<ul style="list-style-type: none"> 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 8/48	<ul style="list-style-type: none"> connecting the brake actuator to an alternative or additional source of fluid pressure {, e.g. traction control systems}
U	B60T 11/00	Transmitting braking action from initiating means to ultimate brake actuator without power assistance or drive or where such assistance or drive is irrelevant (the power assistance or drive being essential B60T 13/00)
U	B60T 11/10	<ul style="list-style-type: none"> transmitting by fluid means, e.g. hydraulic
	B60T 11/24	<ul style="list-style-type: none"> Single initiating means operating on more than one circuit, e.g. dual circuits (multiple master cylinder units B60T 11/20)
U	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)
U	B60T 13/10	<ul style="list-style-type: none"> with fluid assistance, drive, or release
U	B60T 13/12	<ul style="list-style-type: none"> the fluid being liquid
U	B60T 13/16	<ul style="list-style-type: none"> using pumps directly, i.e. without interposition of accumulators or reservoirs
	B60T 13/18	<ul style="list-style-type: none"> with control of pump output delivery {, e.g. by distributor valves (B60T 13/167 takes precedence)}
U	B60T 13/24	<ul style="list-style-type: none"> the fluid being gaseous
U	B60T 13/26	<ul style="list-style-type: none"> Compressed-air systems
U	B60T 13/261	<ul style="list-style-type: none"> {systems with both indirect application and application by springs or weights and released by compressed air}
	B60T 13/265	<ul style="list-style-type: none"> {dependent systems, e.g. trailer systems}
	B60T 13/40	<ul style="list-style-type: none"> indirect, i.e. compressed air booster units {indirect systems}
U	B60T 13/403	<ul style="list-style-type: none"> {specially adapted for coupling with dependent systems, e.g. tractor-trailer systems}
	B60T 13/406	<ul style="list-style-type: none"> {specially adapted for transfer of two or more command signals, e.g. railway systems (with electrical control B60T 13/665)}
	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 per se F04)

Project: N/A (B60V)

U	B60V 1/00	Air-cushion (land vehicles, waterborne vessels, or aircraft adapted or modified to travel on air cushion B60V 3/00)
	B60V 1/22	<ul style="list-style-type: none"> provided with hydrofoils (hydrofoils per se per se B63B 1/24)

Project: N/A (B60W)

B60W

CONJOINT CONTROL OF VEHICLE SUB-UNITS OF DIFFERENT TYPE OR DIFFERENT FUNCTION; CONTROL SYSTEMS SPECIALLY ADAPTED FOR HYBRID VEHICLES; ROAD VEHICLE DRIVE CONTROL SYSTEMS FOR PURPOSES NOT RELATED TO THE CONTROL OF A PARTICULAR SUB-UNIT

NOTES

1. This subclass ~~does not cover~~ **does not cover** the control of a single sub-unit; such control is classified in the relevant place for the sub-unit, e.g. [F02D](#), [F16H](#). Where a single sub-unit is controlled by means of signals or commands from other sub-units, the control of this single sub-unit is classified in the relevant place for this sub-unit. For example, the control of variable-ratio gearing by means of signals from the engine or the accelerator is classified in the subclass for gearing, [F16H](#).
2. Conjoint control of driveline units, e.g. engines, and variable-ratio gearing occurring only transiently during ratio shift and being also characterised by the control of the gearing is also classified in the subclass for gearing, [F16H](#).
3. In groups [B60W 20/00](#) - [B60W 50/00](#), the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.
4. When classifying in group [B60W 10/00](#), classification must also be made in groups [B60W 20/00](#)-[B60W 50/00](#) in order to identify the purpose or use of the control.
5. In this subclass, the following terms are used with the meanings indicated:
 - "conjoint control" means that a programmed or condition-responsive { main} automatic controller on board the vehicle, embodying control logic for vehicle sub-units of different type or different function, sends control signals to actuators of two or more vehicle sub-units, { three or more vehicle sub-units for groups [B60W 30/00](#)-[B60W 30/16](#)}, so that the sub-units act together to solve a particular problem or in response to a particular driving condition, { in order to improve stability, comfort or safety by managing the global dynamics of the vehicle};
 - "drive control system" means an electronic system in a road vehicle for automatically controlling the movement { by managing the global dynamics} of that vehicle in order to take certain actions { in order to improve stability, comfort or safety};
 - "road vehicle" means a { motorised passenger} vehicle normally under the control of a human driver for transportation on roads, e.g. an automobile, truck or bus;
 - "sub-unit" means one of the following vehicle systems: { driveline systems, e.g.} propulsion system, clutch system, change-speed gearing system, system for distributing drive torque between front and rear axles, axle differential system, brake system, steering system, suspension system, { and, particularly for hybrid vehicles,} energy storage means, fuel cells, or auxiliary equipment.

U 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

U B60W 2050/0062

• {Adapting control system settings}

B60W 2050/0063 • {Manual parameter input, manual setting means, manual initialising or calibrating means (for vehicle control input means, control panels ~~see~~[see](#) [B60K 37/00](#))}

B60W 2050/007 • {Switching between manual and automatic parameter input, and ~~vice versa~~[vice versa](#)}

U B60W 2710/00 Output or target parameters relating to a particular sub-units

U B60W 2710/18 • Braking system

B60W 2710/182 • • Brake pressure, e.g. of fluid or between pad and disc

Project: N/A (B61B)

B61B 3/00 Elevated railway systems with suspended vehicles (with suspended flexible tracks [B61B 7/00](#); saddle or like balanced type with monorail [B61B 13/06](#); with propelling cables and for transporting materials [B65G](#); tracks therefor [E01B 25/00](#))

Project: N/A (B61C)

U 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](#))

U B61C 15/04 • by controlling wheel pressure, e.g. by movable weights or heavy parts or by magnetic devices (magnetic brakes [B61H](#))

B61C 15/045 • • {Specially adapted for tunnel systems vehicles, e.g. with pressure increasing arrangements}

Project: N/A (B61D)

U B61D 1/00 Carriages for ordinary railway passenger traffic (mine cars [B61D 11/00](#); tramcars [B61D 13/00](#))

B61D 1/04 • General arrangements of seats ([B61D 1/06](#) takes precedence; seats ~~per se~~[per se](#) [B61D 33/00](#))

U B61D 3/00 Wagons or vans (tank wagons [B61D 5/00](#); hopper wagons [B61D 7/00](#); tipping wagons [B61D 9/00](#); mine cars [B61D 11/00](#); vehicles specially adapted for animal transportation [B60P 3/04](#); {container traffic [B65G](#)})

U B61D 3/16 • adapted for carrying special loads

U B61D 3/18 • • for vehicles {(Vehicles adapted to carry other vehicles, in general, [B60P 3/06](#))}

B61D 3/182 • • • {specially adapted for heavy vehicles, e.g. public work vehicles, trucks, trailers}

Project: N/A (B61H)

B61H BRAKES OR OTHER RETARDING APPARATUS PECULIAR TO RAIL VEHICLES; ARRANGEMENTS OR DISPOSITIONS OF BRAKES OR OTHER RETARDING APPARATUS IN RAIL VEHICLES (electrodynamic braking of vehicles [B60L](#), in general [H02K](#); arrangements in rail vehicles for adjusting wheel-braking force to meet varying vehicular or permanent-way conditions [B60T 8/00](#); 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, [B60T 13/00](#) - [B60T 17/00](#); brakes ~~per se~~[per se](#) [F16D](#))

Project: N/A (B61L)

- U 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 1/02 • Electric devices associated with track {, e.g. rail contacts}
- U B61L 1/18** • Railway track circuits (automatically-operated track circuits specially adapted for section blocking for controlling traffic [B61L 23/00](#); rail joints [E01B 11/00](#))
- U B61L 1/181** • • {Details}
- U B61L 1/182** • • • {Use of current of indifferent sort or a combination of different current types}
- B61L 1/183 • • • • {Use of means on the vehicle for improving short circuit, e.g. in vehicles with rubber bandages}
- U B61L 3/00** **Devices along the route for controlling devices on the vehicle or vehicle train, e.g. to release brake, to operate a warning signal**
- U B61L 3/16** • Continuous control along the route
- U B61L 3/18** • • using electric current passing between devices along the route and devices on the vehicle or vehicle train
- B61L 3/20 • • • employing different frequencies or coded pulse groups {, e.g. using currents carried by traction current (operating and signalling systems using network power supply [H02J 13/00](#))}
- U B61L 3/22** • • using magnetic or electrostatic induction; using electromagnetic radiation
- B61L 3/24 • • • employing different frequencies or coded pulse groups {, e.g. in combination with track circuits}
- B61L 5/00** **Local operating mechanisms for points or track-mounted scotch-blocks (track-mounted scotch-blocks ~~per se~~ [per se](#) [B61K](#)); Visible or audible signals; Local operating mechanisms for visible or audible signals ([B61L 11/00](#) takes precedence)**
- B61L 5/02 • Mechanical devices for operating points or scotch-blocks {, e.g. local manual control}
- B61L 5/06 • Electric devices for operating points or scotch-blocks {, e.g. using electromotive driving means}
- B61L 7/00** **Remote control of local operating means for points, signals, or trackmounted scotch-blocks ([B61L 11/00](#) takes precedence; interlocking arrangements [B61L 19/00](#); transmission ~~per se~~ [per se](#), [see see](#) the relevant classes)**
- U B61L 13/00** **Operation of signals from the vehicle or by the passage of the vehicle**
- B61L 13/04 • using electrical or magnetic interaction between vehicle and track {, e.g. by conductor circuits using special means or special conductors}
- U B61L 23/00** **Control, warning, or like safety means along the route or between vehicles or vehicle trains**
- U B61L 23/08** • for controlling traffic in one direction only (station blocking between signal boxes in one yard [B61L 21/00](#))
- B61L 23/10 • • manually operated {, e.g. block arrangements}

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 3/14
 - characterised by provisions for nesting or stacking, e.g. shopping trolleys {(collapsible shopping trolleys [B62B 3/027](#))}
- B62B 3/146
 - • {Lockers, hooks, e.g. for personal belongings}

Project: N/A (B62C)

B62C 9/00 Carriers or holders for whips; Holders for reins forming part of or attached to vehicles (reins or whips ~~per se~~ [per se](#) [B68B](#))

Project: N/A (B62D)

- U **B62D 1/00** **Steering controls, i.e. means for initiating a change of direction of the vehicle**
- U 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](#))}
- U **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](#))**
- 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~~ [per se](#) [B62D 3/00](#); steering linkages not characterised by being power-assisted or power-driven [B62D 7/00](#))
- 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](#))**
- U B62D 7/06
 - for individually-pivoted wheels, e.g. on king-pins
- U B62D 7/14
 - • the pivotal axes being situated in more than one plane transverse to the longitudinal centre line of the vehicle, e.g. all-wheel steering
- U B62D 7/15
 - • characterised by means varying the ratio between the steering angles of the steered wheels {([B62D 7/148](#) takes precedence)}
- U B62D 7/1518
 - • • {comprising a mechanical interconnecting system between the steering control means of the different axles}
- B62D 7/1536
 - • • • {provided with hydraulic assistance; (power-assisted fluid steering ~~per se~~ [per se](#) [B62D 5/06](#))}
- B62D 7/1545
 - • • • {provided with electrical assistance; (power-assisted electrical steering ~~per se~~ [per se](#) [B62D 5/04](#))}
- B62D 7/1554
 - • • • {comprising a fluid interconnecting system between the steering control means of the different axles; (power-assisted fluid steering ~~per se~~ [per se](#) [B62D 5/06](#))}
- B62D 7/1581
 - • • • {characterised by comprising an electrical interconnecting system between the steering control means of the different axles; (power-assisted electrical steering ~~per se~~ [per se](#) [B62D 5/04](#))}
- B62D 7/16
 - Arrangement of linkage connections (pivots ~~per se~~ [per se](#) [F16C](#); {e.g. ball joints [F16C 11/06](#))}

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~~ [per se](#)

- U 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 23/005 • {with integrated chassis in the whole shell, e.g. meshwork, tubes, or the like ([B62D 33/044](#) takes precedence)}

Project: MP0171 (B62D)

- M 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~~

Project: N/A (B62D)

- U B62D 29/00 Superstructures, {understructures, or sub-units thereof,} characterised by the material thereof** ({[B62D 33/044](#), [B62D 33/048](#) take precedence})
- U B62D 29/001** • {characterised by combining metal and synthetic material}
- B62D 29/002** • • {a foamable synthetic material or metal being added ~~in situ~~ [in situ](#) (shaping of substances in a plastic state by foaming, in general [B29C 44/00](#))}
- U B62D 31/00 Superstructure for passenger vehicles (passenger vehicles specially adapted to co-operate with aircraft or terminal buildings** [B64F 1/31](#))
- B62D 31/003** • {compact cars, e.g. city cars}
- U 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](#)})
- B62D 33/04** • Enclosed load compartments {Frameworks for movable panels, tarpaulins or side curtains (tarpaulins ~~per se~~ [per se](#) [B60J 7/00](#), [B60P 7/04](#); side curtains ~~per se~~ [per se](#) [B60J 5/065](#))}
- U B62D 35/00 Vehicle bodies characterised by streamlining**
- B62D 35/001** • {For commercial vehicles or tractor-trailer combinations, e.g. caravans}
- B62D 39/00 Vehicle bodies not otherwise provided for** {, e.g. safety vehicles (safety equipment [B60R 21/00](#))}
- U 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](#))}

- U 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](#)})**
- B62D 53/02 • comprising a uniaxle tractor unit and a uniaxle trailer unit {(see [B60B 11/00](#) - [B60B 11/08](#))}
- 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 53/068 • • {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 55/00** **Endless track vehicles (steering aspects [B62D 11/00](#); {characterised by the driver not being seated [B62D 51/007](#)})**
- B62D 55/04 • with tracks and alternative ground wheels, e.g. changeable from endless track vehicle into wheeled vehicle and ~~vice versa~~ [vice versa](#) {(for multi-purpose tractors [B62D 49/0635](#))}
- 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](#))
- U B62D 63/062** • • {Trailers with one axle or two wheels (semi-trailers [B62D 53/06](#))}
- B62D 63/064 • • {light luggage or equipment trailers, e.g. for batteries, gas generators, gas bottles, stretchers (luggage carriers [per se](#) [B60R](#))}

Project: N/A (B62H)

- U B62H 5/00** **Appliances preventing or indicating unauthorized use or theft of cycles; Locks integral with cycles (fittings for preventing or indicating use or theft of vehicles in general [B60R](#); general features of locks [E05B](#))**
- B62H 5/003 • {using chains or cables (chain or cable locks [per se](#) [E05B 67/003](#); with alarm [E05B 45/005](#))}

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 6/20 • {Lighting devices mounted on wheel spokes;} arrangement of reflectors {, e.g. on the wheel spokes}(pedals incorporating reflectors [B62M 3/12](#))
- U B62J 99/00** **Subject matter not provided for in other groups of this subclass**
- B62J 2099/004 • {Other electrical equipment specially adapted for use on a cycle not provided for in groups [B62J 2099/0006](#) - [B62J 2099/0026](#), e.g. solar cells}

Project: N/A (B62K)

- U B62K 11/00** **Motorcycles, engine-assisted cycles or motor scooters with one or two wheels (fairings or streamlining parts not forming part of the frame [B62J](#); transmission of drive from engines to wheels [B62M](#))**
- B62K 11/14 • Handle-bar constructions, or arrangements of controls thereon, specially adapted thereto (hand controls [per se](#) [B62K 23/02](#))

- B62K 19/00** Cycle frames (cycle frames specially adapted for one particular kin of cycle specified in groups [B62K 1/00](#) - [B62K 17/00](#), [see](#)[see](#) the relevant group)
- B62K 19/44 · Chain-guards forming part of frame (chain-guards [per se](#) [per se](#) [B62J 13/00](#))
- B62K 19/46 · Luggage carriers forming part of frame (luggage carriers [per se](#) [per se](#) [B62J 7/00](#))
- B62K 21/00** Steering devices (steering devices specially adapted for one particular kind of cycle specified in groups [B62K 1/00](#) - [B62K 17/00](#), [see](#)[see](#) the relevant group)
- B62K 21/005 · {Steering pivot axis arranged within the wheel, e.g. for a hub center steering arrangement}

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](#) [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)

- U B63B 7/00** Collapsible, foldable, inflatable or like vessels (foldable pontoons [B63B 35/36](#))
- U B63B 7/06 · having parts of non-rigid material
- U B63B 7/08 · · inflatable
- B63B 7/085 · · · {Accessories or mountings specially adapted therefor, e.g. seats, sailing kits, motor mountings}
- 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 · Methods of building hulls
- U B63B 9/065 · · {for floating offshore platforms (grounded platforms [E02B 17/00](#))}
- WARNING
Not complete, see [B63B 21/50](#), [B63B 35/003](#), [B63B 35/44](#)
- B63B 2009/067 · · · {for assembling offshore structures, e.g. [in situ](#) [in situ](#), using buoyancy forces for supporting the structure itself, or part of it, e.g. using barges}
- 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](#)})

U	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)}
		<u>WARNING</u> Not complete pending a reorganisation; for documents concerning protective caps, or anti-theft devices other than using keys, see B63J 99/00
	B63B 17/02	• Awnings {, including rigid weather protection structures, e.g. sunroofs; Tarpaulins; Accessories for awnings or tarpaulins}
U	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)}
		<u>WARNING</u> 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
	B63B 21/16	• Using winches (winches per se per se B66D)
	B63B 21/20	• Adaptations of chains, ropes, hawsers, or the like, or of parts thereof chains, ropes or hawsers in general, see see the relevant subclasses, e.g. F16G {or D07B }
		<u>WARNING</u> Not complete pending a reorganisation, see B63B 21/00
U	B63B 21/50	• Anchoring arrangements {or methods} for special vessels, e.g. for floating drilling platforms or dredgers
U	B63B 21/507	• • {with mooring turrets}
		<u>WARNING</u> this group and its subgroup are pending a reorganisation, also documents covered by group B63B 21/34 are within this group, and its subgroups
	B63B 21/508	• • • {connected to submerged buoy (mooring buoys per se per se B63B 22/02)}
U	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 per se , e.g. vehicles, rails, see see the relevant classes)
U	B63B 23/00	Equipment for handling lifeboats or the like
U	B63B 23/40	• Use of lowering or hoisting gear
	B63B 23/48	• • Using winches for boat handling (winches per se per se B66D)

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~~ [B66B](#), [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 27/08 • • using winches (winches ~~per se~~ [B66D](#))
- B63B 27/10 • • using cranes (cranes ~~per se~~ [B66C](#))
- B63B 27/16 • • using lifts or hoists (elevators ~~per se~~ [B66B](#) {Pilot lifts [B63B 27/14](#)})
- B63B 27/18 • • using cableways, e.g. with breeches-buoys (cableways ~~per se~~ [B65G](#))

WARNING

this group is pending a reorganisation, also documents covered by group [B63B 27/32](#) are within this group

- U B63B 27/20 • {with continuous action}
- B63B 27/22 • • of conveyors, e.g. of endless-belt or screw-type (arrangements of devices with throwing action [B63B 27/26](#); arrangements of chutes [B63B 27/28](#); conveyors ~~per se~~ [B65G](#))
- B63B 27/26 • • using devices with throwing action (devices with throwing action ~~per se~~ [B65G](#))
- B63B 27/28 • • using chutes (chutes ~~per se~~ [B65G](#))
- B63B 27/36 • {Arrangement of ship-based loading or unloading equipment} for floating cargo (devices for facilitating retrieval of floating objects ~~per se~~ [B66C 13/02](#))

U 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 35/08 • 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

- 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 35/7906 • • • {Construction or shape of the boards}

- B63B 35/7923 . . . {with hydrofoils (hydrofoils ~~per se~~ ~~per se~~ [B63B 1/24](#))}
- U B63B 35/7953 . . . {Winddriven boards}
- U B63B 35/7973 . . . {Sail arrangements}
- B63B 35/7976 . . . {Sails pivotally mounted at a mast-tip; Kite-sails (kites ~~per se~~ ~~per se~~ [B64C 31/06](#))}
- U B63B 35/81 . . Waterskis; Watersledges
- U B63B 35/815 . . . {Towing devices}
- B63B 35/816 . . . {Connection of the tow to the boat; using winches (winches ~~per se~~ ~~per se~~ [B66D](#))}

Project: N/A (B63C)

- U 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

- U 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]

Project: N/A (B63G)**B63G**

OFFENSIVE OR DEFENSIVE ARRANGEMENTS ON VESSELS; MINE-LAYING; MINE-SWEEPING; SUBMARINES; AIRCRAFT CARRIERS (means of attack or defence in general, e.g. turrets [F41H](#))

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) - [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

- B63G 5/00 **Vessels characterised by adaptation to torpedo launching (submarines [B63G 8/00](#); torpedo launching ~~per se~~ ~~per se~~ [F41F](#))**
- U 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](#))**

- B63G 8/08
 - Propulsion ({schnorkels [B63G 8/36](#); marine propulsion or steering in general [B63H](#);} nuclear propulsion [B63H 21/18](#); propulsion power plants or units ~~per se~~ ~~per se~~ {[F01 - F04](#)}; submerged exhausting apparatus [F01N 13/12](#))
- U B63G 8/28
 - Arrangement of offensive or defensive equipment
- B63G 8/32
 - • of torpedo-launching means (torpedo-launching means ~~per se~~ ~~per se~~ [F41F 3/00](#)); of torpedo stores or handlers
- B63G 8/38
 - Arrangement of visual or electronic watch equipment, e.g. of periscopes, of radar {(periscopes, optical aiming or sighting devices ~~per se~~ ~~per se~~ [G02B 23/00](#))}

Project: N/A (B63H)

- U 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
 - 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 1/18
 - • • with means for diminishing cavitation, e.g. supercavitation
 - U B63H 1/30
 - of non-rotary type
 - B63H 1/36
 - • swinging sideways, e.g. fishtail type

WARNING
this group is pending a reorganisation; also documents covered by group [B63H 1/37](#) are within this group]
- 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 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~~ ~~per se~~, ~~see see~~ the relevant classes)
- U 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 16/08
 - Other apparatus for converting muscle power into propulsive effort (general features of propulsion elements, ~~see see~~ the relevant groups)

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** **per se**, **see 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 20/36 • 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** **per se**, **see 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

U **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 21/165 • • by hydraulic fluid motor, i.e. wherein a liquid under pressure is utilised to rotate the propelling means {(transmission from power plant or unit to propeller using fluid gearing **per se** **per se** [B63H 23/26](#))}

WARNING

This group is not complete pending a reclassification; for documents published before 01.01.2012, see also group [B63H 21/12](#)

B63H 21/22 • the propulsion power units being controlled from exterior of engine room, e.g. from navigation bridge; Arrangements of order telegraphs {(conjoint control of specific features of internal combustion engines and of propelling elements [F02D](#)); order telegraphs **per se** **per se** [G08B 9/00](#))}

WARNING

This group is not complete pending a reorganisation; also documents covered by group [B63H 21/21](#) are within this group

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~~ [per se F16](#))

U 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

B63H 25/42 • 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 3/00 Driving of auxiliaries (transmission elements ~~per se~~ [per se F16](#))

WARNING

[B63J 3/00](#) and subgroups are not complete pending a reclassification; see also group [B63J 99/00](#)]

Project: N/A (B64B)

U B64B 1/00 Lighter-than-air aircraft

B64B 1/005 • {Arrangements for landing or taking-off, e.g. alighting gear}

Project: N/A (B64C)

U 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 1/22 • Other structures integral with fuselages to facilitate loading {, e.g. cargo bays, cranes (cargo door type ramps [B64C 1/1415](#))}

B64C 1/36 • adapted to receive aerals or radomes (aerals or radomes ~~per se~~ [per se H01Q](#))

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 (arrester hooks [B64C 25/68](#))
- 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~~ [per se F16F](#))
- U B64C 27/00 **Rotorcraft; Rotors peculiar thereto (alighting gear [B64C 25/00](#))**
- B64C 27/52 • Tilting of rotor bodily relative to fuselage (of ~~see see~~ saw type construction [B64C 27/43](#))

Project: N/A (B64D)

- 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~~ [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](#))**
- U B64D 1/16 • Dropping or releasing powdered, liquid, or gaseous matter, e.g. for fire-fighting (jettisoning fuel [B64D 37/26](#))
- B64D 1/18 • • by spraying, e.g. insecticides (spraying apparatus ~~per se~~ [per se B05B](#))
- 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~~ [per se D07B](#))**
- B64D 3/02 • for towing targets (towed targets ~~per se~~ [per se F41J](#))
- 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~~ [per se F41](#))**
- B64D 7/08 • Arrangements of rocket launchers {or releasing means} (rocket launchers ~~per se~~ [per se](#), e.g. rocket pods, [F41F 3/06](#))
- U 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 2009/006 • {Rollers or drives for pallets of freight containers, [e.g. PDU](#); ~~e.g. PDU~~}
- U B64D 17/00 **Parachutes (non canopied parachutes [B64D 19/00](#))**
- U B64D 17/22 • Load suspension
- B64D 17/30 • • Harnesses (harnesses ~~per se~~ [per se A62B](#))
- U B64D 27/00 **Arrangement or mounting of power plant in aircraft; Aircraft characterised thereby (attitude, flight direction, or altitude control of aircraft by jet reaction [B64C](#))**
- U B64D 27/02 • Aircraft characterised by the type or position of power plant (fuselages or wings adapted for mounting power plant [B64C](#))
- B64D 27/023 • • {of rocket type, e.g. for assisting taking-off or braking}
- 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~~ [per se F02C 7/04](#); air intakes for combustion engines in general [F02M 35/00](#))

- B64D 33/04
- of exhaust outlets or jet pipes (exhaust outlets for combustion engines in general [F01N](#); jet pipes or nozzles for jet-propulsion plants ~~per se~~ [per se](#) [F02K](#); plants characterised by the form or arrangement of the jet pipe or nozzle [F02K](#) {attitude, flight direction, or altitude control by jet reaction [B64C](#)})
- B64D 33/08
- of power plant cooling systems (cooling of internal-combustion engines ~~per se~~ [per se](#) [F01P](#); cooling of gas-turbine plants or jet-propulsion plants ~~per se~~ [per se](#) [F02C](#), [F02K](#))
- B64D 35/00** Transmitting power from power plant to propellers or rotors; Arrangements of transmissions (propellers or rotors ~~per se~~ [per se](#), helicopter transmissions [B64C](#))
- 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~~ [per se](#) [B65D](#))
- B64D 43/00** Arrangements or adaptations of instruments (arrangements of cameras [B64D 47/08](#); aeronautical measuring instruments ~~per se~~ [per se](#) [G01C](#))
- U B64D 45/00** Aircraft indicators or protectors not otherwise provided for (camouflage [F41H 3/00](#))
- U B64D 45/0015
- {Devices specially adapted for the protection against criminal attack, e.g. anti-hijacking systems}
- U B64D 2045/002
- • {by disabling or restraining attackers}
- B64D 2045/0025
- • • {by spraying gases in cabins-, or by shooting darts with anesthetic effects}

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 1/40
- • Arrangements or adaptations of propulsion systems ([B64G 1/26](#) takes precedence; propulsion plants ~~per se~~ [per se](#), [see see](#) the relevant subclasses, e.g. [F02K](#), [F03H](#))
- B64G 1/401
- • • {Liquid propellant rocket engines (~~per se~~ [per se](#) [F02K 9/42](#))}
- B64G 1/403
- • • {Solid propellant rocket engines (~~per se~~ [per se](#) [F02K 9/08](#))}
- B64G 1/404
- • • • {Hybrid rocket engines (~~per se~~ [per se](#) [F02K 9/72](#))}
- B64G 1/405
- • • {Ion or plasma engines (~~per se~~ [per se](#) [F03H 1/00](#))}
- B64G 1/42
- • Arrangements or adaptations of power supply systems (power supply systems ~~per se~~ [per se](#), [see see](#) the relevant subclasses)
- B64G 1/44
- • • using radiation, e.g. deployable solar arrays (solar cells ~~per se~~ [per se](#) [H01L 31/00](#))
- U B64G 1/52
- • Protection, safety or emergency devices; Survival aids (life-saving in general [A62](#))
- B64G 1/58
- • • Thermal protection, e.g. heat shields (thermal insulation in general [F16L 59/00](#); chemical aspects, [see see](#) the relevant classes)
- B64G 1/66
- • Arrangements or adaptations of apparatus or instruments, not otherwise provided for (instruments ~~per se~~ [per se](#), [see see](#) the relevant classes, e.g. aerials for use in satellites [H01Q 1/28](#))

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~~ [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~~ [per se](#), [see 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](#)

U B65B 7/00

Closing containers or receptacles after filling (combinations of container-closing apparatus with apparatus for filling containers [B65B 1/00](#), [B65B 3/00](#), [B65B 5/00](#); under special atmospheric or gaseous conditions [B65B 31/00](#))

B65B 7/01

- Machines characterised by incorporation of means for making the closures before applying (making closures, of interest apart from this application, [see see](#) the relevant subclass)

- U B65B 9/00** Enclosing successive articles, or quantities of material, e.g. liquids or semi-liquids, in flat, folded, or tubular webs of flexible sheet material; Subdividing filled flexible tubes to form packages
- U B65B 9/10** • Enclosing successive articles, or quantities of material, in preformed tubular webs, or in webs formed into tubes around filling nozzles, e.g. extruded tubular webs (sausage making [A22C 11/00](#))
- B65B 9/20** • • the webs being formed into tubes ~~in-situ~~ *in situ* around the filling nozzles
- NOTE**
If an invention involves both continuous and intermittent web motion, it is classified in both groups [B65B 9/207](#) and [B65B 9/213](#).
- B65B 9/24** • • the tubes being formed ~~in-situ~~ *in situ* by extrusion
- U B65B 51/00** Devices for, or methods of, sealing or securing package folds or closures; Devices for gathering or twisting wrappers, or necks of bags
- B65B 51/10** • Applying or generating heat or pressure or combinations thereof {(welding of plastics ~~per se~~ *per se* [B29C 65/02](#); closing plastic tube ends in general [B29C 57/10](#))}
- B65B 57/00** Automatic control, checking, warning, or safety devices (registering wrapping or container-forming material fed from rolls [B65B 41/18](#); accident-prevention measures applicable for general use [F16P](#); {factory control systems [G05B 19/418](#); operation of audible or visible signals besides this application [G08G](#)}; photoelectric cells [H01J](#), [H01L](#); such devices in general ~~see~~ *see* the relevant classes)
- U B65B 61/00** Miscellaneous auxiliary devices operating on sheets, blanks, webs, binding material, containers, or packages, and not otherwise provided for (operating on articles or materials to be packaged and not otherwise provided for [B65B 63/00](#))
- B65B 61/20** • for adding cards, coupons, or other inserts to package contents {, e.g. for adding or applying accessories or inserts to the inside or the outside of a container}{adding unpacking elements [B65B 61/18](#); labelling [B65C](#)}
- U B65B 67/00** Apparatus or devices facilitating manual packaging operations; Sack holders
- U B65B 67/02** • Packaging of articles or materials in containers
- B65B 67/04** • • Devices facilitating the insertion of articles or materials into bags {, e.g. guides or chutes (sack holders [B65B 67/12](#))}
- U B65B 2220/00** Specific aspects of the packaging operation
- B65B 2220/04** • Means for, or method of collapsing containers with walls hinged together or detachably connected (such containers ~~per se~~ *per se* [B65D 11/18](#))
- U B65B 2230/00** Aspects of the final package
- B65B 2230/02** • Containers having separate compartments isolated from one another (~~B65B 29/10 and B65B 2220/16 take preference~~ *B65B 29/10 and B65B 2220/16 take precedence*)

Project: N/A (B65C)

- U B65C 9/00** Details of labelling machines or apparatus {(attaching articles to carriers [B65B 15/00](#); cards of samples [G09F 5/04](#))}
- B65C 9/0015** • {Preparing the labels or articles, e.g. smoothing, removing air bubbles}

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 [A45F](#); {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~~ see the appropriate subclass of [B60](#) - [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~~ 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:

B65D 5/34	covered by	B65D 5/325	
B65D 5/35	covered by	B65D 5/32	
B65D 5/355	covered by	B65D 5/0005	
B65D 5/43	covered by	B65D 5/42	
B65D 5/462	covered by	B65D 5/46008	-
B65D 5/46032			
B65D 5/465	covered by	B65D 5/46008	-
B65D 5/46032			
B65D 5/468	covered by	B65D 5/4608	
B65D 5/472	covered by	B65D 5/46048	
B65D 5/475	covered by	B65D 5/46008	
B65D 5/478	covered by	B65D 5/46056	
B65D 5/4805	-	B65D 5/489	covered by
B65D 5/48002			
B65D 5/49	-	B65D 5/499	covered by
B65D 5/48024			
B65D 5/63	covered by	B65D 5/72	
B65D 6/00	-	B65D 6/40	covered by
B65D 7/00 ,	B65D 9/00 ,	B65D 11/00 ,	B65D 15/00
B65D 8/00	-	B65D 8/22	covered by
B65D 7/00 ,	B65D 9/00 ,	B65D 11/00 ,	B65D 15/00
B65D 19/22	covered by	B65D 19/0004	&
subgroups			
B65D 19/24	covered by	B65D 19/0004	&
subgroups			
B65D 19/26	covered by	B65D 19/0004	&
subgroups			
B65D 19/28	covered by	B65D 19/0004	&
subgroups			
B65D 19/30	covered by	B65D 19/0004	&
subgroups			
B65D 19/31	covered by	B65D 19/0004	&
subgroups			
B65D 19/34	covered by	B65D 19/0004	&
subgroups			
B65D 17/28	-	B65D 17/48 ,	B65D 17/52
covered by	B65D 17/16	-	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	- B65D 30/28	covered by
B65D 29/00 ,	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	- B65D 35/54	covered by
B65D 47/2018		
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	- B65D 65/32	covered by
B65D 75/58		
B65D 65/34	covered by	B65D 75/66
B65D 65/36	covered by	B65D 75/58
B65D 71/52	- B65D 71/68	covered by
B65D 71/0003 - B65D 71/0077		
B65D 75/60	- B65D 75/64	covered by
B65D 75/58		
B65D 81/15	covered by	B65D 81/05
B65D 81/17	covered by	B65D 81/02
B65D 83/18	- B65D 83/74	covered by
B65D 83/14 ,	B65D 83/16	
B65D 83/18	covered by	B65D 83/201
B65D 83/58	covered by	B65D 83/44
B65D 83/76	covered by	B65D 83/0005
B65D 85/57	covered by	G11B 23/00
B65D 85/575	covered by	G11B 23/00
B65D 85/86	- B65D 85/90	covered by
H01L 21/00 ,	H05K 13/00	
B65D 91/00	covered by	A47G 29/12

U 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](#))

- U 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](#)})
- U B65D 1/0223
 - • {characterised by shape}
- U B65D 1/023
 - • • {Neck construction}
- B65D 1/0253
 - • • • {Means facilitating removal of the closure, e.g. cams, levers}
- U 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 5/20
 - 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)
- B65D 5/209
 - • {the adjacent edges of folded-up portions being joined by moulding seams ~~in situ~~ [in situ](#)}
- U 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](#))
- U B65D 17/50
 - Non-integral frangible members applied to, or inserted in, a preformed opening, e.g. tearable strips, plastic plugs
- U B65D 17/506
 - • {Rigid or semi-rigid members, e.g. plugs}
- B65D 17/507
 - • • {moulded ~~in situ~~ [in situ](#), e.g. during production of container}
- U B65D 33/00**

Details of, or accessories for, sacks or bags
- U 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](#))
- B65D 33/25
 - • Riveting; Dovetailing; Screwing; using press buttons or slide fasteners {(slide fasteners ~~per se~~ [per se](#) [A44B 19/00](#))}
- U 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](#))
- U B65D 41/02
 - Caps or cap-like covers without lines of weakness, tearing strips, tags, or like opening or removal devices
- B65D 41/24
 - • Caps or cap-like covers made of shrinkable material or formed ~~in situ~~ [in situ](#) by dipping, e.g. using gelatine or celluloid
- U B65D 41/32
 - Caps or cap-like covers with lines of weakness, tearing-strips, tags, or like opening or removal devices, e.g. to facilitate formation of pouring openings
- B65D 41/54
 - • Caps or cap-like covers made of shrinkable material or formed ~~in situ~~ [in situ](#) by dipping, e.g. using gelatine, celluloid

	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 see the relevant groups, e.g. B65D 41/32, B65D 51/20)
U	B65D 55/00	Accessories for container closures not otherwise provided for
U	B65D 55/02	<ul style="list-style-type: none"> • 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 55/06	<ul style="list-style-type: none"> • • 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 55/02 takes precedence } ; applying labels to bottles B65C 3/06, B65C 9/00; seals per se per se G09F 3/00)
	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 per se B32B; materials per se per se see 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	<ul style="list-style-type: none"> • Packaging materials of special type or form
	B65D 65/40	<ul style="list-style-type: none"> • • 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 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 }}
U	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	<ul style="list-style-type: none"> • Packaging elements holding or encircling completely or almost completely the bundle of articles, e.g. wrappers
	B65D 71/12	<ul style="list-style-type: none"> • • the packaging elements {, e.g. wrappers} being formed by folding a single blank
	B65D 71/14	<ul style="list-style-type: none"> • • • having a tubular shape {, e.g. tubular wrappers} without end walls (sleeves B65D 59/04)
U	B65D 71/28	<ul style="list-style-type: none"> • • • • characterised by the handles
	B65D 71/30	<ul style="list-style-type: none"> • • • • unitary {, i.e. integral} with the tubular packaging elements
	B65D 71/38	<ul style="list-style-type: none"> • • the packaging elements {, e.g. wrappers} being formed by folding and interconnecting two or more blanks

U	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 50/30 }; 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)
		<u>NOTE</u> Attention is drawn to Note (4) following the title of this subclass
	B65D 85/08	• for compressible or flexible rod-shaped or tubular articles {(collapsible tubes per se B65D 35/00)}
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 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 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)
U	B65D 88/02	• rigid (B65D 88/34 - 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)}
	B65D 88/12	• • specially adapted for transport (associated with vehicles, see see the relevant subclasses of B60 - B64)
U	B65D 88/16	• flexible (B65D 88/34 - B65D 88/78 take precedence; hoppers B65D 88/26)
	B65D 88/22	• • specially adapted for transport (associated with vehicles, see see the relevant subclasses of B60 - B64)
U	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 per se B65G 69/28 ; for ambulances A61G 3/061 ; for vehicles in general B60P 1/43)}
U	B65D 90/00	Component parts, details or accessories for large containers (B65D 88/34 - B65D 88/78 take precedence)
U	B65D 90/22	• Safety features (floating covers B65D 88/34 ; arrangements of indicating or measuring devices B65D 90/48 ; fire-fighting A62C)
	B65D 90/32	• • Arrangements for preventing, or minimising the effect of, excessive or insufficient pressure (valves per se per se F16K)
	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 per se F16K ; {doors for containers B65D 90/008)}
	B65D 2203/00	Decoration means, markings, information elements, contents indicators (see see also B65D 5/4212, B65D 33/004)
	B65D 2203/04	• Level indicators (see see also B65D 25/56 , B65D 33/004)

	B65D 2251/00	Details relating to container closures (lids or covers for box-like containers B65D 43/00; see see also B65D 43/00)
U	B65D 2275/00	Details of sheets, wrappers or bags
	B65D 2275/02	• Sheets wrappers or bags provided with protective or puncture resistant patches, specially adapted for meat on the bone, e.g. e.g. patch bags
U	B65D 2501/00	Containers having bodies formed in one piece
U	B65D 2501/24	• Boxes or like containers with moulded compartments or partitions
U	B65D 2501/24006	• • Details relating to bottle crates
U	B65D 2501/24554	• • • Stacking means (B65D 2501/24694 takes precedence)
U	B65D 2501/24585	• • • • for stacking or joining the crates together one upon the other, in the upright or upside-down position
	B65D 2501/24675	• • • • • Crates joined together by screw-, bayonet, snap-fit or the like
U	B65D 2571/00	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
U	B65D 2571/00123	• Bundling wrappers or trays
U	B65D 2571/00833	• • Other details of wrappers
U	B65D 2571/00932	• • • Flattenable or foldable packages
	B65D 2571/00938	• • • • Means for maintaining collapsible packages in erected state (B65D 2571/00129 takes precedence B65D 2571/00129 takes precedence)
U	B65D 2581/00	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
U	B65D 2581/34	• for packaging foodstuffs or other articles intended to be cooked or heated within
U	B65D 2581/3437	• • specially adapted to be heated by microwaves
U	B65D 2581/3439	• • • Means for affecting the heating or cooking properties
	B65D 2581/3451	• • • • Microwave reactive fibres, i.e. microwave reactive material in the form of fibres

Project: N/A (B65F)

B65F 7/00	Cleaning or disinfecting devices combined with refuse receptacles or refuse vehicles (such devices per se per se A61L, B08B)
B65F 9/00	Transferring of refuse between vehicles or containers with intermediate storage or pressing (presses for baling per se per se B30B 9/30)

Project: N/A (B65G)**B65G**

TRANSPORT OR STORAGE DEVICES, e.g. CONVEYORS FOR LOADING OR TIPPING; SHOP CONVEYOR SYSTEMS; PNEUMATIC TUBE CONVEYORS ({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** [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 - 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:

B65G 33/28	covered by	
B65G 33/265		
B65G 47/10	covered by	
B65G 1/1373		
B65G 47/86	covered by	B65G 47/842 ,
B65G 47/847		
B65G 49/07	covered by	
H01L 21/677		
B65G 69/32	covered by	
B65G 69/28		
B65G 69/34	covered by	B65G 69/28

- U B65G 7/00** **Devices for moving or tilting heavy loads (for tilting and emptying barrels or casks [B65G 65/24](#))**
- B65G 7/02
- Devices adapted to be interposed between loads and the ground or floor, e.g. crowbars with means for assisting conveyance of loads (crowbars **per se** [per se](#) [B66F 15/00](#))
- U B65G 17/00** **Conveyors 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 conveyors 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 17/06
- having a load-carrying surface formed by a series of interconnected, e.g. longitudinal, links, plates, or platforms
- B65G 17/24
- comprising a series of rollers which are moved {, e.g. over a supporting surface, by the traction element to effect conveyance of loads or load-carriers}
- U B65G 19/00** **Conveyors 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 conveyors**
- U B65G 19/18
- Details
- B65G 19/185
- {for article conveyors, e.g. for container conveyors (~~[B65G 19/20](#)~~, ~~[B65G 19/22](#)~~, [B65G 19/20](#), [B65G 19/22](#), [B65G 19/28](#) take precedence)}

	B65G 33/00	Screw or rotary spiral conveyors (screws for extruding, compressing, kneading, mixing, pumping or other special operations, see the relevant classes)
U	B65G 33/08	• for fluent solid materials
U	B65G 33/14	• • comprising a screw or screws enclosed in a tubular housing
	B65G 33/18	• • • with multiple screws in parallel arrangements {, e.g. concentric}
U	B65G 47/00	Article or material handling devices associated with conveyors; Methods employing such devices (for sorting, e.g. postal B07C)
U	B65G 47/22	• Devices influencing the relative position or the attitude of articles during transit by conveyors (during feeding B65G 47/14)
U	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 47/30	• • • during transit by a series of conveyors {(B65G 47/261 takes precedence)}
	B65G 47/32	• • • • Applications of transfer devices {(such devices per se <i>per se</i> B65G 47/74)}
U	B65G 47/34	• Devices for discharging articles or materials from conveyors (B65G 47/256 takes precedence; sorting in general B07)
U	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)
U	B65G 47/48	• • • according to bodily destination marks on either articles or load carrier (marking data records G06K)
	B65G 47/49	• • • • without bodily contact between article or load carrier and automatic control device {, e.g. the destination marks being electrically or electronically detected}
U	B65G 47/52	• Devices for transferring articles or materials between conveyors {or sections of one conveyor}, i.e. discharging and feeding devices (loading or unloading by means not incorporated in, or not operatively associated with, conveyors B65G 65/00 ; transfer of workpieces during metal rolling B21B 41/00)
	B65G 47/68	• • adapted to receive articles arriving in one layer from one conveyor {lane} and to transfer them in individual layers to more than one conveyor {lane or to one broader conveyor lane}, or vice-versa <i>vice versa</i> , e.g. combining the flows of articles conveyed by more than one conveyor
	B65G 47/72	• • transferring materials in bulk from one conveyor to several conveyors, or vice versa <i>vice versa</i>
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 49/02	• for conveying workpieces through baths of liquid
U	B65G 49/04	• • the workpieces being immersed and withdrawn by movement in a vertical direction
U	B65G 49/0409	• • • {specially adapted for workpieces of definite length}
U	B65G 49/0436	• • • • {arrangements for conveyance from bath to bath}
U	B65G 49/044	• • • • • {along a continuous circuit}
U	B65G 49/045	• • • • • • {the circuit being fixed}

- B65G 49/0454 {by means of containers -or workpieces- carriers (containers or carriers as such [see see C25D 17/00](#))}
- 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](#) - [B65G 2249/045](#)
- U B65G 49/063 . . . {Transporting devices for sheet glass}
- U B65G 49/064 {in a horizontal position ([B65G 49/066](#) takes precedence)}
- B65G 49/065 {supported partially or completely on fluid cushions, e.g. a gas cushion (in general [B65G 51/00](#))}
- B65G 49/068 . . . {Stacking or destacking devices; ~~Means for preventing damage to stacked sheets~~; *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 49/069 {Means for avoiding damage to stacked plate glass, e.g. by interposing paper or powder spacers in the stack (maculation ~~per se~~ *per se* [B65H 39/00](#))}
- B65G 49/07 . . for semiconductor wafers {Not used, [see 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 57/00** **Stacking of articles ([B65G 60/00](#) takes precedence; stacking of jumbo rolls [B41F](#); stackable containers [B65D](#); feeding, piling, or stacking sheets [B65H](#); stacked delivery of machined products, [see see](#) the relevant classes for the machines)**
- U B65G 59/00** **De-stacking of articles ([B65G 60/00](#) takes precedence)**
- U B65G 59/06 . De-stacking from the bottom of the stack
- U B65G 59/061 . . {articles being separated substantially along the axis of the stack}
- U B65G 59/062 . . . {by means of reciprocating or oscillating escapement-like mechanisms}
- B65G 59/065 {by angularly displacing the stack relatively to the lower most article or ~~vice-versa~~ *vice versa*}
- B65G 69/00** **Auxiliary measures taken, or devices used, in connection with loading or unloading (in vehicles, [see see](#) the relevant subclasses; preventing, minimising, or fighting fire [A62C](#))**
- U B65G 2812/00** **Indexing codes relating to the kind or type of conveyors**
- U B65G 2812/02 . Belt or chain conveyors
- U B65G 2812/02267 . . Conveyors having endless traction elements
- B65G 2812/02861 . . . moving the materials over supporting surfaces by impeller means, e.g. scrapers

Project: N/A (B65H)**B65H****HANDLING THIN OR FILAMENTARY MATERIAL, e.g. SHEETS, WEBS, CABLES****NOTES**

1. This subclass ~~does not cover~~ *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 - 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 conveyor
[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 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 5/06 • by rollers {or balls, e.g. between rollers (transport by suction rollers [B65H 5/226](#))}
- U B65H 5/08** • by grippers, e.g. suction grippers
- B65H 5/10 • • Reciprocating or oscillating grippers {, e.g. suction or gripper tables}
- 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](#))}
- B65H 45/00** **Folding thin material (specially adapted for the manufacture or treatment of particular products, [see see](#) appropriate subclasses, e.g. [D06F 89/00](#))**
- U B65H 49/00** **Unwinding or paying-out filamentary material; Supporting, storing or transporting packages from which filamentary material is to be withdrawn or paid-out (winding [B65H 54/00](#); bobbins, tubes or other cores for packages [B65H 75/00](#))**
 - U B65H 49/18** • Methods or apparatus in which packages rotate (flyers or other guides assisting paying-out [B65H 57/00](#); supports or holders, for storing and repeatedly paying-out and rewinding lengths of material provided for particular purposes [B65H 75/34](#))
 - U B65H 49/20** • • Package-supporting devices
 - B65H 49/28 • • Turntables {, i.e. package resting on a table (having also means for clamping the package [B65H 49/30](#))}
- U B65H 54/00** **Winding, coiling, or depositing filamentary material (cores, formers, holders, cans or receptacles [B65H 75/02](#))**
 - U B65H 54/02** • Winding and traversing material on to reels, bobbins, tubes, or like package cores or formers
 - B65H 54/026 • • {Doubling winders, i.e. for winding two or more parallel yarns on a bobbin, e.g. in preparation for twisting or weaving}
- 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}**
 - U B65H 69/06** • by splicing {(Grommets made by splicing [D07B 1/18](#), auxiliary apparatus for splicing ropes or cables [D07B 7/169](#))}
 - U B65H 69/061** • • {using pneumatic means}

	B65H 69/066	<ul style="list-style-type: none"> • • {Wet splicing, i.e. adding liquid to the splicing room or to the yarn ends preparing rooms}
U	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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • specially adapted or mounted for storing and repeatedly paying-out and re-storing 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 see the relevant subclasses, e.g. H02G)
U	B65H 75/38	<ul style="list-style-type: none"> • • • involving the use of a core or former internal to, and supporting, a stored package of material
U	B65H 75/44	<ul style="list-style-type: none"> • • • • Constructional details
	B65H 75/4402	<ul style="list-style-type: none"> • • • • • {Guiding arrangements to control paying-out and re-storing of the material (guides per se per se B65H 57/00)}
U	B65H 2220/00	Function indicators
	B65H 2220/03	<ul style="list-style-type: none"> • indicating an entity which is measured, estimated, evaluated, calculated or determined but which does not constitute an entity which is adjusted or changed by the control process per se per se
U	B65H 2301/00	Handling processes for sheets or webs
U	B65H 2301/40	<ul style="list-style-type: none"> • Type of handling process
U	B65H 2301/41	<ul style="list-style-type: none"> • • Winding, unwinding
U	B65H 2301/412	<ul style="list-style-type: none"> • • • Roll
U	B65H 2301/4124	<ul style="list-style-type: none"> • • • • Outer end attachment
	B65H 2301/41246	<ul style="list-style-type: none"> • • • • • by machine, e.g. on unwinder turret
U	B65H 2301/413	<ul style="list-style-type: none"> • • • Supporting web roll
U	B65H 2301/4134	<ul style="list-style-type: none"> • • • • Both ends type arrangement
	B65H 2301/41342	<ul style="list-style-type: none"> • • • • • shaft transversing the roll (see see also B65H 75/08)
U	B65H 2301/414	<ul style="list-style-type: none"> • • • Winding
U	B65H 2301/41419	<ul style="list-style-type: none"> • • • • Starting winding process
U	B65H 2301/41422	<ul style="list-style-type: none"> • • • • • involving mechanical means
	B65H 2301/414222	<ul style="list-style-type: none"> • • • • • • fixed to frame, tucking leading edge to core, e.g. by brush
U	B65H 2301/4144	<ul style="list-style-type: none"> • • • • Finishing winding process
U	B65H 2301/41445	<ul style="list-style-type: none"> • • • • • after winding process
	B65H 2301/41447	<ul style="list-style-type: none"> • • • • • • discharging roll by, e.g. rolling it down a slope
U	B65H 2301/415	<ul style="list-style-type: none"> • • • Unwinding
U	B65H 2301/41505	<ul style="list-style-type: none"> • • • • Preparing unwinding process

- U B65H 2301/41508 the web roll being in the unwinding support / unwinding location
- U B65H 2301/41509 opening web roll and related steps
- B65H 2301/415095 gripping an edge of the web, e.g. by clamping and forward it, e.g. to splicing web advancing unit
- U B65H 2301/417 Handling or changing web rolls
- U B65H 2301/4171 Handling web roll
- B65H 2301/4175 involving cart ([see see B65H 2405/422](#))
- U B65H 2301/418 Changing web roll
- U B65H 2301/4181 Core or mandrel supply
- B65H 2301/41816 by core magazine within winding machine, i.e. horizontal or inclined ramp holding cores
- B65H 2301/4182 Core or mandrel insertion, e.g. means for loading core or mandrel in winding position
- B65H 2301/41822 from above, i.e. by gravity
- B65H 2301/41824 from below, e.g. between rollers of winding bed
- B65H 2301/41829 positioning the core, e.g. in axial direction
- U B65H 2301/42 . . . Piling, depiling, handling piles
- U B65H 2301/422 Handling piles, sets or stacks of articles
- U B65H 2301/4226 Delivering, advancing piles
- B65H 2301/42262 by acting on surface of outermost articles of the pile, e.g. in nip between pair of belts or rollers (Nota: gripping pile [see see B65H 2301/4224](#))
- U B65H 2301/43 . . . Gathering; Associating; Assembling
- B65H 2301/437 Repairing a faulty collection due to, e.g. misfeed, multiplefeed
- U B65H 2301/44 . . . Moving, forwarding, guiding material
- U B65H 2301/449 Features of movement or transforming movement of handled material
- B65H 2301/4491 transforming movement from continuous to intermittent or [vice versa vice versa](#)
- U B65H 2301/50 . . . Auxiliary process performed during handling process
- U B65H 2301/51 Modifying a characteristic of handled material
- U B65H 2301/516 Securing handled material to another material
- U B65H 2301/5161 Binding processes
- B65H 2301/51611 involving at least a binding element traversing the handled material, e.g. staple
- U B65H 2402/00 Features of construction**
- U B65H 2402/40 . . . Features of frame, housing or mounting of the handling apparatus
- U B65H 2402/41 . . . Portable or hand-held apparatus
- B65H 2402/412 details or the parts to be hold by the user, e.g. handle
- U B65H 2403/00 Power transmission; Driving means**
- U B65H 2403/30 . . . Chain drives
- B65H 2403/31 involving non endless chain, e.g. the chain being used as a flexible rack
- U B65H 2404/00 Parts for transporting or guiding the handled material**
- U B65H 2404/10 . . . Rollers
- U B65H 2404/15 . . . Roller assembly, particular roller arrangement
- U B65H 2404/152 Arrangement of roller on a movable frame

- B65H 2404/1521
 - • • rotating, pivoting or oscillating around an axis; e.g. parallel to the roller axis
- U B65H 2404/20
 - Belts
- U B65H 2404/28
 - • Other properties of belts
- B65H 2404/285
 - • • including readable marks, patterns; e.g. serving for control
- U B65H 2515/00** **Physical entities not provided for in groups [B65H 2511/00](#) or [B65H 2513/00](#)**
- U B65H 2515/30
 - Force; Stress
- U B65H 2515/31
 - • Tensile force
- B65H 2515/314
 - • • Tension profile, i.e. distribution of tension; e.g. across the material feeding direction or along diameter of web roll
- U B65H 2701/00** **Handled material; Storage means**
- U B65H 2701/10
 - Handled articles or webs
- U B65H 2701/19
 - • Specific article or web
- B65H 2701/1914
 - • • Cards; e.g. telephone, credit and identity cards
- B65H 2701/1918
 - • • Insert between web or strip layer; e.g. wire
- B65H 2701/1924
 - • • Napkins or tissues; e.g. dressings, toweling, serviettes, kitchen paper and compresses
- B65H 2701/193
 - • • Sample; e.g. laminate
- B65H 2701/1934
 - • • Sticky notes; e.g. sheets partially coated with temporary adhesive

Project: N/A (B66B)

- U B66B 1/00** **Control systems of elevators in general (safety devices [B66B 5/00](#); controlling door or gate operation [B66B 13/00](#); systems of general application [G05](#))**
- U B66B 1/24
 - Control systems with regulation, i.e. with retroactive action, for influencing travelling speed, acceleration, or deceleration
- U B66B 1/28
 - • electrical (detecting excessive speed [B66B 5/04](#); {(control of electrical motor [H02P](#))})
- B66B 1/32
 - • • effective on braking devices, {e.g. acting on electrically controlled brakes (brake control [H02P](#), lift brakes ~~per se~~ [per se](#) [B66B 5/02](#))}
- 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~~ [per se](#) [B62B 1/00](#), [B62B 3/00](#))}

Project: N/A (B66C)

- U B66C 1/00** **Load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith for transmitting lifting forces to articles or groups of articles (fastening to cables or ropes [F16G 11/00](#))**
- U B66C 1/02
 - by suction means {(suction cups for attaching purposes [F16B 47/00](#))}
- B66C 1/0218
 - • {Safety measures; e.g. sensors, duplicate functions}

Project: N/A (B66D)

- B66D** **CAPSTANS; WINCHES; TACKLES, e.g. PULLEY BLOCKS; HOISTS (winding or unwinding ropes or cables for feeding or storage purposes [B65H](#); rope or cable winding or unwinding mechanisms for lifts [B66B](#))**

NOTE

This subclass ~~covers~~[covers](#):

- rope, cable or chain winding or unwinding mechanisms for moving all loads except lift cages, e.g. winches for dredges;
- braking or detent devices characterised by their application for retarding or preventing rotary movement of a winding drum or barrel

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:

[B66D 1/395](#) covered by [B66D 1/36](#), [B66D 1/50](#)

- | | |
|---|--|
| <p>U B66D 1/00</p> <p>U B66D 1/02</p> <p>U B66D 1/14</p> <p>B66D 1/16</p> <p>B66D 1/18</p> <p>B66D 1/22</p> <p>B66D 1/24</p> | <p>Rope, cable, or chain winding mechanisms; Capstans (portable or mobile lifting or hauling appliances B66D 3/00)</p> <ul style="list-style-type: none"> • Driving gear • • 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 - B66D 1/24)} • • • 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)} • • • and the power being transmitted from a continuously operating and irreversible prime mover {, i.e. an internal combustion engine, e.g. on a motor vehicle or a portable winch} • • • Planetary or differential gearings (for actuating grab buckets B66D 1/70) {, i.e. with planet gears having movable axes of rotation} • • • for varying speed or reversing direction of rotation of drums or barrels {, i.e. variable ratio or reversing gearing (B66D 1/225 takes precedence)} |
|---|--|

Project: N/A (B66F)

- | | |
|--|---|
| <p>U B66F 9/00</p> <p>U B66F 9/06</p> <p>U B66F 9/075</p> <p>U B66F 9/07513</p> <p>B66F 9/07527</p> | <p>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)</p> <ul style="list-style-type: none"> • movable, with their loads, on wheels or the like, e.g. fork-lift trucks (vehicle aspects B60 - 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) • • Constructional features or details • • • {Details concerning the chassis} • • • • {Covers for, e.g. engines or batteries} |
|--|---|

Project: N/A (B67B)

- | | |
|---|--|
| <p>B67B 1/00</p> <p>B67B 3/00</p> <p>U B67B 3/02</p> <p>U B67B 3/10</p> | <p>Closing bottles, jars or similar containers by applying stoppers (stoppers per se per se B65D 39/00)</p> <p>Closing bottles, jars or similar containers by applying caps (caps per se per se B65D 41/00)</p> <ul style="list-style-type: none"> • by applying flanged caps, e.g. crown caps, and securing by deformation of flanges • • Capping heads for securing caps {(B67B 3/023 takes precedence)} |
|---|--|

- B67B 3/18 • • • characterised by being rotatable, e.g. for forming screw threads ~~in-situ~~in situ
- B67B 3/20 • by applying and rotating preformed threaded caps (forming threads ~~in-situ~~in situ by resilient deforming means [B67B 3/16](#), by rotary capping heads [B67B 3/18](#))
- B67B 3/2073 • {comprising torque limiting means (torque limiters in wrenches or screwdrivers [B25B 23/14](#); couplings or clutches ~~per se~~per se [F16D](#))}
- U B67B 5/00 Applying protective or decorative covers to closures; Devices for securing bottle closures with wire (infant feeding teats with means for fastening to bottles [A61J 11/04](#))**
- B67B 5/03 • Applying protective or decorative covers to closures, e.g. by forming ~~in-situ~~in situ

Project: MP0239 (B67B)

- M 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](#) ~~{[B65D 75/58](#), [B65D 77/30](#)};~~ ~~{dispensers for pills from blister packs [B65B 69/0058](#)})~~**

Project: N/A (B67B)

- B67B 7/44 • Combination tools, e.g. comprising cork-screws, can piercers, crowncap removers (combinations of opening devices with cutting tools [B26](#); with devices serving other purposes, ~~see~~see appropriate subclasses, e.g. [B25F](#); [B43K 29/00](#))

Project: N/A (B67D)

- U B67D 1/00 Apparatus or devices for dispensing beverages on draught ([B67D 3/00](#) takes precedence; apparatus for making beverages [A47J 31/00](#))**
- U B67D 2001/0091 • {Component storage means}
- B67D 2001/0092 • • {Containers for gas, for, e.g. CO₂, N₂}
- B67D 1/06 • Mountings or arrangements of dispensing apparatus in or on shop or bar counters (shop or bar counters ~~per se~~per se [A47F 9/00](#))
- U B67D 1/08 • Details
- B67D 1/0857 • • {Cooling arrangements (cooling systems ~~per se~~per se [F25B](#))}
- B67D 1/12 • • Flow or pressure control devices or systems {, e.g. valves, gas pressure control, level control in storage containers}
- U B67D 1/1202 • • • {Flow control, e.g. for controlling total amount or mixture ratio of liquids to be dispensed}
- U B67D 1/1234 • • • • {to determine the total amount}
- B67D 1/1238 • • • • {comprising means for detecting the liquid level in vessels to be filled, e.g. using ultrasonic waves, optical reflexion, probes}
- U B67D 2210/00 Indexing scheme relating to aspects and details of apparatus or devices for dispensing beverages on draught or for controlling flow of liquids under gravity from storage containers for dispensing purposes**
- U B67D 2210/00146 • Component storage means
- B67D 2210/00149 • • Fixed containers to be filled ~~in-situ~~in situ

Project: N/A (B68G)

- B68G 1/00 Loose filling materials for upholstery (manufacture of the materials, ~~see~~see the relevant classes)**

B68G 5/00

Resilient upholstery pads (finished upholstery [B68G 11/00](#); {making upholstery from plastics [B29D 99/0092](#)}; waddings, fleeces, mats, or like products of fibrous structure, [see](#) the relevant classes)

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~~ [does not cover](#):

- purely electrical or electronic devices [per se](#) [per se](#) which are covered by section [H](#), e.g. subclass [H01L](#);
- purely optical devices [per se](#) [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](#) [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)

B81B 3/0018

- {Structures acting upon the moving or flexible element for transforming energy into mechanical movement or [vice-versa](#) [vice versa](#), i.e. actuators, sensors, generators}

B81B 3/0021

- {Transducers for transforming electrical into mechanical energy or [vice-versa](#) [vice versa](#) (dynamo-electric machines [H02K 57/00](#); electrostatic machines [H02N 1/00](#); piezo-electric devices [H01L 41/00](#))}

B81B 3/0024

- {Transducers for transforming thermal into mechanical energy or [vice versa](#) [vice versa](#), e.g. thermal or bimorph actuators (electric motors using thermal effects [H02N 10/00](#))}

U B81B 7/00

Micro-structural systems; {Auxiliary parts of micro-structural devices or systems}

U B81B 7/0032

- {Packages or encapsulation (processes for packaging MEMS [B81C 1/00261](#); packaging of smart-MEMS [B81C 1/0023](#))}

- B81B 7/0061
- {suitable for fluid transfer from the MEMS out of the package or ~~vice-versa~~*vice versa*, e.g. transfer of liquid, gas, sound}
- B81B 7/008
- {MEMS characterised by an electronic circuit specially adapted for controlling or driving the same ([B81B 7/0087](#) takes precedence; arrangements for starting, regulating, braking, or otherwise controlling an actuator [H02N](#); control arrangements or circuits for visual indicators [G09G 3/00](#))}

NOTES

1. This group ~~covers~~*covers*: only MEMS with an electronic circuit which is not specific to a particular application.
2. This group ~~does not cover~~*does not cover*: electronic circuits ~~per se~~*per se*, e.g. for controlling or driving application specific MEMS

Project: N/A (B81C)**B81C**

PROCESSES OR APPARATUS SPECIALLY ADAPTED FOR THE MANUFACTURE OR TREATMENT OF MICRO-STRUCTURAL DEVICES OR SYSTEMS (making microcapsules or microballoons [B01J 13/02](#); processes or apparatus peculiar to the manufacture or treatment of piezo-electric, electrostrictive or magnetostrictive element ~~per se~~*per se* [H01L 41/22](#))

NOTES

1. This subclass ~~does not cover~~*does not cover*:
 - processes or apparatus for the manufacture or treatment of purely electrical or electronic devices, which are covered by section ~~HH~~*HH*, e.g. group [H01L 21/00](#);
 - processes or apparatus involving the manipulation of single atoms or molecules, which are covered by group [B82B 3/00](#).
2. In this subclass, local "residual" subgroups, e.g. [B81C 1/00126](#), 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 [B81C 1/00126](#) and not in [B81C 1/00023](#) as [B81C 1/00126](#) is "residual" to [B81C 1/00031](#)-[B81C 1/00119](#)

- U B81C 1/00 Manufacture or treatment of devices or systems in or on a substrate ([B81C 3/00](#) takes precedence)**
- U B81C 1/00015
- B81C 1/00023
- {for manufacturing micro-systems}
 - {without movable or flexible elements (array of static structures for functionalising surfaces in [B81C 1/00206](#); manufacture of MEMS devices for specific applications, ~~see~~*see* relevant places, e.g. microreactors [B01J 19/0093](#), lab-on-chip [B01L 3/5027](#), micromixers [B01F 13/0059](#))}
- B81C 1/00134
- {comprising flexible or deformable structures (manufacture of MEMS devices for specific applications, ~~see~~*see* relevant places, e.g. gyroscopes [G01C 19/5719](#), pressure sensors [G01L 9/0042](#), accelerometers [G01P 15/0802](#), acoustic transducers or diaphragms therefor [H04R 31/00](#))}
- U B81C 1/00261
- {Processes for packaging MEMS devices (MEMS packages [B81B 7/0032](#), packaging of smart-MEMS [B81C 1/0023](#))}
- B81C 1/00309
- • {suitable for fluid transfer from the MEMS out of the package or ~~vice-versa~~*vice versa*, e.g. transfer of liquid, gas, sound}
- U B81C 99/00 Subject matter not provided for in other groups of this subclass**
- U B81C 99/0005
- {Apparatus specially adapted for the manufacture or treatment of micro-structural devices or systems, or methods for manufacturing the same}

B81C 99/002

- {Apparatus for assembling MEMS, e.g. micro-manipulators (micro-manipulators ~~per se~~ ~~per se~~ [B25J 7/00](#))}

Project: N/A (B82B)**B82B**

NANO-STRUCTURES FORMED BY MANIPULATION OF INDIVIDUAL ATOMS, MOLECULES, OR LIMITED COLLECTIONS OF ATOMS OR MOLECULES AS DISCRETE UNITS; MANUFACTURE OR TREATMENT THEREOF

NOTES

1. This subclass ~~does not cover~~ ~~does not cover~~ chemical or biological nano-structures ~~per se~~ ~~per se~~, provided for elsewhere, e.g. in classes [C08](#) or [C12](#).
2. Attention is drawn to the Note following the title of class [B82](#), which defines the meaning of the terms "nano-size", "nano-scale" and "nano-structure" in this subclass.
3. Subject matter classified in this subclass is further classified in subclass [B82Y](#), in order to enable a comprehensive search of nano-structure technology using classification symbols of [B82Y](#) in combination with classification symbols of [B82B](#).
4. Nano-structures having specialised features or functions are further classified in appropriate places in other subclasses that provide for those features or functions, e.g. in [G01Q](#), [G02F 1/017](#), [H01L 29/775](#).

Project: N/A (B82Y)**B82Y**

SPECIFIC USES OR APPLICATIONS OF NANO-STRUCTURES; MEASUREMENT OR ANALYSIS OF NANO-STRUCTURES; MANUFACTURE OR TREATMENT OF NANO-STRUCTURES

NOTES

1. This subclass ~~covers~~ ~~covers~~ applications and aspects of nano-structures which are produced by any method, and is not restricted to those that are formed by manipulation of individual atoms or molecules.
2. Attention is drawn to the Note following the title of class [B82](#), which defines the meaning of the terms "nano-size", "nano-scale" and "nano-structure" in this subclass.
3. This subclass is intended to enable a comprehensive search of subject matter related to nano-structures by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore this subclass ~~covers~~ ~~covers~~ aspects of nano-structures that might also be entirely or partially covered elsewhere in the IPC.
4. This subclass is for secondary classification, i.e. obligatory supplementary classification of subject matter already classified as such in other classification places, e.g. :

[B82B](#) Nanostructures formed by individual manipulation of atoms, molecules, or limited collections of atoms or molecules as discrete units; manufacture or treatment thereof

[A61K 9/51](#) Nano - capsules for medicinal preparations

[B05D 1/20](#) Langmuir-Blodgett films

[C01B 31/02](#) Carbon nano-structures, e.g. bucky-balls, nanotubes, nanocoils, nano-doughnuts or nano-onions

[G01Q](#) Scanning probe techniques

[G02F 1/017](#) Optical quantum wells or boxes

[H01F 10/32](#) Nano-structured thin magnetic films

[H01F 41/30](#) Molecular beam epitaxy [MBE]

[H01L 29/775](#) Quantum wire FETs

5. The classification symbols of this subclass are not listed first when assigned to patent documents.

6. In this subclass, multi-aspects classification is applied, so that aspects of subject matter that are covered by more than one of its groups should be classified in each of those groups.

Project: N/A (C)

C

CHEMISTRY; METALLURGY

NOTES

1. In section [E](#)[C](#), the definitions of groups of chemical elements are as follows:

- ALKALI METALS: Li, Na, K, Rb, Cs, Fr
- ALKALINE EARTH METALS: Ca, Sr, Ba, Ra
- LANTHANIDES: elements with atomic numbers 57 to 71 inclusive
- RARE EARTHS: Sc, Y, Lanthanides
- ACTINIDES: elements with atomic numbers 89 to 103 inclusive
- REFRACTORY METALS: Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W
- HALOGENS: F, Cl, Br, I, At
- NOBLE GASES: He, Ne, Ar, Kr, Xe, Rn
- PLATINUM GROUP: Os, Ir, Pt, Ru, Rh, Pd
- NOBLE METALS: Ag, Au, Platinum group
- LIGHT METALS: alkali metals, alkaline earth metals, Be, Al, Mg
- HEAVY METALS: metals other than light metals
- IRON GROUP: Fe, Co, Ni
- NON-METALS: H, B, C, Si, N, P, O, S, Se, Te, noble gases, halogens
- METALS: elements other than non-metals
- TRANSITION ELEMENTS: elements with atomic numbers 21 to 30 inclusive, 39 to 48 inclusive, 57 to 80 inclusive, 89 upwards

2. The following notes are meant to assist in the use of this part of the classification scheme; they must not be read as modifying in any way the elaborations.

1. Section [E](#)[C](#) covers:

- a. pure chemistry, which covers inorganic compounds, organic compounds, macromolecular compounds, and their methods of preparation;
 - b. applied chemistry, which covers compositions containing the above compounds, such as: glass, ceramics, fertilisers, plastics compositions, paints, products of the petroleum industry. It also covers certain compositions on account of their having particular properties rendering them suitable for certain purposes, as in the case of explosives, dyestuffs, adhesives, lubricants, and detergents;
 - c. certain marginal industries, such as the manufacture of coke and of solid or gaseous fuels, the production and refining of oils, fats, and waxes, the fermentation industry, (e.g. brewing and wine-making) the sugar industry;
 - d. certain operations or treatments, which are either purely mechanical, e.g. the mechanical treatment of leather and skins, or partly mechanical, e.g. the treatment of water, or the prevention of corrosion in general;
 - e. metallurgy, ferrous or non-ferrous alloys.
- 2.
- a. In the case of operations, treatments, products, or articles which have both a chemical and non-chemical part or aspect, the general rule is that the chemical part or aspect is covered by section [E](#)[C](#).
 - b. In some of these cases, the chemical part or aspect brings with it a non-chemical one, even though purely mechanical, because this latter aspect either is essential to the operation or treatment or

constitutes an important element of it; it has seemed, in fact, more logical not to dissociate the different parts or aspects of a coherent whole. This is the case for applied chemistry and for the industries, operations, and treatments mentioned in Notes 1), c), d) and e). For example, furnaces peculiar to the manufacture of glass are covered by class [C03](#) and not by class [F27](#).

- c. There are, however, some exceptions in which the mechanical (or non-chemical) aspect carries with it the chemical aspect, for example:
- certain extractive processes in subclass [A61K](#);
 - the chemical purification of air in subclass [A61L](#);
 - chemical methods of fire-fighting in subclass [A62D](#);
 - chemical processes and apparatus in class [B01](#);
 - impregnation of wood in subclass [B27K](#);
 - chemical methods of analysis or testing in subclass [G01N](#);
 - photographic materials and processes in class [G03](#), and generally, the chemical treatment of textiles and the production of cellulose or paper in section [D](#).
- d. In still other cases, the pure chemical aspect is covered by section [G](#) and the applied chemical aspect by another section such as [A](#), [B](#), [F](#), e.g. the use of a substance or composition for
- treatment of plants or animals covered by subclass [A01N](#);
 - foodstuffs covered by class [A23](#);
 - munitions or explosives covered by class [F42](#).
- e. When the chemical and mechanical aspects are so closely interlocked that a neat and simple division is not possible, or when certain mechanical processes follow as a natural or logical continuation of a chemical treatment, section [G](#) may cover, in addition to the chemical aspect, a part only of the mechanical aspect, e.g. after-treatments of artificial stone covered by class [C04](#). In this latter case a note or a reference is usually given to make the position clear, even if sometimes the division is rather arbitrary.

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 [G](#).

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](#)

- U 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](#) - [C01B 3/18](#) and in groups [C01B 3/22](#) - [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 3/50** • Separation of hydrogen or hydrogen containing gases from gaseous mixtures, e.g. purification ([C01B 3/14](#) takes precedence)
- C01B 3/508** • {by selective and reversible uptake by an appropriate medium, i.e. the uptake being based on physical or chemical sorption phenomena or on reversible chemical reactions (the appropriate mediums ~~per se~~ [per se](#) [C01B 3/0005](#))}
- 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~~ [see](#) the relevant groups for hydrogen compounds in class [C01](#))**
- C01B 9/00** **General methods of preparing halides (particular individual halides, ~~see~~ [see](#) the relevant groups in [C01B](#) - [C01G](#) according to the element combined with the halogen; electrolytic production of inorganic compounds [C25B](#))**
- U C01B 13/00** **Oxygen; Ozone; Oxides or hydroxides in general**
- U C01B 13/02** • Preparation of oxygen (by liquefying [F25J](#))
- C01B 13/0296** • {Generators releasing in a self-sustaining way pure oxygen from a solid charge, without interaction of it with a fluid nor external heating, e.g. chlorate candles or canisters containing them (charges ~~per se~~ [per se](#) [C01B 13/02](#))}
- C01B 13/14** • Methods for preparing oxides or hydroxides in general (particular individual oxides or hydroxides, ~~see~~ [see](#) the relevant groups of subclasses [C01B](#) - [C01G](#) or [C25B](#), according to the element combined with the oxygen or hydroxy group)
- 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~~ [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~~ [see](#) the relevant groups of subclasses [C01B](#) - [C01G](#), according to the cation)
- C01B 17/96** • Methods for the preparation of sulfates in general (particular individual sulfates, ~~see~~ [see](#) the relevant groups of subclasses [C01B](#) - [C01G](#), according to the cation)
- U C01B 21/00** **Nitrogen; Compounds thereof**
- U C01B 21/20** • Nitrogen oxides; Oxyacids of nitrogen; Salts thereof

- C01B 21/48
- • Methods for the preparation of nitrates in general (particular individual nitrates, **see see** the relevant groups of subclasses [C01B](#) - [C01G](#), according to the cation)
- U 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
- U C01B 25/22
- • • Preparation by reacting phosphate-containing material with an acid, e.g. wet process
- C01B 25/222
- • • with sulfuric acid, a mixture of acids mainly consisting of sulfuric acid or a mixture of compounds forming it **in-situ**[in situ](#), e.g. a mixture of sulfur dioxide, water and oxygen
- U 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](#))**
- U 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}
- C01B 31/04
- • Graphite, including modified graphite, e.g. graphitic oxides, intercalated graphite, expanded graphite or graphene
- NOTE**
- In groups [C01B 31/04](#) - [C01B 31/0492](#) it is desirable to add indexing codes for structural aspects or properties of graphene. The indexing codes are chosen from [C01B 2204/00](#) - [C01B 2204/32](#)
- U C01B 31/08
- Active carbon
- C01B 31/14
- • Granulation (apparatus [B01J 2/00](#))
- NOTE**
- In this group, the term granulation covers the methods of preparation of active carbon using carbonaceous precursors **per-se**[per se](#) and binders, e.g. pitch, and producing the granules
- C01B 31/24
- Methods for the preparation of carbonates or bicarbonates in general (percarbonates [C01B 15/10](#); particular individual carbonates, **see see** the relevant groups in [C01B](#) - [C01G](#) according to the cation)
- U 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 33/08
- Compounds containing halogen
- U C01B 33/107
- • Halogenated silanes
- U C01B 33/10778
- • • {Purification}
- U C01B 33/10784
- • • • {by adsorption}
- C01B 33/10789
- • • • {the adsorbing material being formed **in-situ**[in situ](#), e.g. by partial hydrolysis}

Project: N/A (C01C)

- U C01C 1/00** **Ammonia; Compounds thereof ({[C01C 3/08](#), [C01C 3/14](#), [C01C 3/16](#), [C01C 3/20](#) take precedence})**
- NOTE**
- Complex ammine salts, e.g. [Pd(NH₃)₄]Cl₂, are { also} classified in the relevant groups of subclasses [C01D](#) - [C01G](#), according to the metal

C01C 1/28

- Methods of preparing ammonium salts in general

NOTES

1. This group ~~does not cover~~ **does not cover** ammonium salts of complex acids (other than complex cyanides) containing a metal in the anion, which are covered by the relevant groups of subclasses [C01D](#) - [C01G](#), according to the metal.
2. Salts of polybasic acids with ammonium and a metal as cations are classified as though the ammonium were hydrogen.

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](#)}}

Project: N/A (C01G)

U C01G 53/00

C01G 53/40

Compounds of nickel

- {Nickelates}

WARNING

Groups [C01G 53/40](#) - [C01G 53/70](#) are not complete pending a reorganisation, see also [C01G 53/006](#) and [C01G 53/00](#)

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](#) - [C02F 9/14](#) covered by [C02F 9/00](#) and subgroup-

U C02F 1/00 Treatment of water, waste water, or sewage ([C02F 3/00](#) - [C02F 9/00](#) take precedence)

- 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](#) - [C02F 2001/46166](#) }

C02F 9/00 Multistage treatment of water, waste water, or sewage

NOTES

1. This group ~~covers~~[covers](#) only those combined treating operations where the interest is directed to the relationship between the steps.
2. This group ~~does not cover~~[does not cover](#), for example, chemical treatment followed by settlement or biological treatment involving normal mechanical treatment.

Project: N/A (C03B)

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 37/01205 · · · {starting from tubes, rods, fibres or filaments ([C03B 37/014](#) takes precedence)}
- U C03B 37/01211 · · · · {by inserting one or more rods or tubes into a tube}
- C03B 37/01217 · · · · · {for making preforms of polarisation-maintaining optical fibres (polarisation-maintaining optical fibres ~~per se~~[per se](#) [G02B 6/105](#))}

U C03B 2207/00 Glass deposition burners

- U C03B 2207/80 · Feeding the burner or the burner-heated deposition site
- C03B 2207/90 · · with vapour generated from solid glass precursors, i.e. by sublimation

U C03B 2215/00 Press-moulding glass

- C03B 2215/79 · Uniting product and product holder during pressing, e.g. lens and lens holder

Project: N/A (C03C)**C03C**

CHEMICAL COMPOSITION OF GLASSES, GLAZES, OR VITREOUS ENAMELS; SURFACE TREATMENT OF GLASS; SURFACE TREATMENT OF FIBRES OR FILAMENTS FROM GLASS, MINERALS OR SLAGS; JOINING GLASS TO GLASS OR OTHER MATERIALS

NOTES

1. This subclass ~~covers~~ **covers** compositions of polycrystalline fibres
2. This subclass ~~does not cover~~ **does not cover** the preparation of single-crystal fibres, which is covered by subclass [C30B](#)

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:

[C03C 6/00](#) covered by [C03C 1/00](#)
[C03C 10/02](#)–[C03C 10/14](#) covered by [C03C 10/00](#)
[C03C 13/02](#) covered by [C03C 13/00](#)
[C03C 27/12](#) covered by [B32B 17/00](#)

Project: N/A (C04)**C04**

CEMENTS; CONCRETE; ARTIFICIAL STONE; CERAMICS; REFRACTORIES (alloys based on refractory metals [C22C](#))

NOTE

This class ~~does not cover~~ **does not cover** mechanical features provided for elsewhere, e.g. mechanical working [B28](#), kilns [F27](#).

Project: N/A (C04B)**U C04B 12/00**

C04B 12/04

Cements not provided for in groups [C04B 7/00](#) - [C04B 11/00](#)

- Alkali metal or ammonium silicate cements {Alkyl silicate cements; Silica sol cements; Soluble silicate cements} (alkali metal silicates ~~per se~~ **per se**, their preparation [C01B 33/32](#); ammonium silicates ~~per se~~ **per se**, their preparation [C01C 1/00](#))

U 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

U C04B 16/04

- Macromolecular compounds ([C04B 16/02](#) takes precedence)

U C04B 16/08

- • porous, e.g. expanded polystyrene beads {or micro-balloons}

C04B 16/085

- • • {expanded ~~in situ~~ **in situ**, i.e. during or after mixing the mortar, concrete or artificial stone ingredients}

- U 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)}
- U C04B 18/18 • • organic ([C04B 18/10](#) takes precedence)
- U C04B 18/20 • • • from macromolecular compounds {(recycled expanded polystyrene [C04B 16/08](#))}
- C04B 18/22 • • • • Rubber {, e.g. ground waste tires}
- U C04B 20/00** **Use of materials as fillers for mortars, concrete or artificial stone according to more than one of groups [C04B 14/00](#) - [C04B 18/00](#) and characterised by shape or grain distribution; Treatment of materials according to more than one of the groups [C04B 14/00](#) - [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
- U C04B 20/0016 • {Granular materials, e.g. micro-balloons}
- U C04B 20/002 • • {Hollow or porous granular materials}
- C04B 20/0024 • • • {expanded **in-situ** *in situ*, i.e. the material is expanded or made hollow after primary shaping of the mortar, concrete or artificial stone mixture ([C04B 16/085](#) takes precedence)}
- U 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](#) - [C04B 12/00](#)
- U C04B 28/14 • containing calcium sulfate cements {(gypsum-paper plates [E04C](#))}
- C04B 28/148 • • {containing calcium sulfate formed **in-situ** *in situ*, e.g. by the reaction of iron sulfate with lime}
- U C04B 33/00** **Clay-wares (monolithic refractories or refractory mortars [C04B 35/66](#); porous products [C04B 38/00](#))**
- NOTE
In groups [C04B 33/00](#) - [C04B 33/36](#), from 01-10-2008 onwards, the indexing codes of groups [C04B 2235/00](#) - [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
- U 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;~~
[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](#) - [C04B 35/83](#), from 01-01-2005 onwards, the indexing codes of groups [C04B 2235/00](#) - [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](#) - [C04B 2235/668](#)

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](#)~~B~~}

WARNING

Groups [C04B 35/62605](#) - [C04B 35/62695](#) are not complete, see also other subgroups of [C04B 35/00](#), e.g. [C04B 35/626](#)

- U 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 Si₃N₄ [C04B 35/591](#)})
- NOTE
- In groups [C04B 35/71](#) - [C04B 35/83](#) the composition of the ceramic products is also classified in groups [C04B 35/01](#) - [C04B 35/597](#)
- U C04B 35/78
- C04B 35/80
- • containing non-metallic materials
 - • • Fibres, filaments, whiskers, platelets, or the like {(carbon reinforced with carbon fibres [see see C04B 35/83](#))}
- U 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 38/06
- 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 38/0615
- • {the burned-out substance being a monolithic element having approximately the same dimensions as the final article, e.g. a porous polyurethane sheet or a prepreg obtained by bonding together resin particles ([C04B 38/0022](#) takes precedence)}
- C04B 38/062
- • • {the burned-out substance being formed [in-situ in situ](#), e.g. by polymerisation of a prepolymer composition containing ceramic powder}
- U 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
1. 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](#) - [C04B 41/5392](#) as well as in the range [C04B 41/60](#) - [C04B 41/72](#)
 - when the substrate to be treated is of the ceramic type, classification is made in the range [C04B 41/00](#) - [C04B 41/5392](#) as well as in the range [C04B 41/80](#) - [C04B 41/91](#)

- when the substrate to be treated is a-specific, classification is made only in the range [C04B 41/00](#) - [C04B 41/5392](#)
 - 2. In groups [C04B 41/0018](#) - [C04B 41/53](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
 - 3. 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](#).
 - 4. In groups [C04B 41/00](#) - [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](#) - [C04B 38/00](#) should be unlinked.
 - 5. In groups [C04B 41/00](#) - [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](#) - [C04B 41/5392](#) should be unlinked.
 - 6. Attention is drawn to internal Note (2) following the title of subclass [C04B](#).
- C04B 41/0018 • {Coating or impregnating "~~in-situ~~*in situ*", e.g. impregnating of artificial stone by subsequent melting of a compound added to the artificial stone composition}
- 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](#) - [C04B 41/0054](#) take precedence)}
- C04B 41/5338 • {Etching (for obtaining decorative effects [B44C 1/22](#); etching of specific electronic compounds, ~~see~~*see* the relevant places, e.g. etching of semiconductor bodies [H01L 21/306](#))}
- U **C04B 2103/00** **Function or property of ingredients for mortars, concrete or artificial stone**
- C04B 2103/0067 • {the ingredients being formed ~~in-situ~~*in situ* by chemical reactions or conversion of one or more of the compounds of the composition}

Project: N/A (C05G)

C05G

MIXTURES OF FERTILISERS COVERED INDIVIDUALLY BY DIFFERENT SUBCLASSES OF CLASS [C05](#); MIXTURES OF ONE OR MORE FERTILISERS WITH MATERIALS NOT HAVING A SPECIFIC FERTILISING ACTIVITY, e.g. PESTICIDES, SOIL-CONDITIONERS, WETTING AGENTS (organic fertilisers containing added bacterial cultures, mycelia, or the like [C05F 11/08](#); organic fertilisers containing plant vitamins or hormones [C05F 11/10](#)); FERTILISERS CHARACTERISED BY THEIR FORM

NOTES

1. This subclass ~~covers~~*covers* mixtures of fertilisers with soil-conditioning or soil-stabilising materials characterised by their fertilising activity.
2. This subclass ~~does not cover~~*does not cover* mixtures of fertilisers with soil-conditioning or soil-stabilising materials characterised by their soil-conditioning or soil-stabilising activity, which are covered by group [C09K 17/00](#).

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 (see internal note after the title of class [C05](#)):

[C05G 1/02](#)–[C05G 1/10](#) covered by [C05](#)
[C05G 3/10](#) covered by [C05G 3/0088](#)
[C05G 5/00](#) covered by [C05G 3/0005](#)

Project: N/A (C06B)**C06B**

**EXPLOSIVES OR THERMIC COMPOSITIONS (blasting [F42D](#));
MANUFACTURE THEREOF; USE OF SINGLE SUBSTANCES AS
EXPLOSIVES (compounds in general [C01](#), [C07](#) or [C08](#); {demolition agents
based on cementitious or like materials [C04B 41/0009](#)})**

NOTES

1. This subclass ~~covers~~*covers*:
 - compositions which are:
 - a. explosive: compositions included are those containing both a fuel and sufficient oxidiser so that, upon initiation, they are capable of undergoing a chemical change of a relatively high rate of speed, resulting in the production of usable force for blasting, firearms, propelling missiles, or the like;
 - b. thermic: compositions included have
 - i. a consumable fuel component which consists of any element which is a metal, B, Si, Se or Te, or mixtures, intercompounds, or hydrides thereof; and
 - ii. in combination an oxidant component which is either a metal oxide or a salt (organic or inorganic) capable of yielding a metal oxide on decomposition;
 - c. fuels for rocket engines and intended for reaction with an oxidant, excluding air, in order to provide thrust for motive power purposes;
 - d. for use in affecting the explosion environment, e.g. for neutralising the poisonous gases of explosives, for cooling the explosion gases, or the like;
 - methods or apparatus for preparing or treating such compositions not otherwise provided for;
 - methods of using single substances as explosives.
2. In this subclass, the following term is used with the meaning indicated:
 - "nitrated" covers compounds having a nitro group or a nitrate ester group.
3. Methods or apparatus for preparing or treating such compositions are classified according to the particular components of the compositions.
4. In this subclass, the words "based on", with reference to explosive compositions, refer to the explosive ingredient present in the largest proportion by weight
5. In the absence of an indication to the contrary a composition is classified in the last place that provides for an ingredient

C06B 47/00

Compositions in which the components are separately stored until the moment of burning or explosion, e.g. "Sprengel"-type explosives; Suspensions of solid component in a normally non-explosive liquid phase, including a thickened aqueous phase

NOTE

~~{This group also covers emulsion type explosives in which a solid component is not compulsory}~~*This group also covers emulsion type explosives in which a solid component is not compulsory}*

Project: N/A (C07B)**C07B 59/00**

Introduction of isotopes of elements into organic compounds; {Labelled organic compounds ~~per se~~*per se*}

U C07B 61/00

Other general methods

C07B 61/02

• Generation of organic free radicals; {Organic free radicals ~~per se~~*per se*}

Project: N/A (C07C)

- U C07C 4/00** **Preparation of hydrocarbons from hydrocarbons containing a larger number of carbon atoms (redistribution reactions involving splitting [C07C 6/00](#); cracking hydrocarbon oils [C10G](#))**
- U C07C 4/08 · by splitting-off an aliphatic or cycloaliphatic part from the molecule
 - U C07C 4/12 · · from hydrocarbons containing a six-membered aromatic ring, e.g. propyltoluene to vinyltoluene
 - U C07C 4/14 · · · splitting taking place at an aromatic-aliphatic bond
 - C07C 4/20 · · · · Hydrogen being formed ~~in-situ~~[in situ](#), e.g. from steam
- U C07C 5/00** **Preparation of hydrocarbons from hydrocarbons containing the same number of carbon atoms**
- U C07C 5/22 · by isomerisation (with simultaneous hydrogenation [C07C 5/13](#); with simultaneous dehydrogenation [C07C 5/373](#))
 - U C07C 5/23 · · Rearrangement of carbon-to-carbon unsaturated bonds
 - U C07C 5/25 · · · Migration of carbon-to-carbon double bonds
 - U C07C 5/2506 · · · · {Catalytic processes}
 - U C07C 5/2562 · · · · · {with hydrides or organic compounds ([C07C 5/2543](#) takes precedence)}
 - C07C 5/2581 · · · · · · {containing complexes, e.g. acetyl-acetonates (complexes of salts of acids of halogen [C07C 5/2543](#))}
 - C07C 5/42 · by dehydrogenation with a hydrogen acceptor
- NOTES**
1. The catalyst is considered as forming part of the acceptor system in case of simultaneous catalyst reduction.
 2. The acceptor system is classified according to the supplying substances in case of ~~in-situ~~[in situ](#) formation of the acceptor system or of ~~in-situ~~[in situ](#) regeneration of the reduced acceptor system.
 3. Compounds added for binding the reduced acceptor system are not considered as belonging to the acceptor system.
- 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**
- U C07C 29/64 · by simultaneous introduction of -OH groups and halogens
 - C07C 29/66 · · by addition of hypohalogenous acids, which may be formed ~~in-situ~~[in situ](#), to carbon-to-carbon unsaturated bonds
 - U C07C 29/68 · Preparation of metal alcoholates ([C07C 29/42](#), [C07C 29/54](#) take precedence)
 - U C07C 29/70 · · by converting hydroxy groups to O-metal groups {([C07C 29/09](#) takes precedence)}
 - C07C 29/705 · · · {by transalcoholysis (for the same reaction with the emphasis on alcohol preparation ~~see~~[see](#) [C07C 29/128](#))}
- U C07C 37/00** **Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom of a six-membered aromatic ring**
- C07C 37/06 · by conversion of non-aromatic six-membered rings or of such rings formed ~~in situ~~[in situ](#) into aromatic six-membered rings, e.g. by dehydrogenation

U C07C 39/00 Compounds having at least one hydroxy or O-metal group bound to a carbon atom of a six-membered aromatic ring

NOTE

In condensed ring systems of six-membered aromatic rings and other rings, the double bond belonging to the benzene ring is not considered as unsaturated for the non-aromatic ring condensed thereon.

- U C07C 39/24
 - Halogenated derivatives
- C07C 39/367
 - • polycyclic non-condensed, containing only six-membered aromatic rings as cyclic parts, e.g. halogenated poly-hydroxyphenylalkanes

U C07C 45/00 Preparation of compounds having >C = O groups bound only to carbon or hydrogen atoms; Preparation of chelates of such compounds

- U C07C 45/27
 - by oxidation (with ozone [C07C 45/40](#))
- C07C 45/31
 - • with compounds containing mercury atoms, which may be regenerated **in situ**, e.g. by oxygen

U C07C 51/00 Preparation of carboxylic acids or their salts, halides or anhydrides (of acids by hydrolysis of oils, fats or waxes [C11C](#))

- U C07C 51/16
 - by oxidation ([C07C 51/145](#) takes precedence)
- C07C 51/29
 - • with halogen-containing compounds which may be formed **in situ**
- U C07C 51/42
 - Separation; Purification; Stabilisation; Use of additives
- C07C 51/50
 - • Use of additives, e.g. for stabilisation

C07C 69/00 Esters of carboxylic acids; Esters of carbonic or haloformic acids (ortho esters, **see the relevant groups, e.g. [C07C 43/32](#))**

NOTE

In this group esters having a variably-specified acid moiety, i.e. covered by more than one of groups [C07C 69/02](#), [C07C 69/34](#), [C07C 69/52](#), [C07C 69/608](#), [C07C 69/612](#), [C07C 69/62](#), [C07C 69/66](#), [C07C 69/74](#), [C07C 69/76](#), [C07C 69/95](#), [C07C 69/96](#), are covered by groups [C07C 69/003](#) - [C07C 69/017](#) according to their hydroxylic moiety

Project: N/A (C07D)

U C07D 231/00 Heterocyclic compounds containing 1,2-diazole or hydrogenated 1,2-diazole rings

- U C07D 231/02
 - not condensed with other rings
- U C07D 231/10
 - • having two or three double bonds between ring members or between ring members and non-ring members
- U C07D 231/14
 - • • with hetero atoms or with carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, e.g. ester or nitrile radicals, directly attached to ring carbon atoms
- U C07D 231/44
 - • • • Oxygen and nitrogen or sulfur and nitrogen atoms
- C07D 231/52
 - • • • • Oxygen atom in position 3 and nitrogen atom in position 5, or **vice-versa**

U C07D 301/00 Preparation of oxiranes

- U C07D 301/02
 - Synthesis of the oxirane ring
- U C07D 301/03
 - • by oxidation of unsaturated compounds, or of mixtures of unsaturated and saturated compounds
- U C07D 301/14
 - • • with organic peracids, or salts, anhydrides or esters thereof
- C07D 301/16
 - • • • formed **in situ**, e.g. from carboxylic acids and hydrogen peroxide

- U C07D 307/00** **Heterocyclic compounds containing five-membered rings having one oxygen atom as the only ring hetero atom**
- U C07D 307/77 · ortho- or peri-condensed with carbocyclic rings or ring systems
 - U C07D 307/87 · · Benzo [c] furans; Hydrogenated benzo [c] furans
 - C07D 307/90 · · · with an oxygen atom in position 1 and a nitrogen atom in position 3, or ~~vice-~~
~~versa~~[vice versa](#)
- U C07D 311/00** **Heterocyclic compounds containing six-membered rings having one oxygen atom as the only hetero atom, condensed with other rings**
- U C07D 311/02 · ortho- or peri-condensed with carbocyclic rings or ring systems
 - U C07D 311/04 · · Benzo[b]pyrans, not hydrogenated in the carbocyclic ring
 - U C07D 311/58 · · · other than with oxygen or sulfur atoms in positions 2 or 4
 - U C07D 311/60 · · · · with aryl radicals attached in position 2
 - C07D 311/62 · · · · · with oxygen atoms directly attached in position 3, e.g. anthocyanidins

Project: N/A (C07F)**C07F**

ACYCLIC, CARBOCYCLIC OR HETEROCYCLIC COMPOUNDS CONTAINING ELEMENTS OTHER THAN CARBON, HYDROGEN, HALOGEN, OXYGEN, NITROGEN, SULFUR, SELENIUM OR TELLURIUM (metal-containing porphyrins [C07D 487/22](#))

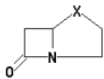
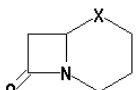
NOTES

1. Attention is drawn to Note (3) [C07](#), which defines the last place priority rule applied in the range of subclasses [C07C-C07K](#) and within these subclasses.
2. Attention is drawn to Note (6) following the title of class [C07](#).
3. Attention is drawn to Note (3) after the title of section [C7C](#), which Note indicates to which version of the periodic table of chemical elements the IPC refers.
4. In this subclass, organic acid salts, alcoholates, phenates, chelates or mercaptides are classified as the parent compounds.
5. Compounds containing Se or Te are classified with their sulfur homologues
6. A hydrocarbon chain is considered to be terminated by a heteroatom or by a carbon atom having three bonds to heteroatoms with at the most one to halogen
7. When groups, e.g. aromatic or aliphatic groups, are mentioned without further indications, it means that the group concerned can be further substituted. Otherwise it will be indicated, e.g. [C07F 9/11](#) with hydroxyalkyl compounds without further substituents on alkyl.

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:
[C07F 9/6593](#) covered by [C07F 9/65815](#)

- U C07F 7/00** **Compounds containing elements of the 4th Group of the Periodic System**
- U C07F 7/02 · Silicon compounds
 - U C07F 7/08 · · Compounds having one or more C-Si linkages
 - C07F 7/0834 · · · {Compounds having one or more O-Si linkage (for compounds with C-O-Si linkages ~~see~~[see](#) [C07F 7/18](#))}
- 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 9/3804
 - • • • {not used, see subgroups}
- U C07F 9/3839
 - • • • • {Polyphosphonic acids}
- C07F 9/3873
 - • • • • {containing nitrogen substituents, e.g. $N.....H$ or N-hydrocarbon rest which can be substituted by halogen or nitro(so), $N.....O$, $N.....S$, $N.....C(=X)-$ ($X = O, S$), $N.....N$, $N...C(=X)...N$ ($X = O, S$)}
- U C07F 9/40
 - • • • Esters thereof
- U C07F 9/4003
 - • • • • {the acid moiety containing a substituent or a structure which is considered as characteristic}
- U C07F 9/4025
 - • • • • • {Esters of poly(thio)phosphonic acids}
- C07F 9/405
 - • • • • • • {containing nitrogen substituents, e.g. $N.....H$ or N-hydrocarbon rest which can be substituted by halogen or nitro(so), $N.....O$, $N.....S$, $N.....C(=X)-$ ($X = O, S$), $N.....N$, $N...C(=X)...N$ ($X = O, S$)}
- U C07F 9/50
 - • • Organo-phosphines
- U C07F 9/505
 - • • • {Preparation; Separation; Purification; Stabilisation}
- U 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 9/5077
 - • • • • • {from starting materials having the structure P-Metal, including $R_2P-R_2P^+M^+$ }
- U C07F 9/54
 - • • Quarternary phosphonium compounds
- C07F 9/5463
 - • • • {Compounds of the type "quasi-phosphonium", e.g. $(C)_aP-(Y)_b$ wherein $a+b=4$, $b \geq 1$ and Y =heteroatom, generally N or O}
- U C07F 9/547
 - • Heterocyclic compounds, e.g. containing phosphorus as a ring hetero atom
- U C07F 9/6561
 - • • containing systems of two or more relevant hetero rings condensed among themselves or condensed with a common carbocyclic ring or ring system, with or without other non-condensed hetero rings
- C07F 9/65611
 - • • • {containing the ring system  ($X = CH_2, O, S, NH$) optionally with an additional double bond and/or substituents, e.g. penicillins and analogs}
- C07F 9/65613
 - • • • {containing the ring system  ($X = CH_2, O, S, NH$) optionally with an additional double bond and/or substituents, e.g. cephalosporins and analogs}

Project: N/A (C07G)

C07G

COMPOUNDS OF UNKNOWN CONSTITUTION

NOTE

This subclass ~~does not cover~~ **does not cover** peptides or proteins of unknown constitution, which are covered by subclass [C07K](#)

Project: N/A (C07H)

C07H 21/00

Compounds containing two or more mononucleotide units having separate phosphate or polyphosphate groups linked by saccharide radicals of nucleoside groups, e.g. nucleic acids

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 an 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-OCH₂CO₂H and Gly-OCH₂CO-Ala-Gly are considered as "linear depsipeptides", but

HOCH₂CO-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-OCH₂CO.

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:

C07K 5/023	covered by	C07K 5/0202
C07K 5/027	covered by	C07K 5/0205
C07K 5/03	covered by	C07K 5/0207
C07K 5/033	covered by	C07K 5/021
C07K 5/037	covered by	C07K 5/0215
C07K 5/062	covered by	C07K 5/06017
C07K 5/065	covered by	C07K 5/06078
C07K 5/068	covered by	C07K 5/06086
C07K 5/072	covered by	C07K 5/06104
C07K 5/075	covered by	C07K 5/0613
C07K 5/078	covered by	C07K 5/06139
C07K 5/083	covered by	C07K 5/0804
C07K 5/087	covered by	C07K 5/0812
C07K 5/09	covered by	C07K 5/0815
C07K 5/093	covered by	C07K 5/0819
C07K 5/097	covered by	C07K 5/0821
C07K 5/103	covered by	C07K 5/1005
C07K 5/107	covered by	C07K 5/1016
C07K 5/11	covered by	C07K 5/1019
C07K 5/113	covered by	C07K 5/1021
C07K 5/117	covered by	C07K 5/1024
C07K 14/185	covered by	C07K 14/1816
C07K 14/725	covered by	C07K 14/705
C07K 14/73	covered by	C07K 14/70514
C07K 14/735	covered by	C07K 14/70535
C07K 14/74	covered by	C07K 14/70539

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 1/12

• by hydrolysis {, i.e. solvolysis in general}

U C07K 5/00

Peptides containing up to four amino acids in a fully defined sequence; Derivatives thereof

- U C07K 5/02
C07K 5/0227
- containing at least one abnormal peptide link
 - • {containing the (partial) peptide sequence -Phe-His-NH-(X)₂-C(=O)-, e.g. Renin-inhibitors with n = 2 - 6; for n > 6 [see see C07K 5/06](#) - [C07K 5/10](#)}
- U 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 7/64
C07K 7/66
- Cyclic peptides containing only normal peptide links
 - • Gramicidins S, C; Tyrocidins A, B, C; Related peptides
- U C07K 9/00
- Peptides having up to 20 amino acids, containing saccharide radicals and having a fully defined sequence; Derivatives thereof**
- U C07K 9/001
- {the peptide sequence having less than 12 amino acids and not being part of a ring structure}
- C07K 9/005
- • {containing within the molecule the substructure
-
- with m, n > 0 and m+n > 0, A, B, D, E being
- heteroatoms; X being a bond or a chain, e.g. muramylpeptides}

Project: N/A (C08B)

- 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](#) [per se](#), [C08B 3/00](#), [C08B 5/00](#), [C08B 7/00](#) or [C08B 9/00](#))}
- C08B 1/06
- Rendering cellulose suitable for etherification {(etherification [per se](#) [per se](#) [C08B 11/00](#))}
- U C08B 15/00
- Preparation of other cellulose derivatives or modified cellulose, {e.g. complexes}**
- C08B 15/02
- Oxy-cellulose; Hydrocellulose; {Cellulosehydrate, e.g. microcrystalline cellulose}
- U C08B 30/00
- Preparation of starch, degraded or non-chemically modified starch, amylose, or amylopectin**
- C08B 30/12
- Degraded, {destructured} or non-chemically modified starch {, e.g. mechanically, enzymatically or by irradiation; Bleaching of starch (preparation of chemical derivatives of starch [C08B 31/00](#))}
- U C08B 37/00
- Preparation of polysaccharides not provided for in groups [C08B 1/00](#) - [C08B 35/00](#); Derivatives thereof (cellulose [D21](#); {microbiological processes [C12P](#)})**
- U C08B 37/0006
- {Homoglycans, i.e. polysaccharides having a main chain consisting of one single sugar, e.g. colominic acid}
- U C08B 37/0024
- • {beta-D-Glucans; (beta-1,3)-D-Glucans, e.g. paramylon, coriolan, sclerotan, pachyman, callose, scleroglucan, schizophyllan, laminaran, lentinan or curdlan; (beta-1,6)-D-Glucans, e.g. pustulan; (beta-1,4)-D-Glucans; (beta-1,3) (beta-1,4)-D-Glucans, e.g. lichenan; Derivatives thereof}
- U C08B 37/0027
- • {2-Acetamido-2-deoxy-beta-glucans; Derivatives thereof}

C08B 37/003

- • • {Chitin, i.e. 2-acetamido-2-deoxy-(beta-1,4)-D-glucan or N-acetyl-beta-1,4-D-glucosamine; Chitosan, i.e. deacetylated product of chitin or (beta-1,4)-D-glucosamine; Derivatives thereof}

Project: N/A (C08F)**C08F****MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS**NOTES

1. In this subclass, boron or silicon are considered as metals.
2. 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:
 - a. an element other than carbon
 - b. a carbon atom having a double bond to one atom other than carbon
 - c. an aromatic carbocyclic ring or a heterocyclic ring.
 Examples: Polymers of
 1. $\text{CH}_2=\text{CH}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{C}(=\text{O})\text{O}-\text{CH}_2-\text{CH}_2-\text{OH}$ are classified in group [C08F 16/28](#)
 2. $\text{CH}_2=\text{CH}-\text{C}(=\text{O})-\text{CH}=\text{CH}_2$ are classified in group [C08F 16/36](#)
 3. para- $\text{C}_6\text{H}_4\text{Cl}(\text{CH}=\text{CH}_2)$ are classified in group [C08F 12/18](#).
3. In this subclass:
 - a. in the absence of an indication to the contrary, a catalyst or a polymer is classified in the last appropriate place .
 - b. {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](#)).}
4. In this subclass:
 - a. 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](#) - [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](#) - [C08F 38/00](#);
 - c. subject matter limited to homopolymers is classified only in groups [C08F 110/00](#) - [C08F 138/00](#);
 - d. subject matter limited to copolymers is classified only in groups [C08F 210/00](#) - [C08F 246/00](#);
 - e. in groups [C08F 210/00](#) - [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~~[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](#) - [C08F 246/00](#) if no preformed polymer is present;
 - in groups [C08F 251/00](#) - [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](#).

U 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

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

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](#) - [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](#) - [C08F 4/619](#)

U C08F 4/619 • • • • Component covered by group [C08F 4/60](#) containing a transition metal-carbon bond {([C08F 4/60003](#) - [C08F 4/60196](#) take precedence)}

C08F 4/61908 • • • • {in combination with an ionising compound other than alumoxane, e.g. $(\text{C}_6\text{F}_5\text{C}_6\text{F}_5)_4\text{B}-_4\text{B}^+\text{X}^+$ }

U C08F 4/62 • • • • Refractory metals or compounds thereof

NOTE

Group [C08F 4/62003](#) takes precedence over groups [C08F 4/622](#) - [C08F 4/639](#)

U C08F 4/639 • • • • • Component covered by group [C08F 4/62](#) containing a transition metal-carbon bond {([C08F 4/62003](#) - [C08F 4/62196](#) take precedence)}

C08F 4/63908 • • • • • {in combination with an ionising compound other than alumoxane, e.g. $(\text{C}_6\text{F}_5\text{C}_6\text{F}_5)_4\text{B}-_4\text{B}^+\text{X}^+$ }

U C08F 4/64 • • • • • Titanium, zirconium, hafnium or compounds thereof

NOTE

Group [C08F 4/64003](#) takes precedence over groups [C08F 4/642](#) - [C08F 4/659](#)

- U C08F 4/659 Component covered by group [C08F 4/64](#) containing a transition metal-carbon bond {([C08F 4/64003](#) - [C08F 4/64196](#) take precedence)}
- C08F 4/65908 {in combination with an ionising compound other than alumoxane, e.g. ($\text{C}_6\text{F}_5\text{C}_6\text{F}_5\text{)}_4\text{B}^-\text{X}^+$ }
- U C08F 6/00 **Post-polymerisation treatments ([C08F 8/00](#) takes precedence; of conjugated diene rubbers [C08C](#))**
- NOTES**
1. In groups [C08F 6/00](#) - [C08F 6/28](#) the treatment of specific polymers is indicated using the subdivision of [C08L 23/00](#) - [C08L 57/12](#) in the form of C-Sets. Example: ([C08F 6/12](#), [C08L 25/06](#))
 2. Groups [C08F 6/001](#), [C08F 6/006](#), [C08F 6/008](#), [C08F 6/02](#), [C08F 6/04](#) take precedence over the other groups.
- U C08F 6/06 . Treatment of polymer solutions
- C08F 6/08 . . Removal of catalyst residues {(not used, ~~see~~[see](#) [C08F 6/02](#))}
- C08F 251/00 - C08F 292/00** **Graft polymers; Polymers crosslinked with unsaturated monomers**
- NOTE**
- In [C08F 251/00](#) - [C08F 292/00](#) the grafted monomer may be indicated using the subdivision of [C08F 210/00](#) - [C08F 238/04](#) preceded by a "+" sign.
- ~~Example: ————— C08F 265/06 ————— +C08F 220/06~~
- Example:*
[C08F 265/06](#) + [C08F 220/06](#)
- U C08F 2438/00 **Living radical polymerisation**
- C08F 2438/02 . Stable Free Radical Polymerisation [SFRP]; Nitroxide Mediated Polymerisation [NMP] for, e.g. using 2,2,6,6-tetramethylpiperidine-1-oxyl [TEMPO]

Project: N/A (C08G)**C08G****MACROMOLECULAR COMPOUNDS OBTAINED OTHERWISE THAN BY REACTIONS ONLY INVOLVING UNSATURATED CARBON-TO-CARBON BONDS****NOTES**

1. In this subclass, group [C08G 18/00](#) takes precedence over the other groups. A further classification is given if the polymers are obtained by reactions forming specific linkages for which an appropriate group is provided.
2. Within each main group of this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.
3. In groups [C08G 61/00](#) - [C08G 79/00](#), in the absence of an indication to the contrary, macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.
4. This subclass ~~covers~~[covers](#) also compositions based on monomers which from macromolecular compounds classifiable in this subclass. In this subclass:
 - a. if the monomers are defined, classification is made in groups [C08G 2/00](#) - [C08G 79/00](#), [C08G 83/00](#) according to the polymer to be formed;
 - b. if the monomers are defined in a way that a composition cannot be classified within one main group of this subclass, the composition is classified in group [C08G 85/00](#);

- c. if the compounding ingredients are of interest ~~per se~~*per se*, classification is also made in subclass [C08K](#).

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:

[C08G 14/067](#), [C08G 14/073](#), [C08G 14/09](#) covered by [C08G 14/06](#)
[C08G 59/16](#), [C08G 59/17](#) covered by [C08G 59/14](#)
[C08G 63/49](#) covered by [C08G 63/48](#)
[C08G 65/28](#) covered by [C08G 65/26](#)
[C08G 73/04](#) covered by [C08G 73/02](#)

- | | |
|--|---|
| <p>U C08G 8/00</p> <p>U C08G 8/04</p> <p>C08G 8/08</p> <p>U C08G 18/00</p> <p>U C08G 18/06</p> <p>U C08G 18/28</p> | <p>Condensation polymers of aldehydes or ketones with phenols only</p> <ul style="list-style-type: none"> • of aldehydes • • of formaldehyde, e.g. of formaldehyde formed in situ<i>in situ</i> <p>Polymeric products of isocyanates or isothiocyanates (preparatory processes of porous or cellular materials, in which the monomers or catalysts are not specific C08J)</p> <ul style="list-style-type: none"> • with compounds having active hydrogen • • characterised by the compounds used containing active hydrogen <p>NOTE</p> <p>For the purpose of groups C08G 18/28 - C08G 18/69, the addition of water for the preparation of cellular materials is not taken into consideration {except in the case, wherein water is the only compound having active hydrogen C08G 18/302. When there is attributed a class in C08G 18/00 for a specific monomer or a catalyst, the addition of water as the sole blowing agent is indicated by indexing code C08G 2101/0083. Moreover specific aggregation forms of water, e.g. absorbed water and water of crystallisation are also classified in C08J 9/02}</p> |
| <p>U C08G 18/2805</p> <p>U C08G 18/2815</p> <p>C08G 18/283</p> <p>C08G 18/284</p> <p>U C08G 18/40</p> <p>U C08G 18/63</p> <p>C08G 18/637</p> <p>U C08G 18/70</p> <p>C08G 18/701</p> <p>U C08G 2261/00</p> <p>U C08G 2261/30</p> | <ul style="list-style-type: none"> • • • {Compounds having only one group containing active hydrogen (vinylpolymers having terminal groups containing active hydrogen C08G 18/62)} • • • • {Monohydroxy compounds} • • • • • {Compounds containing ether groups, e.g. oxyalkylated monohydroxy compounds} • • • • • {Compounds containing ester groups, e.g. oxyalkylated monocarboxylic acids} • • • High-molecular-weight compounds {(C08G 18/2805 takes precedence)} • • • • Block or graft polymers obtained by polymerising compounds having carbon-to-carbon double bonds on to polymers • • • • • {characterised by the in situ<i>in situ</i> polymerisation of the compounds having carbon-to-carbon double bonds in a reaction mixture of saturated polymers and isocyanates} • • characterised by the isocyanates or isothiocyanates used • • • {Compounds forming isocyanates or isothiocyanates in situ<i>in situ</i> (C08G 18/80 takes precedence)} <p>Macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain of the macromolecule</p> <ul style="list-style-type: none"> • Monomer units or repeat units incorporating structural elements in the main chain |

- U C08G 2261/31
 - • incorporating aromatic structural elements in the main chain
- C08G 2261/314
 - • • Condensed aromatic systems, e.g. perylene, anthracene or pyrene
- U C08G 2261/32
 - • incorporating heteroaromatic structural elements in the main chain
- U C08G 2261/322
 - • • non-condensed
- C08G 2261/3227
 - • • • containing only one kind of heteroatoms other than N, O, S, Si, Se, Te
- C08G 2261/35
 - • Macromonomers, i.e. comprising more than 10 repeat units
- U C08G 2650/00**
Macromolecular compounds obtained by reactions forming an ether link in the main chain of the macromolecule
 - characterized by the type of post-polymerisation functionalisation
- U C08G 2650/02
 - • Depolymerisation, e.g. to reform the monomer
- C08G 2650/12
 - •
- U C08G 2650/28
 - characterised by the polymer type
- U C08G 2650/38
 - • containing oxygen in addition to the ether group
- C08G 2650/40
 - • • containing ketone groups, e.g. polyarylethylketones, PEEK or PEK
- U C08G 2650/46
 - • containing halogen
- C08G 2650/48
 - • • containing fluorine, e.g. perfluoropolyethers
- C08G 2650/50
 - • containing nitrogen, e.g. polyetheramines or Jeffamines(r)
- C08G 2650/56
 - • Polyhydroxyethers, e.g. phenoxy resins
- C08G 2650/58
 - • Ethylene oxide or propylene oxide copolymers, e.g. pluronics

Project: N/A (C08H)**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](#)

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~~ [covers](#) processes, not covered by subclasses [C08B](#) - [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](#) - [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](#) - [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](#)

C08J 5/00

Manufacture of articles or shaped materials containing macromolecular substances (shaping of foodstuffs [A23P](#); manufacture of semi-permeable membranes [B01D 67/00](#) - [B01D 71/00](#); mechanical features, ~~see~~ [see](#) the relevant classes, e.g. [B29](#))

- 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~~ [per se](#) [C09J 4/00](#), [C09J 101/00](#) - [C09J 201/00](#))}
- 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]~~ [\[N\]](#): {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. $\text{SO}_2\text{F}\text{SO}_2\text{F}$, 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. $\text{SO}_2\text{H}\text{SO}_2\text{H}$, 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 5/24

- Impregnating materials with prepolymers which can be polymerised *in-situ* [in situ](#), e.g. manufacture of prepreps

U 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~~ [per se](#) [C09D 4/00](#), [C09D 101/00](#) - [C09D 201/00](#))}

U C08J 7/06

- • with compositions not containing macromolecular substances

C08J 7/065

- • • {Low-molecular-weight organic substances, e.g. absorption of additives in the surface of the article}

Project: N/A (C08K)

C08K

USE OF INORGANIC OR NON-MACROMOLECULAR ORGANIC SUBSTANCES AS COMPOUNDING INGREDIENTS (pesticides, herbicides [A01N](#); pharmaceuticals, cosmetics [A61K](#); explosives [C06B](#); paints, inks, varnishes, dyes, polishes, adhesives [C09](#); lubricants [C10M](#); detergents [C11D](#); artificial filaments or fibres [D01F](#); textile treating compositions [D06](#))

NOTES

1. The use of an ingredient for a specific polymer is classified by adding, in a C-set, to the group symbol of [C08K](#), the subdivision of [C08L 1/00](#) - [C08L 99/00](#). Example: Polystyrene containing a carboxylic amide is classified in ([C08K 5/20](#), [C08L 25/06](#)).

2. From April 2012, the use of an ingredient for a specific polymer is classified by adding, in a C-set, to the group symbol of [C08K](#), the subdivision of [C08L 1/00](#) - [C08L 99/00](#). Example: Polystyrene containing a carboxylic amide is classified in ([C08K 5/20](#), [C08L 25/06](#)).

3. In this subclass, in the absence of an indication to the contrary, an ingredient is classified in the last appropriate place.

4. In this subclass:

- a mixture of ingredients is classified in the most indented group covering all the essential ingredients of the mixture, e.g.:
a mixture of a monohydric and a polyhydric alcohol [C08K 5/05](#)

a mixture of two polyhydric alcohols	C08K 5/053
a mixture of an alcohol and an ether	C08K 5/04
a mixture of an ether and an amine	C08K 5/00
a mixture of an amine and a metal	C08K 13/02

{ This note is applied only for mixtures with more than three essential ingredients. Mixtures with two or three ingredients are classified in the appropriate groups of [C08K](#), e.g. a mixture of Al₂O₃, an ether and an amine is classified in [C08K 3/22](#), [C08K 5/06](#) and [C08K 5/17](#)}

- ammonium salts are classified in the same way as metal salts

5. In this subclass, organic acid salts, alcoholates, phenolates or mercaptides are classified in the groups or subgroups of the parent compounds

6. The use of an ingredient for a specific polymer is classified by adding to the group symbol of [C08K](#) and separated therefrom by a "+" sign, the subdivision of [C08L 1/00](#) - [C08L 99/00](#).

~~Example: Polystyrene containing a carboxylic amide is classified in [C08K 5/20](#) + [C08L 25/06](#)~~

Example: Polystyrene containing a carboxylic amide is classified in [C08K 5/20](#) + [C08L 25/06](#)

7. In this subclass are considered as compounding ingredients:

- inert additives
- radical crosslinking agents, e.g. peroxides, S-containing vulcanisation agents
- coupling agents, i.e. compounds able to improve the adhesion between filler and macromolecule

Are not considered as compounding ingredients:

- chemical modifying or crosslinking agents which react via a condensation or addition mechanism (for [C08B](#) polymers [C08B](#), for diene rubbers [C08C 19/30](#), for other vinyl polymers [C08F 8/00](#), for polysiloxanes [C08L 83/00](#), for other [C08G](#) polymers [C08G](#))
- solvents or dispersion agents for making polymer solutions, emulsions or dispersions ([C08J 3/02](#))
- blowing agents ([C08J 9/04](#))

WARNING

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

[C08K 5/5445](#) covered by [C08K 5/544](#)

Project: N/A (C08L)

**C08L 23/00 -
C08L 57/00**

Compositions of macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds

NOTE

{Groups [C08L 23/00](#) - [C08L 49/00](#) are to be interpreted in accordance with Notes 2), 3) and 4 a) following the title of subclass [C08F 1/00](#)}

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](#) - [C08L 49/00](#), or [C08L 55/00](#) - [C08L 57/00](#); Derivatives thereof

Project: MP0183 (C09B)

M C09B ORGANIC DYES OR CLOSELY-RELATED COMPOUNDS FOR PRODUCING DYES {, e.g. PIGMENTS}; MORDANTS; LAKES (~~fermentation or enzyme-using processes to synthesise a desired chemical compound~~ **C12P ~~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:

C09B 23/01	covered by	C09B 23/0008	-
C09B 23/0091			
C09B 29/01	" "	C09B 29/0003	-
C09B 29/0022			
C09B 29/03	" "	C09B 29/0007	
C09B 29/033	" "	C09B 29/0025	
C09B 29/036	" "	C09B 29/0029	
C09B 29/039	" "	C09B 29/0074	-
C09B 29/0081			
C09B 29/042	" "	C09B 29/0085	
C09B 29/045	" "	C09B 29/0088	
C09B 29/048	" "	C09B 29/0092	
C09B 29/085	" "	C09B 29/0003	, C09B 29/0801
- C09B 29/0848			
C09B 29/09	" "	C09B 29/0025	, C09B 29/0801
- C09B 29/0848			
C09B 29/15	" "	C09B 29/103	
C09B 29/40	" "	C09B 29/3608	-
C09B 29/3613			
C09B 29/42	" "	C09B 29/3617	-
C09B 29/3639			
C09B 29/44	" "	C09B 29/3643	
C09B 29/46	" "	C09B 29/3652	
C09B 29/48	" "	C09B 29/3656	
C09B 29/50	" "	C09B 29/366	
C09B 29/52	" "	C09B 29/3665	
C09B 33/13	" "	C09B 33/12	
C09B 46/00	" "	C09B 27/00	- C09B 45/00
C09B 67/02	" "	C09B 67/0097	
C09B 67/04	" "	C09B 67/0001	
C09B 67/06	" "	C09B 67/0003	
C09B 67/08	" "	C09B 67/0004	
C09B 67/10	" "	C09B 67/0014	
C09B 67/12	" "	C09B 67/0016	
C09B 67/14	" "	C09B 67/0017	
C09B 67/16	" "	C09B 67/0019	
C09B 67/18	" "	C09B 67/002	
C09B 67/20	" "	C09B 67/006	

C09B 67/22	"	"	C09B 67/0033
C09B 67/24	"	"	C09B 67/0072
C09B 67/26	"	"	C09B 67/0073
C09B 67/28	"	"	C09B 67/0077
C09B 67/30	"	"	C09B 67/0078
C09B 67/32	"	"	C09B 67/0075
C09B 67/34	"	"	C09B 67/0076
C09B 67/36	"	"	C09B 67/0079
C09B 67/38	"	"	C09B 67/008
C09B 67/40	"	"	C09B 67/0082
C09B 67/42	"	"	C09B 67/0071
C09B 67/44	"	"	C09B 67/0083
C09B 67/46	"	"	C09B 67/0084
C09B 67/48	"	"	C09B 67/0025
C09B 67/50	"	"	C09B 67/0026
C09B 67/52	"	"	C09B 67/0027
C09B 67/54	"	"	C09B 67/0096

Project: N/A (C09B)

U C09B 23/00

C09B 23/0091

Methine or polymethine dyes, e.g. cyanine dyes

- {having only one heterocyclic ring at one end of the methine chain, e.g. hemicyanines, hemioxonol (styryl dyes [see see C09B 23/14](#))}

U C09B 29/00

U C09B 29/06

U C09B 29/08

U C09B 29/0833

C09B 29/0834

C09B 29/0836

Monoazo dyes prepared by diazotising and coupling

- from coupling components containing amino as the only directing group
- • Amino benzenes
- • • {characterised by the substituent on the benzene ring excepted the substituents: CH₃, C₂H₅, O-alkyl, NHCO-alkyl, NHCOO-alkyl, NHCO- C₆H₅, NHCOO-C₆H₅}
- • • • {linked through -O- (for OH [see see C09B 29/24](#), [C09B 29/26](#))}
- • • • {linked through -N= (for heterocyclic ring, [see see C09B 29/0846](#))}

U C09B 35/00

U C09B 35/38

Disazo and polyazo dyes of the type A<-D->B prepared by diazotising and coupling

- Trisazo dyes of the type
$$\begin{array}{c} \text{D} \swarrow \searrow \\ \text{K} \leftarrow \text{A} \\ \text{K}_1 \end{array}$$

U C09B 35/44

U C09B 35/46

C09B 35/467

- • the component K being a hydroxy amine
- • • the component K being an amino naphthol
- • • • {D being derived from diaminodiaryl linked through CON<, [SO₂N](#)[SO₂N](#)<, CSN<}

U C09B 47/00

U C09B 47/04

U C09B 47/06

C09B 47/067

Porphines; Azaporphines {(non-dyeing compounds [C07D 487/22](#))}

- Phthalocyanines {abbreviation: Pc}
- • Preparation from carboxylic acids or derivatives thereof, {e.g. anhydrides, amides, mononitriles, phthalimide, o-cyanobenzamide}
- • • from phthalodinitriles {naphthalenedinitriles, aromatic dinitriles prepared [in situ](#), hydrogenated phthalodinitrile}

Project: MP0134 (C09B)

M C09B 65/00

Compositions containing mordants ~~(preparation of the mordant compounds C01, C07)~~

Project: N/A (C09C)

U C09C 1/00	Treatment of specific inorganic materials other than fibrous fillers (luminescent or tenebrescent materials C09K); Preparation of carbon black
C09C 1/0015	<ul style="list-style-type: none"> • {Pigments exhibiting interference colours, e.g. transparent platelets of appropriate thinness or flaky substrates, e.g. mica, bearing appropriate thin transparent coatings (C09C 1/0078, C09C 1/62 take precedence)}
	<p>NOTES</p> <p>1. The optical properties of the interference pigments are depending on the order of the different layers applied on the substrate in view of their refractive indices; A refractive index $< \text{or} = 1.8$ is considered low, a refractive index > 1.8 is considered high; A dye is always an organic, coloured material. An aluminium lake compound would for classification purposes also fall under this definition, as well as any coloured metal chelate or metal complex with organic ligands; An interference pigment can e.g. have a flaky, spherical or ellipsoidal core; A pigment comprising a core consisting of a metal is only considered as an interference pigment if it shows properties typical for interference pigments</p> <p>2. In groups C09C 1/0015 - C09C 1/0075 it is desirable to add indexing codes relating to the compositional and structural details chosen from groups C09C 2200/00 - C09C 2220/20</p>
C09C 1/62	<ul style="list-style-type: none"> • Metallic pigments or fillers ({C09C 1/0015 takes precedence}; obtaining metal powder, see the relevant class for the method used, e.g. B22F 9/00, C21B 15/02, C22B 5/20, C25C 5/00)
U C09C 2200/00	Compositional and structural details of pigments exhibiting interference colours
	<p>NOTE</p> <p>When indexing codes C09C 2200/00 - C09C 2220/20 are used, no codes are given for the particle morphology according to the indexing codes C01P 2004/10 - C01P 2004/42 or C01P 2004/80 - C01P 2004/88</p>
U C09C 2200/40	<ul style="list-style-type: none"> • Interference pigments comprising an outermost surface coating
U C09C 2200/402	<ul style="list-style-type: none"> • • Organic protective coating
U C09C 2200/405	<ul style="list-style-type: none"> • • • High molecular weight materials, e.g. polymers
C09C 2200/406	<ul style="list-style-type: none"> • • • comprising additional functional groups, e.g. $-\text{NH}_2$, $-\text{C}=\text{C}-$ or $-\text{SO}_3$

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* *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* *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 - 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.~~

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 - 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](#).~~

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](#) - [C08F 291/00](#) and from the subgroups of [C08F 290/00](#) - [C08F 290/048](#) and [C08F 290/08](#) - [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](#) - [C08F 246/00](#), [C08G 77/00](#) - [C08G 77/04](#) or [C08G 77/20](#) - [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 CaCO₃ 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 CaCO₃ 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](#) - [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:

C09D 4/02 C08F 220/00	covered by	C09D 4/00 ,
C09D 4/04 C08F 222/00	covered by	C09D 4/00 ,
C09D 5/23	covered by	H01F 41/16
C09D 5/25	covered by	H01B 3/308
C09D 5/33	covered by	C09D 5/004
C09D 5/46	covered by	C09D 5/03

C09D 161/08 , C09D 161/06	C09D 161/10	covered by
C09D 163/02	covered by	C09D 163/00
C09D 171/08	covered by	C09D 171/02
C09D 171/10	covered by	C09D 171/12
C09D 183/05	covered by	C09D 183/04
C09D 183/07	covered by	C09D 183/04 ,
C09D 183/06		

U 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](#))}

U C09D 5/44

- for electrophoretic applications (processes for coating by electrophoresis [C25D 13/00](#))

NOTE

The groups [C09D 5/4403](#) - [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](#) - [C09D 5/4496](#) relating to paints characterised by other features

C09D 5/4476

- {comprising polymerisation **in-situ** *in situ*}

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 polyethylene 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 - 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.~~

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 - 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.~~

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 CaCO₃ 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](#) - [C08F 246/00](#), [C08G 77/00](#) - [C08G 77/04](#) or [C08G 77/20](#) - [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 CaCO₃ 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](#) - [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](#)

Project: MP0234 (C09J)

U C09J 7/00 Adhesives in the form of films or foils

NOTE

In this group, the indexing codes of subclass **M09J** are used

- U C09J 7/02 • on carriers
- U C09J 7/0239 • • {on carriers other than paper or textile fabrics}
- M C09J 7/025 • • • {characterised by the release coating composition *or properties*}

Project: N/A (C09K)

C09K

MATERIALS FOR MISCELLANEOUS APPLICATIONS, NOT PROVIDED FOR ELSEWHERE

NOTES

1. This subclass ~~covers~~*covers* also the use of specified materials in general or their use for the applications not specially provided for elsewhere.
2. In this subclass, the following term is used with the meaning indicated:
 - "materials" includes compositions.

U C09K 3/00 Materials not provided for elsewhere

NOTE

When classifying in groups [C09K 3/10](#) - [C09K 3/1028](#) the properties and uses of the material can be further indexed by using indexing codes chosen from [C09K 2003/1034](#) - [C09K 2003/1096](#) and the chemical nature of the materials can be further indexed by using indexing codes chosen from [C09K 2200/00](#) - [C09K 2200/0697](#)

- U 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.

- C09K 3/1409 • • {Abrasive particles ~~per se~~*per se* (preparation of diamond [C01B 31/06](#))}

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

- U 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~~*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](#) - [C09K 2205/48](#)

- C09K 5/06 • • the change of state being from liquid to solid or ~~vice-versa~~*vice versa*

- 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**
{When classifying in groups [C09K 8/00-C09K 8/40](#) and [C09K 8/50-C09K 8/94](#), it is mandatory when appropriate to classify with indexing codes for aspects relating to compositions for drilling or treating boreholes or wells. The indexing codes are chosen from the groups [C09K 2208/00-C09K 2208/34](#)}
- U C09K 8/58** • Compositions for enhanced recovery methods for obtaining hydrocarbons, i.e. for improving the mobility of the oil, e.g. displacing fluids
- C09K 8/594** • • Compositions used in combination with injected gas {, e.g. CO₂ or carbonated gas}([C09K 8/592](#) takes precedence)
- C09K 15/00** **Anti-oxidant composition; Compositions inhibiting chemical change** ({for use in well-specified applications, **see** [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](#) - [C09K 15/34](#), in the absence of an indication to the contrary, a composition is classified in the last appropriate place.
- U C09K 19/00** **Liquid crystal materials**
- NOTES**
1. In groups [C09K 19/02](#) - [C09K 19/60](#), { with the exception of groups [C09K 19/0208](#) - [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](#) - [C09K 19/40](#) are classified only in that group.
 3. If liquid crystal components of the mixtures classified in groups [C09K 19/42](#) - [C09K 19/50](#) are of importance as such, they should also be classified according to the compounds in groups [C09K 19/04](#) - [C09K 19/40](#).
- U C09K 19/04** • characterised by the chemical structure of the liquid crystal components, {e.g. by a specific unit}
- U C09K 19/06** • • Non-steroidal liquid crystal compounds
- U C09K 19/08** • • • containing at least two non-condensed rings
- U C09K 19/30** • • • • containing saturated or unsaturated non-aromatic rings, e.g. cyclohexane rings
- U C09K 19/3001** • • • • • {Cyclohexane rings}
- U C09K 19/3028** • • • • • {in which at least two rings are linked by a carbon chain containing carbon to carbon single bonds}
- C09K 2019/303** • • • • • • {Cy-[C2H4](#)[C2H4](#)-Cy}
- C09K 2019/3031** • • • • • • {Cy-Cy-[C2H4](#)[C2H4](#)-Cy}
- C09K 2019/3033** • • • • • • {Cy-Cy-Cy-[C2H4](#)[C2H4](#)-Cy}
- C09K 2019/3034** • • • • • • {Cy-Cy-[C2H4](#)[C2H4](#)-Cy-Cy}
- C09K 2019/3036** • • • • • • {Cy-[C2H4](#)[C2H4](#)-Ph}

C09K 2019/3037	. . . . . {Cy-Cy- C₂H₄ C₂H₄ -Ph}
C09K 2019/3039	. . . . . {Cy-Cy-Cy- C₂H₄ C₂H₄ -Ph}
C09K 2019/304	. . . . . {Cy- C₂H₄ C₂H₄ -Ph-Ph}
C09K 2019/3042	. . . . . {Cy-Cy- C₂H₄ C₂H₄ -Ph-Ph}
C09K 2019/3043	. . . . . {Cy-Cy- C₂H₄ C₂H₄ -Ph-Cy}
C09K 2019/3045	. . . . . {Cy-Ph- C₂H₄ C₂H₄ -Ph-Cy}
C09K 2019/3046	. . . . . {Cy- C₂H₄ C₂H₄ -Ph- C₂H₄ C₂H₄ -Cy}

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](#) - [C09K 21/14](#), in the absence of an indication to the contrary, materials are classified in the last appropriate place.

U C09K 2205/00

Aspects relating to compounds used in compression type refrigeration systems

- U C09K 2205/10 . Components
- U C09K 2205/12 . . Hydrocarbons
- C09K 2205/128 . . . Perfluorinated hydrocarbons ([C09K 2205/124](#) ~~or~~, [C09K 2205/126](#) take precedence)

Project: N/A (C10C)**U C10C 3/00**

Working-up pitch, asphalt, bitumen {(compositions of asphalts and other bituminous materials [C08L 95/00](#))}

- U C10C 3/02 . by chemical means {reaction}
- C10C 3/04 . . by blowing or oxidising {, e.g. air, ozone}

Project: N/A (C10G)**C10G**

CRACKING HYDROCARBON OILS; PRODUCTION OF LIQUID HYDROCARBON MIXTURES, e.g. BY DESTRUCTIVE HYDROGENATION, OLIGOMERISATION, POLYMERISATION (cracking to hydrogen or synthesis gas [C01B](#); cracking or pyrolysis of hydrocarbon gases to individual hydrocarbons or mixtures thereof of definite or specific constitution [C07C](#); cracking to cokes [C10B](#)); RECOVERY OF HYDROCARBON OILS FROM OIL-SHALE, OIL-SAND, OR GASES; REFINING MIXTURES MAINLY CONSISTING OF HYDROCARBONS; REFORMING OF NAPHTHA; MINERAL WAXES (inhibiting corrosion or incrustation in general [C23F](#))

NOTES

1. In this subclass,
 - groups [C10G 9/00](#) - [C10G 49/00](#) are limited to one-step processes;
 - combined or multi-step processes are covered by groups [C10G 51/00](#) - [C10G 69/00](#);
 - refining or recovery of mineral waxes is covered by group [C10G 73/00](#)
2. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "in the presence of hydrogen" or "in the absence of hydrogen" mean treatments in which hydrogen, in free form or as hydrogen generating compounds, is added, or not added, respectively;
 - "hydrotreatment" is used for conversion processes as defined in group [C10G 45/00](#) or group [C10G 47/00](#);

- "hydrocarbon oils" covers mixtures of hydrocarbons such as tar oils or mineral oils.

3. In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

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:

[C10G 73/23](#) covered by [C10G 73/06](#)

- 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 see F01K 23/064](#); using gas turbines, [see see F01K 25/14](#); the combined use of gas and steam turbines, [see see F01K 3/185](#))}
- U C10G 17/00** **Refining of hydrocarbon oils in the absence of hydrogen, with acids, acid-forming compounds or acid-containing liquids, e.g. acid sludge**
- C10G 17/095
 - with "solid acids", e.g. phosphoric acid deposited on a carrier
- U C10G 2300/00** **Aspects relating to hydrocarbon processing covered by groups [C10G 1/00](#) - [C10G 99/00](#)**
- U C10G 2300/20
 - Characteristics of the feedstock or the products
- U C10G 2300/201
 - • Impurities
- C10G 2300/202
 - • • Heteroatoms content, i.e. S, [N](#), [O](#), [P](#)
- U C10G 2300/40
 - Characteristics of the process deviating from typical ways of processing
- C10G 2300/4062
 - • Geographical aspects, e.g. different process units form a combination process at different geographical locations

Project: N/A (C10J)

- U C10J 2300/00** **Details of gasification processes**
- U C10J 2300/09
 - Details of the feed, e.g. feeding of spent catalyst, inert gas or halogens
- U C10J 2300/0913
 - • Carbonaceous raw material
- C10J 2300/0926
 - • • Slurries comprising bio-oil or bio-coke, i.e. charcoal, obtained, e.g. by fast pyrolysis of biomass

Project: N/A (C10K)

- 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)

- U C10L 2200/00** **Components of fuel compositions**

NOTE

Additives in liquid fuels present in concentrations lower than 5% get a class taken from [C10L 1/10](#) - [C10L 1/308](#) and corresponding [C10L 1/10](#) - [C10L 1/308](#). In

groups [C10L 1/32](#) - [C10L 11/08](#) is such distinction between the terms additive and component not made.

- | | |
|----------------|--|
| C10L 2200/02 | • Inorganic or organic compounds containing atoms other than C, H or O, e.g. organic compounds containing heteroatoms or metal organic complexes |
| U C10L 2200/04 | • Organic compounds |
| C10L 2200/0407 | • • Specifically defined hydrocarbon fractions as obtained from, e.g. a distillation column |
| C10L 2200/0453 | • • • Petroleum or natural waxes, e.g. paraffin waxes, asphaltenes |
| U C10L 2230/00 | Function and purpose of a components of a fuel or the composition as a whole |
| C10L 2230/02 | • Absorbents, e.g. in the absence of an actual absorbent column or scavenger |
| C10L 2230/12 | • for producing sound, e.g. during burning an artificial fire log to mimic sound of real wood |

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

1. 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".
2. In respect of the classification of mixtures, attention is drawn to Note (4) (e) below.
3. 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.
4. In this subclass:
 - a. metal or ammonium salts of a compound are classified as that compound;
 - b. salts or adducts formed between two or more organic compounds are classified according to all compounds forming the salt or adduct, if of interest;
 - c. a specified compound, e.g. phenols, acids, substituted by a macromolecular hydrocarbon radical is classified as that compound;
 - d. 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](#);
 - e. 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](#) - [C10M 109/00](#), [C10M 113/00](#) - [C10M 121/00](#), [C10M 125/00](#) - [C10M 139/00](#), [C10M 143/00](#) - [C10M 155/00](#), [C10M 159/00](#) or [C10M 163/00](#) - [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](#) - [C10M 7/00](#)~~

- [C10M 1/00](#) - [C10M 7/00](#)

The backlog of these groups is continuously being reclassified in groups [C10M 101/00](#) - [C10M 177/00](#).

Project: RP0227 (C10M)

E C10M 169/00 Lubricating compositions characterised by containing as components a mixture of at least two types of ingredient selected from base-materials, thickeners or additives, covered by the preceding groups, each of these compounds being essential

D C10M 169/005 - {Particular lubricating compositions}

WARNING

This group is no longer used for the classification of new documents

Project: N/A (C10M)

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](#) - [C10M 2209/107](#) and by using alpha-numerical order in the combination.

~~Example: —C10M 2209/107— +~~
C10M 2209/108

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](#) - [C10M 2209/107](#) and by using alpha-numerical order in the combination.

~~Example: —C10M 2209/107— +~~
C10M 2209/109

Example:

[C10M 2209/107](#) + [C10M 2209/109](#)

Project: N/A (C10N)**C10N 2210/00****Nature of the metal present as such or in compounds, i.e. in salts****NOTE**

Indexing codes [C10N 2210/01](#) - [C10N 2210/08](#) are only to be used as linked codes in combination with codes chosen from subclass [C10M](#) identifying the chemical nature of the compounds concerned:

~~Example: —C10M 2201/084— + C10N 2210/02~~

Example: [C10M 2201/084](#) + [C10N 2210/02](#)

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](#) - [C11D 1/94](#), in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

- C11D 1/008 • {Polymeric surface-active agents ([see see C11D 1/48](#), [C11D 1/662](#), [C11D 1/76](#))}
- U C11D 1/02 • Anionic compounds {([C11D 1/002](#), [C11D 1/004](#), [C11D 1/008](#) take precedence)}
- C11D 1/04 • • Carboxylic acids or salts thereof {([see see also C11D 9/005](#))}
- U C11D 1/12 • • Sulfonic acids or sulfuric acid esters; Salts thereof
- C11D 1/123 • • • {derived from carboxylic acids, e.g. sulfosuccinates (from fatty acids [see see C11D 1/28](#))}
- C11D 1/36 • • of unknown constitution {, e.g. natural products}

- U C11D 1/38 • Cationic compounds {(C11D 1/002, C11D 1/004, C11D 1/008 take precedence)}
- U 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
- C11D 1/521 • • {Carboxylic amides ($R^1R^1-CO-NR^2R^3NR^2R^3$), where R^1R^1 , R^2R^2 and R^3R^3 are alkyl or alkenyl groups}
- C11D 1/523 • • {Carboxylic alkylolamides, or dialkylolamides, or hydroxycarboxylic amides ($R^1R^1-CO-NR^2R^3NR^2R^3$), where R^1R^1 , R^2R^2 or R^3R^3 contain one hydroxy group per alkyl group}
- C11D 1/525 • • {Carboxylic amides ($R^1R^1-CO-NR^2R^3NR^2R^3$), where R^1R^1 , R^2R^2 or R^3R^3 contain two or more hydroxy groups per alkyl group, e.g. R^3R^3 being a reducing sugar rest}
- C11D 1/526 • • {Carboxylic amides ($R^1R^1-CO-NR^2R^3NR^2R^3$), where R^1R^1 , R^2R^2 or R^3R^3 are polyalkoxylated}
- C11D 1/528 • • {Carboxylic amides ($R^1R^1-CO-NR^2R^3NR^2R^3$), where at least one of the chains R^1R^1 , R^2R^2 or R^3R^3 is interrupted by a functional group, e.g. a -NH-, -NR-, -CO-, or -CON- group (ethers C11D 1/526)}
- C11D 1/64 • • of unknown constitution {, e.g. natural products}
- U C11D 1/66 • Non-ionic compounds {(C11D 1/002, C11D 1/004, C11D 1/008 take precedence)}
- C11D 1/667 • • {Neutral esters, e.g. sorbitan esters; **see see** also C11D 1/74 and C11D 1/78}
- 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 3/16 • Organic compounds
- C11D 3/34 • • containing sulfur {(C11D 3/162, C11D 3/164, C11D 3/166, C11D 3/168 take precedence)}
- NOTES**
1. In this group in the absence of an indication to the contrary sulfur containing compounds are classified in the last appropriate place (**see see** Note before group C11D 3/00) and indexed for the individual functional groups using codes chosen from C11D 3/3409 - C11D 3/349
2. In case of mixtures or a list of alternatives or Markush formulae each individual compound is classified and indexed according to Note 1.
- U C11D 3/37 • • Polymers {(polymeric surface-active agents C11D 1/008; carbohydrates C11D 3/22)}
- U C11D 3/3746 • • {Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds}
- U C11D 3/3769 • • • {(Co)polymerised monomers containing nitrogen, e.g. carbonamides, nitriles, amines}
- C11D 3/3776 • • • • {Heterocyclic compounds, e.g. lactam}

- U C11D 9/00** **Compositions of detergents based essentially on soap (compositions containing resin soap [C11D 15/04](#))**
- C11D 9/005 • {Synthetic soaps (~~see~~~~see~~ also [C11D 1/04](#))}
- U C11D 9/04** • containing compounding ingredients other than soaps
- U C11D 9/22** • • Organic compounds, {e.g. vitamins}
- U C11D 9/26** • • • containing oxygen {([C11D 9/225](#) takes precedence)}
- C11D 9/267 • • • • {containing free fatty acids (~~see~~~~see~~ also [C11D 9/48](#))}

Project: N/A (C12M)**C12M 1/00****Apparatus for enzymology or microbiology**NOTE

This group ~~covers~~~~covers~~:

- apparatus where micro-organisms or enzymes are produced or isolated;
- apparatus where the characteristics of micro-organisms or enzymes are investigated, e.g. which growth factors are necessary;
- apparatus specially adapted to employ micro-organisms or enzymes as "reactants" or biocatalysts;
- apparatus of both laboratory and industrial scale.

- U C12M 21/00** {Bioreactors or fermenters specially adapted for specific uses (digesters for manure [A01C 3/023](#); apparatus for PCR [B01L 7/52](#); destroying or transforming solid waste [B09B 3/00](#); methods for genetic engineering [C12N 15/00](#), [C12Q 1/68](#); nucleic acid amplification reactions [C12Q 1/6844](#))}
- C12M 21/06 • {for ~~in vitro~~ ~~in vitro~~ fertilization}
- C12M 27/00** {Means for mixing, agitating or circulating fluids in the vessel (by introduction of gas [C12M 29/06](#), [C12M 29/14](#), mixing in general or mixers ~~per se~~ ~~per se~~ [B01F](#); mixing in apparatus for chemical or physical processes [B01J](#))}
- C12M 29/00** {Means for introduction, extraction or recirculation of materials, e.g. pumps (pumps ~~per se~~ ~~per se~~ [F04B](#))}
- C12M 29/06 • {Nozzles; Sprayers; Spargers; Diffusers (~~per se~~ ~~per se~~ [B01F 3/04106](#), [B01J 19/26](#))}
- U C12M 33/00** {Means for introduction, transport, positioning, extraction, harvesting, peeling or sampling of biological material in or from the apparatus (chemical or physical laboratory apparatus in general [B01L](#), devices for taking cell samples [A61B 10/0045](#), withdrawing or distributing predetermined quantities of fluid [B01L 99/00](#))}
- C12M 33/22 • {Settling tanks; Sedimentation by gravity (settling tanks ~~per se~~ ~~per se~~ [B01D 21/02](#))}
- C12M 35/00** {Means for application of stress for stimulating the growth of microorganisms or the generation of fermentation or metabolic products; Means for electroporation or cell fusion (machines for extracting juice from animal or plant tissue by electroporation [A23N 1/006](#), processes employing electric or wave energy [B01J 19/08](#); treatment of microorganisms or enzymes with electrical or wave energy [C12N 13/00](#); methods for cell fusion [C12N 15/02](#); introduction of foreign genetic material [C12N 15/87](#))}

- C12M 37/00** {Means for sterilizing, maintaining sterile conditions or avoiding chemical or biological contamination ([C12M 23/38](#) takes precedence; filtration in general and filters ~~per se~~ [per se](#) [B01D 24/00](#)-[B01D 41/00](#); autoclaves [B01J 3/04](#); treatment of microorganisms with electrical or wave energy [C12N 13/00](#))}
- U C12M 41/00** {Means for regulation, monitoring, measurement or control, e.g. flow regulation (controlling or regulating chemical, physical or physicochemical processes [B01J 19/0006](#); heating or cooling apparatus for laboratory use [B01L 7/00](#); electro optical investigation of individual particles, flow cytometers [G01N 15/14](#); automatic analysis [G01N 35/00](#); controlling or regulating in general [G06N](#))}
- U C12M 41/12** • {of temperature (controlling the temperature of chemical or physical processes [B01J 19/0013](#), heating or cooling apparatus for laboratory use [B01L 7/00](#))}
- C12M 41/14** • • {Incubators; Climatic chambers (~~per se~~ [per se](#) [B01L 1/00](#))}

Project: N/A (C12N)

- U 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 1/14** • Fungi (culture of mushrooms [A01G 1/04](#); as new plants ~~per se~~ [per se](#) [A01H 15/00](#); {fungi ~~per se~~ [per se](#) [C12R 1/645](#) - [C12R 1/885](#)}) Culture media therefor
- C12N 1/20** • Bacteria {(bacteria ~~per se~~ [per se](#) [C12R 1/01](#) - [C12R 1/64](#))}; Culture media therefor
- U 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 9/0002** • {Antibodies with enzymatic activity, e.g. [abzymes](#)}; ~~e.g. abzymes~~
- 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~~ [per se](#) [C12N 1/00](#), [C12N 5/00](#), [C12N 7/00](#); new plants ~~per se~~ [per se](#) [A01H](#); plant reproduction by tissue culture techniques [A01H 4/00](#); new animals ~~per se~~ [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](#))
- U C12N 15/09** • Recombinant DNA-technology

- U 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](#) - [C12N 15/1096](#), and separated therefrom by a + sign, it is desirable to add the indexing codes selected from groups [C12Q 2500/00](#) - [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 15/102
- C12N 15/1024
- {Mutagenizing nucleic acids}
 - {~~In vivo~~ [In vivo](#) mutagenesis using high mutation rate "mutator" host strains by inserting genetic material, e.g. encoding an error prone polymerase, disrupting a gene for mismatch repair}
- U C12N 15/63
- Introduction of foreign genetic material using vectors; Vectors; Use of hosts therefor; Regulation of expression
- C12N 15/70
- Vectors or expression systems specially adapted for E. coli
- NOTES
1. This group ~~covers~~ [covers](#) the use of E. coli as host.
2. Shuttle vectors also replicating in E. coli are classified according to the other host.
- C12N 15/74
- Vectors or expression systems specially adapted for prokaryotic hosts other than E. coli, e.g. Lactobacillus, Micromonospora
- NOTE
This group ~~covers~~ [covers](#) the use of prokaryotes as hosts.
- C12N 15/79
- Vectors or expression systems specially adapted for eukaryotic hosts
- NOTE
This group ~~covers~~ [covers](#) the use of eukaryotes as hosts.
- U C12N 2517/00 Cells related to new breeds of animals**
- C12N 2517/10
- Conditioning of cells for ~~in vitro~~ [in vitro](#) fecondation or nuclear transfer
- U C12N 2710/00 dsDNA Viruses (not used)**
- U C12N 2710/00011
- dsDNA Viruses
- C12N 2710/00071
- Demonstrated ~~in vivo~~ [in vivo](#) effect
- U C12N 2710/10011
- Adenoviridae
- C12N 2710/10071
- Demonstrated ~~in vivo~~ [in vivo](#) effect
- U C12N 2710/10111
- Atadenovirus, e.g. ovine adenovirus D
- C12N 2710/10171
- Demonstrated ~~in vivo~~ [in vivo](#) effect
- U C12N 2710/10211
- Aviadenovirus, e.g. fowl adenovirus A
- C12N 2710/10271
- Demonstrated ~~in vivo~~ [in vivo](#) effect
- U C12N 2710/10311
- Mastadenovirus, e.g. human or simian adenoviruses
- C12N 2710/10371
- Demonstrated ~~in vivo~~ [in vivo](#) effect
- U C12N 2710/12011
- Asfarviridae
- C12N 2710/12071
- Demonstrated ~~in vivo~~ [in vivo](#) effect
- U C12N 2710/14011
- Baculoviridae

	C12N 2710/14071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/14111	• • • Nucleopolyhedrovirus, e.g. autographa californica nucleopolyhedrovirus
	C12N 2710/14171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16011	• • Herpesviridae
	C12N 2710/16071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16111	• • • Cytomegalovirus, e.g. human herpesvirus 5
	C12N 2710/16171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16211	• • • Lymphocryptovirus, e.g. human herpesvirus 4, Epstein-Barr Virus
	C12N 2710/16271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16311	• • • Maridivirus, e.g. Gallid herpesvirus 2, Marek-like viruses, turkey HV
	C12N 2710/16371	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16411	• • • Rhadinovirus, e.g. human herpesvirus 8
	C12N 2710/16471	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16511	• • • Roseolovirus, e.g. human herpesvirus 6, 7
	C12N 2710/16571	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16611	• • • Simplexvirus, e.g. human herpesvirus 1, 2
	C12N 2710/16671	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/16711	• • • Varicellovirus, e.g. human herpesvirus 3, Varicella Zoster, pseudorabies
	C12N 2710/16771	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/18011	• • Nimaviridae
	C12N 2710/18071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/20011	• • Papillomaviridae
	C12N 2710/20071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/22011	• • Polyomaviridae, e.g. polyoma, SV40, JC
	C12N 2710/22071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/24011	• • Poxviridae
	C12N 2710/24071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/24111	• • • Orthopoxvirus, e.g. vaccinia virus, variola
	C12N 2710/24171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2710/24211	• • • Parapoxvirus, e.g. Orf virus
	C12N 2710/24271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2720/00	dsRNA Viruses (not used)
U	C12N 2720/00011	• dsRNA Viruses
	C12N 2720/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2720/10011	• • Birnaviridae
	C12N 2720/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2720/12011	• • Reoviridae
	C12N 2720/12071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2720/12111	• • • Orbivirus, e.g. bluetongue virus
	C12N 2720/12171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2720/12211	• • • Orthoreovirus, e.g. mammalian orthoreovirus
	C12N 2720/12271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2720/12311	• • • Rotavirus, e.g. rotavirus A
	C12N 2720/12371	• • • • Demonstrated in-vivo <i>in vivo</i> effect

U	C12N 2730/00	Reverse Transcribing DNA Viruses (not used)
U	C12N 2730/00011	• Reverse Transcribing DNA Viruses
	C12N 2730/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2730/10011	• • Hepadnaviridae
	C12N 2730/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2730/10111	• • • Orthohepadnavirus, e.g. hepatitis B virus
	C12N 2730/10171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/00	Reverse Transcribing RNA Viruses (not used)
U	C12N 2740/00011	• Reverse Transcribing RNA Viruses
	C12N 2740/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/10011	• • Retroviridae
	C12N 2740/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/11011	• • • Alpharetrovirus, e.g. avian leucosis virus
	C12N 2740/11071	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/12011	• • • Betaretrovirus, e.g. mouse mammary tumour virus
	C12N 2740/12071	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/13011	• • • Gammaretrovirus, e.g. murine leukaemia virus
	C12N 2740/13071	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/14011	• • • Deltaretrovirus, e.g. bovine leukaemia virus
	C12N 2740/14071	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/15011	• • • Lentivirus, not HIV, e.g. FIV, SIV
	C12N 2740/15071	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/16011	• • • Human Immunodeficiency Virus, HIV
	C12N 2740/16071	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/16111	• • • • concerning HIV env
	C12N 2740/16171	• • • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/16211	• • • • concerning HIV gagpol
	C12N 2740/16271	• • • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/16311	• • • • concerning HIV regulatory proteins
	C12N 2740/16371	• • • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2740/17011	• • • Spumavirus, e.g. chimpanzee foamy virus
	C12N 2740/17071	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2750/00	ssDNA Viruses (not used)
U	C12N 2750/00011	• ssDNA Viruses
	C12N 2750/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2750/10011	• • Circoviridae
	C12N 2750/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2750/12011	• • Geminiviridae
	C12N 2750/12071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2750/14011	• • Parvoviridae
	C12N 2750/14071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2750/14111	• • • Dependovirus, e.g. adenoassociated viruses
	C12N 2750/14171	• • • • Demonstrated in-vivo <i>in vivo</i> effect

U	C12N 2750/14211	• • • Erythrovirus, e.g. B19 virus
	C12N 2750/14271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2750/14311	• • • Parvovirus, e.g. minute virus of mice
	C12N 2750/14371	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/00	ssRNA Viruses negative-sense (not used)
U	C12N 2760/00011	• ssRNA Viruses negative-sense
	C12N 2760/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/10011	• • Arenaviridae
	C12N 2760/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/10111	• • • Deltavirus, e.g. hepatitis delta virus
	C12N 2760/10171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/12011	• • Bunyaviridae
	C12N 2760/12071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/12111	• • • Hantavirus, e.g. Hantaan virus
	C12N 2760/12171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/12211	• • • Phlebovirus, e.g. Rift Valley fever virus
	C12N 2760/12271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/14011	• • Filoviridae
	C12N 2760/14071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/14111	• • • Ebolavirus, e.g. Zaire ebolavirus
	C12N 2760/14171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/14211	• • • Marburgvirus, e.g. lake Victoria marburgvirus
	C12N 2760/14271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/16011	• • Orthomyxoviridae
	C12N 2760/16071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/16111	• • • Influenzavirus A, i.e. influenza A virus
	C12N 2760/16171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/16211	• • • Influenzavirus B, i.e. influenza B virus
	C12N 2760/16271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/16311	• • • Influenzavirus C, i.e. influenza C virus
	C12N 2760/16371	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18011	• • Paramyxoviridae
	C12N 2760/18071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18111	• • • Avulavirus, e.g. Newcastle disease virus
	C12N 2760/18171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18211	• • • Henipavirus, e.g. hendra virus
	C12N 2760/18271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18311	• • • Metapneumovirus, e.g. avian pneumovirus
	C12N 2760/18371	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18411	• • • Morbillivirus, e.g. Measles virus, canine distemper
	C12N 2760/18471	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18511	• • • Pneumovirus, e.g. human respiratory syncytial virus
	C12N 2760/18571	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18611	• • • Respirovirus, e.g. Bovine, human parainfluenza 1,3

	C12N 2760/18671	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18711	• • • Rubulavirus, e.g. mumps virus, parainfluenza 2,4
	C12N 2760/18771	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/18811	• • • Sendai virus
	C12N 2760/18871	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/20011	• • Rhabdoviridae
	C12N 2760/20071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/20111	• • • Lyssavirus, e.g. rabies virus
	C12N 2760/20171	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2760/20211	• • • Vesiculovirus, e.g. vesicular stomatitis Indiana virus
	C12N 2760/20271	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/00	ssRNA Viruses positive-sense (not used)
U	C12N 2770/00011	• ssRNA Viruses positive-sense
	C12N 2770/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/10011	• • Arteriviridae
	C12N 2770/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/12011	• • Astroviridae
	C12N 2770/12071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/14011	• • Bromoviridae
	C12N 2770/14071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/16011	• • Caliciviridae
	C12N 2770/16071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/18011	• • Comoviridae
	C12N 2770/18071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/20011	• • Coronaviridae
	C12N 2770/20071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/22011	• • Dicistroviridae
	C12N 2770/22071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/24011	• • Flaviviridae
	C12N 2770/24071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/24111	• • • Flavivirus, e.g. yellow fever virus, dengue, JEV
	C12N 2770/24171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/24211	• • • Hepacivirus, e.g. hepatitis C virus, hepatitis G virus
	C12N 2770/24271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/24311	• • • Pestivirus, e.g. bovine viral diarrhea virus
	C12N 2770/24371	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/26011	• • Flexiviridae
	C12N 2770/26071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/28011	• • Hepeviridae
	C12N 2770/28071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/28111	• • • Hepevirus, e.g. hepatitis E virus
	C12N 2770/28171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/30011	• • Nodaviridae
	C12N 2770/30071	• • • Demonstrated in-vivo <i>in vivo</i> effect

U	C12N 2770/32011	• • Picornaviridae
	C12N 2770/32071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/32111	• • • Aphthovirus, e.g. footandmouth disease virus
	C12N 2770/32171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/32211	• • • Cardiovirus, e.g. encephalomyocarditis virus
	C12N 2770/32271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/32311	• • • Enterovirus
	C12N 2770/32371	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/32411	• • • Hepatovirus, i.e. hepatitis A virus
	C12N 2770/32471	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/32511	• • • Parechovirus, e.g. human parechovirus
	C12N 2770/32571	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/32611	• • • Poliovirus
	C12N 2770/32671	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/32711	• • • Rhinovirus
	C12N 2770/32771	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/34011	• • Potyviridae
	C12N 2770/34071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/36011	• • Togaviridae
	C12N 2770/36071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/36111	• • • Alphavirus, e.g. Sindbis virus, VEE, EEE, WEE, Semliki
	C12N 2770/36171	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/36211	• • • Rubivirus, e.g. rubella virus
	C12N 2770/36271	• • • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/38011	• • Tombusviridae
	C12N 2770/38071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2770/40011	• • Tymoviridae
	C12N 2770/40071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2780/00	Naked RNA Viruses (not used)
U	C12N 2780/00011	• Naked RNA Viruses
	C12N 2780/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2780/10011	• • Narnaviridae
	C12N 2780/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2790/00	Viroids and subviral agents (not used)
U	C12N 2790/00011	• Viroids and subviral agents
	C12N 2790/00071	• • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2790/10011	• • Prions
	C12N 2790/10071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2790/12011	• • Satellite viruses
	C12N 2790/12071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2790/14011	• • Viroids
	C12N 2790/14071	• • • Demonstrated in-vivo <i>in vivo</i> effect
U	C12N 2792/00	Archaeabacteria viruses (not used)

- U C12N 2792/00011 · Archaeabacteria viruses
- C12N 2792/00071 · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2792/10011 · · Fuselloviridae
- C12N 2792/10071 · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2792/12011 · · Guttaviridae
- C12N 2792/12071 · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/00 Bacteriophages (not used)**
- U C12N 2795/00011 · Bacteriophages
- C12N 2795/00071 · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/10011 · · dsDNA Bacteriophages
- C12N 2795/10071 · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/10111 · · · Myoviridae
- C12N 2795/10171 · · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/10211 · · · Podoviridae
- C12N 2795/10271 · · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/10311 · · · Siphoviridae
- C12N 2795/10371 · · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/12011 · · dsRNA Bacteriophages
- C12N 2795/12071 · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/14011 · · ssDNA Bacteriophages
- C12N 2795/14071 · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/14111 · · · Inoviridae
- C12N 2795/14171 · · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/14211 · · · Microviridae
- C12N 2795/14271 · · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/16011 · · ssRNA Bacteriophages negative-sense
- C12N 2795/16071 · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/18011 · · ssRNA Bacteriophages positive-sense
- C12N 2795/18071 · · · Demonstrated ~~in-vivo~~ *in vivo* effect
- U C12N 2795/18111 · · · Leviviridae
- C12N 2795/18171 · · · · Demonstrated ~~in-vivo~~ *in vivo* effect

U C12N 2799/00 Uses of viruses

WARNING

From March 15, 2012 codes in the range [C12N 2799/00](#) - [C12N 2799/06](#) are no longer used for the classification of new documents. The documents in this range are being reclassified to the corresponding codes in [C12N 2710/00-C12N 2795/00](#)

- U C12N 2799/02 · as vector
- C12N 2799/04 · · ~~in-vivo~~ *in vivo*
- C12N 2799/06 · · ~~in-vitro~~ *in vitro*

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 see](#) the relevant compound class, e.g. [C01](#), [C07](#))}

NOTES

1. This subclass ~~covers~~[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:

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

- | | | | |
|---|----------------------------|------------|----------------------------|
| - | C12P 21/04 | covered by | C07K 7/50 |
| - | C12P 21/08 | covered by | C07K 16/00 |

U C12P 17/00

Preparation of heterocyclic carbon compounds with only O, N, S, Se or Te as ring hetero atoms ([C12P 13/04](#) - [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*; ~~*i.e. not condensed among themselves or through a common carbocyclic ring system*~~)}

C12P 17/162

- {Heterorings having oxygen atoms as the only ring heteroatoms, e.g. Lasalocid}

U C12P 19/00

Preparation of compounds containing saccharide radicals (keto-alonic acids [C12P 7/58](#))

NOTE

Attention is drawn to the term "saccharide radical" in the first Note following the title of subclass [C07H](#).

U C12P 19/44

- Preparation of O-glycosides, e.g. glucosides {(Polysaccharides and not substituted disaccharides [C12P 19/04](#), [C12P 19/12](#))}

U C12P 19/46

- • having an oxygen atom of the saccharide radical bound to a cyclohexyl radical, e.g. kasugamycin

U C12P 19/48

- • • the cyclohexyl radical being substituted by two or more nitrogen atoms, e.g. destomycin, neamin

C12P 19/485

- • • {Having two saccharide radicals bound through only oxygen to non-adjacent ring carbons of the cyclohexyl radical, e.g. gentamycin, kanamycin, sisomycin, verdamycin, mutamycin, tobramycin, nebramycin, antibiotics 66-40B, 66-40D, XK-62-2, 66-40, G-418, G-52 ([see see](#) also [C12P 19/54](#))}

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~~ [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](#) - [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](#) - [C12Q 1/70](#) it is desirable to classify with symbols from groups [C12Q 2500/00](#) - [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](#) - [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 2334/00

O-linked chromogens for determinations of hydrolase enzymes, e.g. glycosidases, phosphatases, esterases

C12Q 2334/70

- the product, e.g. phenol, naphthol being diazotised [in-situ in situ](#), e.g. with Fast Red

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 see](#) also codes [C12Q 2535/125](#), [C12Q 2565/537](#))

U C12Q 2543/00

{Reactions characterised by the reaction site, e.g. cell or chromosome}

C12Q 2543/10

- the purpose being "[in-situ in situ](#)" analysis

C12Q 2543/101

- ~~in-situ~~ *in situ* amplification

U C12Q 2565/00**Nucleic acid analysis characterised by mode or means of detection**

U C12Q 2565/60

- Detection means characterised by use of a special device (Not used)

C12Q 2565/625

- being a nucleic acid test strip device, e.g. dipsticks, strips, tapes, CD plates

Project: N/A (C12Y)**C12Y****ENZYMES**NOTES

1. This subclass ~~covers~~ *covers* all enzymes.

2. In this subclass, each enzyme is classified according to their EC number of the "Enzyme Nomenclature" (as valid on 1 January 2012) recommended by the Nomenclature Committee of the International Union of Biochemistry and Molecular Biology. The EC number appears in the subgroups in parenthesis and is reflected in the classification symbol: the EC number with the notation a.bb.cc.ddd is rendered into a CPC symbol [C12Y](#) ABB/CCDDD (with no trailing zeroes at the end) where:

- EC a.bb.cc.ddd: a ranges from 1 – 6; CPC symbol: A = 1 – 6
- EC a.bb.cc.ddd: b ranges from 1 – 99 (*); CPC symbol: B = 01 – 99
- EC a.bb.cc.ddd: c ranges from 1 – 99 (*); CPC symbol: C = 01 – 99
- EC a.bb.cc.ddd: d ranges from 1 – 400 (*); CPC symbol: D = 001 – 400
- (*) not all numbers are used

Examples:

- Alcohol dehydrogenase: EC 1.1.1.1. is classified in [C12Y 101/01001](#)
- Togavirin: EC 3.4.21.90 is classified in [C12Y 304/2109](#)
- Hepsin: EC 3.4.21.106 is classified in [C12Y 304/21106](#)
- Cobaltochelatase: EC 6.6.1.2 is classified in [C12Y 606/01002](#)

3. This subclass is for discretionary supplementary classification of subject matter already classified as such in other classification places, e.g.:

- [A01N 1/00](#): Compositions containing enzymes and use of the compositions and compounds for preservation of bodies of humans or animals or parts thereof
- [A01N 3/00](#): Compositions containing enzymes and use of the compositions and compounds for preservation of plants or parts thereof
- [A01N 63/00](#): Biocides, pest repellents or attractants or plant growth regulators containing enzymes
- [A21D 10/00](#), [A21D 13/00](#) : Bakery products which may contain enzymes
- [A23](#): Foods or foodstuffs containing enzymes
- [A61K](#): Preparations for medical dental or toilet purposes containing enzymes
- [A61K 31/7088](#): Medical preparations containing nucleic acids encoding enzymes
- [A61K 48/00](#): Medical preparations containing genetic material encoding enzymes which is inserted into cells of the living body to treat genetic diseases; Gene therapy
- [A61L 12/082](#): Methods or apparatus for disinfecting or sterilising contact lenses in combination with enzymes
- [A61L 15/38](#): Bandages, dressings or absorbent pads for physiological fluids containing enzymes
- [A61L 27/3683](#): Material for prostheses subjected to enzyme treatment prior to implantation
- [C07K 14/81](#): Protease inhibitors
- [C07K 16/40](#): Antibodies against enzymes
- [C11D 3/386](#): Detergent compositions containing enzymes
- [C12C 1/00](#): Preparation of malt
- [C12M](#): Apparatus for enzymology
- [C12N 9/00](#): Enzymes

- [C12N 11/00](#): Carrier-bound or immobilised enzymes
- [C12N 13/00](#): Treatment of enzymes with electrical or wave energy
- [C12N 15/00](#): Nucleic acids encoding (part of) enzymes
- [C12N 15/113](#), [C12N 15/8281](#): Non-encoding nucleic acids modulating the expression of genes for enzymes
- [C12P](#): Preparation of compounds using enzymes
- [C12Q 1/00](#): Measuring or testing processes involving enzymes; Compositions therefor; Processes of preparing such compositions
- [G01N 33/573](#): Immunoassays for enzymes

4. Specific classification rules for the allocation of [C12Y](#) symbols together with any of the groups listed above, are specified within the relevant group, if available.

5. The classification symbols of this subclass are not listed first when assigned to patent documents.

U	C12Y 104/00	Oxidoreductases acting on the CH-NH₂ group of donors (1.4)
U	C12Y 104/03	• with oxygen as acceptor (1.4.3)
	C12Y 104/03006	• • Amine oxidase (copper-containing)(1.4.3.6) (C12Y 104/03021 or , C12Y 104/03022 takes take precedence)
U	C12Y 108/00	Oxidoreductases acting on sulfur groups as donors (1.8)
U	C12Y 108/04	• with a disulfide as acceptor (1.8.4)
	C12Y 108/04005	• • Methionine-S-oxide reductase (1.8.4.5) (C12Y 108/04013 or , C12Y 108/04014 takes take precedence)
U	C12Y 204/00	Glycosyltransferases (2.4)
U	C12Y 204/01	• Hexosyltransferases (2.4.1)
	C12Y 204/01123	• • Inositol 3-alpha-galactosyltransferase (2.4.1.123), i.e. galactinol-synthase
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 take precedence)
U	C12Y 303/00	Hydrolases acting on ether bonds (3.3)
U	C12Y 303/02	• Ether hydrolases (3.3.2)
	C12Y 303/02003	• • Epoxide hydrolase (3.3.2.3) (C12Y 303/02009 or , C12Y 303/0201 takes take precedence)
	C12Y 304/00	Hydrolases acting on peptide bonds, i.e. peptidases (3.4)
U	C12Y 304/13	• Dipeptidases (3.4.13)
	C12Y 304/13011	• • Dipeptidase (3.4.13.11) (C12Y 304/13018 or , C12Y 304/13019 takes take precedence)
U	C12Y 304/21	• Serine endopeptidases (3.4.21)
	C12Y 304/21011	• • Elastase (3.4.21.11) (C12Y 304/21036 or , C12Y 304/21037 takes take precedence)
	C12Y 304/21031	• • Urokinase (3.4.21.31) (C12Y 304/21068 or , C12Y 304/21073 takes take precedence)
U	C12Y 304/22	• Cysteine endopeptidases (3.4.22)
	C12Y 304/22004	• • Bromelain (3.4.22.4) (C12Y 304/22032 or , C12Y 304/22033 takes take precedence)

- U C12Y 304/23 • Aspartic endopeptidases (3.4.23)
- C12Y 304/23006 • • Microbial carboxyl proteinases (3.4.23.6) ([C12Y 304/23018](#) - [C12Y 304/23028](#) ~~or~~, [C12Y 304/2303](#) ~~takes~~[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~~[take](#) precedence)
- C12Y 304/24812 • • ADAMTS5 endopeptidase (3.4.24.B12), i.e. aggrecanase 2
- U C12Y 402/00 Carbon-oxygen lyases (4.2)**
- U C12Y 402/02 • acting on polysaccharides (4.2.2)
- C12Y 402/02004 • • Chondroitin ABC lyase (4.2.2.4), i.e. chondroitinase ([C12Y 402/0202](#) ~~or~~, [C12Y 402/02021](#) ~~takes~~[take](#) precedence)

Project: N/A (C21B)**C21B**

MANUFACTURE OF IRON OR STEEL (preliminary treatment of ferrous ores or scrap [C22B 1/00](#); electric heating [H05B](#))

NOTE

This subclass ~~covers~~[covers](#) the production of iron or steel from source materials, e.g. the production of pig-iron, and apparatus specially adapted therefor, e.g. blast furnaces, air heaters (furnaces in general [F27](#)).

Project: N/A (C21C)

- U C21C 5/00 Manufacture of carbon-steel, e.g. plain mild steel, medium carbon steel or cast steel {or stainless steel}**
- C21C 5/52 • Manufacture of steel in electric furnaces ({[C21C 5/005](#) takes precedence}; electric heating ~~per se~~ [per se](#) [H05B](#))

Project: N/A (C21D)**C21D 1/00**

General methods or devices for heat treatments, e.g. annealing, hardening, quenching, tempering (furnaces in general [F27](#); electric heating ~~per se~~ [per se](#) [H05B](#))

Project: N/A (C22B)

- U C22B 1/00 Preliminary treatment of ores or scrap (furnaces, sintering apparatus [F27B](#))**
- C22B 1/005 • {Preliminary treatment of scrap ([C22B 1/02](#) ~~up to~~ [C22B 1/26](#) take precedence)}
- C22B 3/00 Extraction of metal compounds from ores or concentrates by wet processes**
- NOTE
- This group ~~covers~~[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)}

- U C22B 3/0006 . . . {using acyclic or carbocyclic compounds}
- U C22B 3/0008 {using acyclic or carbocyclic compounds of a single type}
- C22B 3/0022 {using organic acids ([C22B 3/0031](#)-or, [C22B 3/0035](#)-or, [C22B 3/004](#) takes precedence)}
- C22B 3/0029 {using cyanic acids or derivatives thereof ([C22B 3/0031](#)-or, [C22B 3/0035](#)-or, [C22B 3/004](#) takes precedence)}
- C22B 3/0032 {using mixtures of acyclic or carbocyclic compounds of different types ([C22B 3/0035](#)-or, [C22B 3/004](#) takes precedence)}
- U C22B 3/004 . . . {using organo-metallic compounds or organo compounds of boron, silicon, phosphorus, selenium or tellurim}
- U C22B 3/0041 {using organo-metallic compounds of a single type}
- U C22B 3/0043 {using phosphorus-based acid derivatives}
- U C22B 3/0044 {of a single type}
- U C22B 3/0045 {Acyclic compounds}
- C22B 3/0047 {of the phosphine or phosphane ([PH₃PH₃](#)) type}
- C22B 3/0048 {Primary ([RPH₂RPH₂](#)) compounds}
- C22B 3/005 {Secondary ([R₂PHR₂PH](#)) compounds}
- C22B 3/0051 {Tertiary ([R₃PHR₃PH](#)) compounds}
- C22B 3/0052 {Chalcogenides of phosphine, e.g. ([R₃PR₃P=X](#)) type with X = O, S, Se or Te; Oxides, Thio-oxides of phosphine}
- U C22B 3/0056 {Mononuclear oxyacids of tervalent phosphorus or their esters(-ite)}
- C22B 3/0059 {Phosphinous ([H₂POHH₂POH](#)) type}
- C22B 3/0077 {Cyclic compounds, e.g. aryl-, phenyl-, benzyl-compounds}
- U C22B 3/04 . . by leaching ([C22B 3/18](#) takes precedence)
- C22B 3/06 . . in inorganic acid solutions, {e.g. with acids generated [in-situ](#) [in situ](#); in inorganic salt solutions other than ammonium salt solutions}
- U C22B 3/12 . . in inorganic alkaline solutions
- C22B 3/14 . . . containing ammonia or ammonium salts

WARNING

Group [C22B 3/14](#) was introduced on May 1st, 2005. This group [covers](#) [covers](#) the subject-matter of group [C22B 3/0002](#) which is no longer used for classification of new documents

- U C22B 3/20 . . Treatment or purification of solutions, e.g. obtained by leaching ([C22B 3/18](#) takes precedence)
- U C22B 3/22 . . . by physical processes, e.g. by filtration, by magnetic means, {by thermal decomposition}([C22B 3/0005](#) takes precedence)
- C22B 3/24 . . . by adsorption on solid substances, e.g. by extraction with solid resins

WARNING

Group [C22B 3/24](#) was introduced on May 1st, 2005. This group [covers](#) [covers](#) the subject-matter of group [C22B 3/0098](#) which is no longer used for classification of new documents

C22B 3/42

- by ion-exchange extraction

WARNING

Group [C22B 3/42](#) was introduced on May 1st, 2005. This group ~~covers~~[covers](#) the subject-matter of group [C22B 3/0098](#) which is no longer used for classification of new documents

U 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 7/001

- {Dry processes}

C22B 7/004

- {separating two or more metals by melting out (liquation), i.e. heating above the temperature of the lower melting metal component(s); by fractional crystallisation (controlled freezing)}

U C22B 9/00

General processes of refining or remelting of metals; Apparatus for electroslog or arc remelting of metals

C22B 9/05

- Refining by treating with gases, e.g. gas flushing {also refining by means of a material generating gas ~~in-situ~~[in situ](#)}

U C22B 21/00

Obtaining aluminium

U 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)}

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 see~~ [C01G 23/00](#) - [C01G 23/08](#)}

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 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)

U C22C 1/00

Making alloys (powder-metallurgical apparatus or processes, not specially modified for making alloys [B22F](#); by electrothermal methods [C22B 4/00](#); by electrolysis [C25C](#))

U C22C 1/04

- by powder metallurgy ([C22C 1/08](#), {[C22C 1/05](#), [C22C 1/10](#), [C22C 32/00](#), [C22C 47/00](#), [C22C 49/00](#)} take precedence)

U C22C 1/05

- • Mixtures of metal powder with non-metallic powder ([C22C 1/08](#), {[C22C 47/00](#), [C22C 49/00](#)} take precedence)

- U C22C 1/051 • • • {Making hard metals based on borides, carbides, nitrides, oxides or silicides; Preparation of the powder mixture used as the starting material}
- C22C 1/053 • • • • {with ~~in-situ~~ *in situ* forming of the hard compound ([C22C 1/058](#) takes precedence)}
- U C22C 29/00 **Alloys based on carbides, oxides, nitrides, borides, or silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides, sulfides {([C22C 26/00](#) takes precedence)}**
- U C22C 29/02 • based on carbides or carbonitrides
- U C22C 29/06 • • based on carbides, but not containing other metal compounds
- C22C 29/062 • • • {based on ~~B₄C~~ B₄C}
- C22C 32/00 **Non-ferrous alloys containing at least 5% by weight but less than 50% by weight of oxides, carbides, borides, nitrides, silicides or other metal compounds, e.g. oxynitrides, sulfides whether added as such or formed ~~in situ~~ *in situ***
- NOTE
- This group comprises also dispersion hardened alloys with less than 5% of dispersed compounds
- U C22C 32/0047 • {with carbides, nitrides, borides or silicides as the main non-metallic constituents}
- U C22C 32/0052 • • {only carbides}
- C22C 32/0057 • • • {based on ~~B₄C~~ B₄C}
- U C22C 47/00 **Making alloys containing metallic or non-metallic fibres or filaments**
- C22C 47/16 • by thermal spraying of the metal, e.g. plasma spraying {(atomising molten metal comprising fibres ~~see see~~ also [C22C 1/1042](#))}

Project: N/A (C23)

C23

COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL (by metallising textiles [D06M 11/83](#); decorating textiles by locally metallising [D06Q 1/04](#)); CHEMICAL SURFACE TREATMENT; DIFFUSION TREATMENT OF METALLIC MATERIAL; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL (for specific applications, ~~see see~~ the relevant places, e.g. for manufacturing resistors [H01C 17/06](#)); INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL (treating metal surfaces or coating of metals by electrolysis or electrophoresis [C25D](#), [C25F](#))

NOTE

In this class, the following expression is used with the meaning indicated:

- "metallic material" covers:
 - a. metals;
 - b. alloys (attention is drawn to the Note following the title of subclass [C22C](#)):

alloys containing at least 50 % by weight of one or more of borides, carbides, nitrides, oxides or silicides and binding metal; non-ferrous alloys containing at least 5 % by weight but less than 50 % by weight of borides, carbides, nitrides, oxides or silicides of refractory metals, whether added as such or formed ~~in situ~~ *in situ*.

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 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.

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:

- [C23C 14/36](#) - [C23C 14/44](#) covered by [C23C 14/34](#) and subgroups.
- [C23C 18/28](#) covered by [C23C 18/2006](#) - [C23C 18/2093](#)

- 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
- U C23C 14/24 • • Vacuum evaporation
- C23C 14/32 • • • by explosion; by evaporation and subsequent ionisation of the vapours {, e.g. ion-plating}([C23C 14/34](#) - [C23C 14/48](#) 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)
- U C23C 16/448 • • characterised by the method used for generating reactive gas streams, e.g. by evaporation or sublimation of precursor materials
- C23C 16/4488 • • • {by [in situ in situ](#) generation of reactive gas by chemical or electrochemical reaction}
- U 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 18/02 • by thermal decomposition
- U C23C 18/12 • • characterised by the deposition of inorganic material other than metallic material
- WARNING
Groups [C23C 18/1204](#) - [C23C 18/1295](#) are not complete pending a reorganisation. See also this group
- U C23C 18/125 • • • {Process of deposition of the inorganic material}
- U C23C 18/1262 • • • • {involving particles, e.g. carbon nanotubes [CNT], flakes}
- C23C 18/1266 • • • • • {Particles formed **in-situ**[in situ](#)}
- 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**[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**[covers](#) also suspensions containing reactive liquids and non-reactive solid particles.
 2. In groups [C23C 22/02](#) - [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.

Project: MP0205 (C23F)

- U C23F 11/00 **Inhibiting corrosion of metallic material by applying inhibitors to the surface in danger of corrosion or adding them to the corrosive agent (adding inhibitors to mineral oil, fuels, or lubricants [C10](#); adding inhibitors to pickling solutions [C23G](#))**
- U C23F 11/08 • in other liquids
- U C23F 11/10 • • using organic inhibitors
- NOTES
1. A compound is classified in the last appropriate place.
 2. Esters or anhydrides of organic acids are classified as the relevant acid unless otherwise indicated. Salts of a compound with an inorganic compound are classified as that compound unless specifically provided for.
- U C23F 11/12 • • • Oxygen-containing compounds
- M C23F 11/122 • • • • {Alcohols; Aldehydes; Ketones}
- M C23F 11/124 • • • • • {Carboxylic acids}
- M C23F 11/126 • • • • • {Aliphatic acids}
- M C23F 11/128 • • • • • {Esters of carboxylic acids}

Project: N/A (C23F)

C23F 11/14 . . . Nitrogen-containing compounds

Project: MP0205 (C23F)

M C23F 11/141 . . . {Amines; Quaternary ammonium compounds}
 M C23F 11/142 . . . {Hydroxy amines}
 M C23F 11/143 . . . {Salts of amines}
 M C23F 11/144 . . . {Aminocarboxylic acids}
 M C23F 11/145 . . . {Amides; N-substituted substituted amides}
 M C23F 11/146 . . . {containing a multiple nitrogen-to-carbon bond}
 M C23F 11/147 . . . {containing a nitrogen-to-oxygen bond}
 M C23F 11/148 . . . {containing a nitrogen-to-nitrogen bond}
 M C23F 11/149 . . . {Heterocyclic compounds containing nitrogen as hetero atom}

Project: N/A (C23F)

C23F 11/16 . . . Sulfur-containing compounds

Project: MP0205 (C23F)

M C23F 11/161 . . . {Mercaptans}
 M C23F 11/162 . . . {Thioaldehydes; Thioketones}
 M C23F 11/163 . . . {Sulfonic acids}
 M C23F 11/164 . . . {containing a -SO₂-N group}
 M C23F 11/165 . . . {Heterocyclic compounds containing sulfur as hetero atom}
 U C23F 11/167 . . . Phosphorus-containing compounds
 M C23F 11/1673 . . . {Esters of phosphoric or thiophosphoric acids}
 M C23F 11/1676 . . . {Phosphonic acids}
 U C23F 11/18 . . . using inorganic inhibitors
 M C23F 11/181 . . . {Nitrogen containing compounds}
 M C23F 11/182 . . . {Sulfur, boron or silicon containing compounds}
 M C23F 11/184 . . . {Phosphorous, arsenic, antimony or bismuth containing
 compound compounds}
 M C23F 11/185 . . . {Refractory metal-containing compounds}
 M C23F 11/187 . . . {Mixtures of inorganic inhibitors}
 M C23F 11/188 . . . {containing phosphates}

Project: N/A (C25D)

U C25D 3/00 Electroplating: Baths therefor

U C25D 3/66 . from melts
 C25D 3/665 . {from ionic liquids}

WARNING

Group [C25D 3/665](#) is not complete, pending reorganization, see also
[C25D 3/66](#)

U C25D 5/00 Electroplating characterised by the process; Pretreatment or after-treatment of work-pieces

U C25D 5/02 . Electroplating of selected surface areas

C25D 5/024	• • {using locally applied electromagnetic radiation, e.g. lasers}
C25D 5/54	• Electroplating {on} non-metallic surfaces {, e.g. on carbon or carbon composites}{ C25D 7/12 takes precedence}
U C25D 7/00	Electroplating characterised by the article coated
U C25D 7/12	• Semiconductors
C25D 7/123	• • {coated first with a seed layer, e.g. for filling vias}
	<u>WARNING</u> Groups C25D 7/123-C25D 7/126 are not complete, pending reorganization, see also C25D 7/12 }
U C25D 13/00	Electrophoretic coating characterised by the process (C25D 15/00 takes precedence; compositions for electrophoretic coating C09D 5/44)
U C25D 13/04	• with organic material
C25D 13/06	• • with polymers {(not used, see see C09D 5/44)}
C25D 13/08	• • • by polymerisation in situ in situ of monomeric materials {(not used, see see C09D 5/4476)}
C25D 13/10	• characterised by the additives used {(not used, see see C09D 5/448)}
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 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}

Project: N/A (C30B)**C30B**

SINGLE-CRYSTAL-GROWTH (by using ultra-high pressure, e.g. for the formation of diamonds [B01J 3/06](#)); **UNIDIRECTIONAL SOLIDIFICATION OF EUTECTIC MATERIAL OR UNIDIRECTIONAL DEMIXING OF EUTECTOID MATERIAL**; **REFINING BY ZONE-MELTING OF MATERIAL** (zone-refining of metals or alloys [C22B](#)); **PRODUCTION OF A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (casting of metals, casting of other substances by the same processes or devices [B22D](#); working of plastics [B29](#); modifying the physical structure of metals or alloys [C21D](#), [C22F](#)); **SINGLE CRYSTALS OR HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE**; **AFTER-TREATMENT OF SINGLE CRYSTALS OR A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (for producing semiconductor devices or parts thereof [H01L](#)); **APPARATUS THEREFOR**

NOTES

1. In this subclass, the following expressions are used with the meaning indicated:

- "single-crystal" includes also twin crystals and a predominantly single crystal product;
- "homogeneous polycrystalline material" means a material with crystal particles, all of which have the same chemical composition;
- "defined structure" means the structure of a material with grains which are oriented in a preferential way or have larger dimensions than normally obtained.

2. In this subclass:

- the preparation of single crystals or a homogeneous polycrystalline material with defined structure of particular materials or shapes is classified in the group for the process as well as in group [C30B 29/00](#);
- an apparatus specially adapted for a specific process is classified in the appropriate group for the process. Apparatus to be used in more than one kind of process is classified in group [C30B 35/00](#).

3. After the notation of [C30B](#) and separated therefrom by a + sign, notations concerning the particular composition or shape of the material may be added. These notations are selected from [C30B 29/00](#).

~~Example: A crystal-growth process by zone-melting directly related to Al₂O₃ crystal material is classified in C30B 13/00 + C30B 29/20~~

Example: A crystal-growth process by zone-melting directly related to Al₂O₃ crystal material is classified in [C30B 13/00](#) + [C30B 29/20](#)

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:

[C30B 29/64](#), [C30B 29/66](#) covered by [C30B 29/60](#)

U	C30B 11/00	Single-crystal growth by normal freezing or freezing under temperature gradient, e.g. Bridgman-Stockbarger method (C30B 13/00, C30B 15/00, C30B 17/00, C30B 19/00 take precedence; under a protective fluid C30B 27/00)
	C30B 11/04	• adding crystallising material or reactants forming it in-situ <i>in situ</i> to the melt
	C30B 13/00	Single-crystal growth by zone-melting; Refining by zone-melting (C30B 17/00 takes precedence; by changing the cross-section of the treated solid C30B 15/00; under a protective fluid C30B 27/00; zone-refining of specific materials, see the relevant subclasses for the materials)
	C30B 13/08	• adding crystallising material or reactants forming it in-situ <i>in situ</i> to the molten zone
U	C30B 15/00	Single-crystal growth by pulling from a melt, e.g. Czochralski method (under a protective fluid C30B 27/00)
	C30B 15/02	• adding crystallising material or reactants forming it in-situ <i>in situ</i> to the melt
U	C30B 19/00	Liquid-phase epitaxial-layer growth
U	C30B 19/10	• Controlling or regulating (controlling or regulating in general G05)
	C30B 19/106	• {adding crystallising material or reactants forming it in-situ <i>in situ</i> to the liquid}
U	C30B 25/00	Single-crystal growth by chemical reaction of reactive gases, e.g. chemical vapour-deposition growth
U	C30B 25/02	• Epitaxial-layer growth
U	C30B 25/18	• • characterised by the substrate
	C30B 25/186	• • {being specially pre-treated by, e.g. chemical or physical means}

Project: N/A (C40B)

C40B

COMBINATORIAL CHEMISTRY; LIBRARIES, e.g. CHEMICAL LIBRARIES, ~~IN SILICO~~ *IN SILICO* LIBRARIESNOTES

1. In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.
2. When classifying in this subclass, subject matter of interest is also classified in other appropriate places:
 - library members are also classified in the appropriate places elsewhere in the IPC, (e.g. in section ~~E~~*C*) according to established procedure relating to "Markush"-type formulae (see paragraph 101 of the Guide);
 - methods or apparatus covered by this subclass are also classified for their biological, chemical, physical or other features in the appropriate places in the IPC, if such features are of interest, e.g.

A01N	Biocides
A61K	Preparations for medical, dental or toilet purposes
A61P	Therapeutic activity of compounds
B01D	Separation
B01J	Chemical or physical processes, e.g. catalysis; Apparatus therefor
B01L	Chemical or physical laboratory apparatus
B29	Shaped plastics
C01 , C07 , C08	Inorganic, organic or organic macromolecular compounds; Methods of preparation or separation thereof
C12	Biochemistry, microbiology, enzymology including micro-organisms or enzymes, preparing them, using them to synthesis compounds or compositions; Measuring or testing processes involving micro-organisms or enzymes; Mutation or genetic engineering
C22	Metal alloys
G01N	Chemical or physical analysis
G01R , G01T	Physical measurements methods; Apparatus thereof
G03F	Photomechanical methods
G06F	Electrical digital data processing
G06K	Data processing
G06T	Image data processing
G09F	Displaying; Advertising

U	C40B 20/00	Methods specially adapted for identifying library members
	C40B 20/08	• Direct analysis of the library members per se <i>per se</i> by physical methods, e.g. spectroscopy
U	C40B 30/00	Methods of screening libraries
	C40B 30/02	• In-silico <i>In silico</i> screening
	C40B 40/00	Libraries per se <i>per se</i>, e.g. arrays, mixtures
U	C40B 50/00	Methods of creating libraries, e.g. combinatorial synthesis
	C40B 50/02	• In-silico <i>In silico</i> or mathematical conception of libraries

Project: N/A (D01H)

- D01H 1/00** Spinning or twisting machines in which the product is wound-up continuously (open-end spinning machines [D01H 4/00](#); {doubling of yarns [B65H 54/00+T](#); doubled, plied or cabled threads [D02G 3/28](#), e.g. using hollow spindles [D02G 3/283](#); spin-twisting [D02G 3/281](#); threads with alternately "S" and "Z" direction of twist, e.g. self-twist process, [D02G 3/286](#); wrapping strands of filaments or staple fibres by a binder yarn [D02G 3/38](#)})
- U D01H 1/14 • Details (drafting arrangements [D01H 5/00](#); twisting arrangements [D01H 7/00](#))
- U D01H 1/20 • • Driving or stopping arrangements (for open-end spinning machines [D01H 4/12](#), [D01H 4/20](#), [D01H 4/42](#); safety devices [D01H 13/14](#))
- U D01H 1/32 • • • for complete machines
- D01H 1/34 • • • with two or more speeds; with variable-speed arrangements {, e.g. variation of machine speed according to growing bobbin diameter (responsive to reduction in material tension [D01H 13/16](#))}
- D01H 1/36 • • Package-shaping arrangements, e.g. building motions {, e.g. control for the traversing stroke of ring rails; Stopping ring rails in a predetermined position}
- U **D01H 7/00** **Spinning or twisting arrangements (for open-end spinning [D01H 4/00](#))**
- D01H 7/92 • for imparting transient twist {, i.e. false twist ([D01H 1/11](#) takes precedence)}
- U **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}**
- D01H 9/18 • for supplying bobbins, cores, receptacles, or completed packages to, or transporting from, paying-out or take-up stations ([D01H 9/10](#) takes precedence); {Arrangements to prevent unwinding of roving from roving bobbins (transporting full yarn bobbins to subsequent machines [B65H 67/06+T](#))}
- U **D01H 13/00** **Other common constructional features, details or accessories (for open-end spinning [D01H 4/00](#))**
- D01H 13/005 • {Service carriages travelling along the machines (characteristics relating to the apparatus supported by the carriage, [see see](#) relevant groups, e.g. [D01H 9/005](#), [D01H 9/10](#), [D01H 13/145](#), [D01H 15/00](#))}
- D01H 13/32 • Counting, measuring, recording or registering devices (in general, [see see](#) the appropriate subclass of Section [GG](#), e.g. {[G01B 21/12](#), [G01N 33/36](#)})
- D01H 15/00** **Piecing arrangements (for open-end spinning machines [D01H 4/48](#); in machines for producing textile fabrics, [see see](#) the appropriate subclasses); {Automatic end-finding, e.g. by suction and reverse package rotation; Devices for temporarily storing yarn during piecing (piecing of rovings in combination with replacing of completed packages or cans [D01H 9/005](#))}**

Project: N/A (D02G)

- D02G 1/00** Producing crimped or curled fibres, filaments, yarns, or threads, giving them latent characteristics (yarns [per se per se](#) [D02G 3/00](#); during formation of artificial filaments, threads, or the like [D01D 5/22](#); general aspects of chemical treatment [D06M](#))

NOTE

In the context of this group, the terms "texturing" or "texturising" encompass curling and crimping

Project: N/A (D02H)**U D02H 5/00**

D02H 5/02

Beaming machines

- combined with apparatus for sizing or other treatment of warps (sizing ~~per se~~ *per se* [D06B](#))

Project: N/A (D02J)**D02J**

FINISHING OR DRESSING OF FILAMENTS, YARNS, THREADS, CORDS, ROPES OR THE LIKE (curling or crimping [D02G](#); by treatment with liquids, gases or vapours [D06B](#); finishing other than by liquid treatment, of yarns in warp or sheet form [D06C](#); for chemical matters, ~~see~~ *see* [D06L](#), [D06M](#), [D06P](#), [D06Q](#); treatment during rope-making, apparatus for treating ropes auxiliary to rope-making [D07B](#))

NOTE

Attention is drawn to the note following the title of Class [D02](#).

Project: N/A (D03C)**D03C****SHEDDING MECHANISMS; PATTERN CARDS OR CHAINS; PUNCHING OF CARDS; DESIGNING PATTERNS**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:

~~The following IPC groups are not used in the CPC scheme. Subject-matter covered by these groups is classified in the following CPC groups:—~~ [D03C 9/04](#) covered by [D03C 9/028](#)

Project: N/A (D03D)**U D03D 47/00**

Looms in which bulk supply of weft does not pass through shed, e.g. shuttleless looms, gripper shuttle looms, dummy shuttle looms (circular looms [D03D 37/00](#))

U D03D 47/12

- wherein single picks of weft thread are inserted, i.e. with shedding between each pick

D03D 47/24

- by gripper or dummy shuttle (travelling-wave-shed looms [D03D 47/26](#); inserting mechanisms for shuttles [D03D 49/24](#); gripper or dummy shuttles ~~per se~~ *per se* [D03J 5/06](#))

U D03D 49/00

Details or constructional features not peculiar to looms of a particular type (temples [D03J 1/22](#))

D03D 49/24

- Mechanisms for inserting shuttle in shed (shuttles ~~per se~~ *per se* [D03J 5/00](#))

Project: N/A (D04G)**D04G**

MAKING NETS BY KNOTTING OF FILAMENTARY MATERIAL; MAKING KNOTTED CARPETS OR TAPESTRIES; KNOTTING NOT OTHERWISE PROVIDED FOR (binding knotters for harvesters [A01D 59/04](#); wire netting [B21F](#); tying articles by knotting [B65B](#); knotting in association with winding or unwinding [B65H 69/00](#); knotting in weaving [D03J](#); making nets, carpets, or tapestries by other techniques, ~~see~~ *see* the relevant subclasses)

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](#) - [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 1/54
- • by welding together the fibres, e.g. by partially melting or dissolving (in combination with needling [D04H 1/485](#))
- WARNING**
Groups [D04H 1/54](#) - [D04H 1/565](#) are not complete pending a reorganisation. See also group [D04H 1/541](#) and other subgroups of [D04H 1/54](#)
- D04H 1/541
- • • Composite fibres, e.g. sheath-core, sea-island or side-by-side; Mixed fibres

Project: N/A (D05B)

- U D05B 69/00 **Driving-gear; Control devices**
- U D05B 69/14
- Devices for changing speed or for reversing direction of rotation
- D05B 69/18
- • electric {, e.g. foot pedals}

Project: N/A (D06B)**D06B**

TREATING TEXTILE MATERIALS BY LIQUIDS, GASES OR VAPOURS
(applying liquids to surfaces in general [B05](#); conveying in general, handling webs or filaments in general [B65](#); treating leather [C14C](#); mechanical removal of impurities from animal fibres [D01B](#); laundering [D06F](#); chemical matters, [see see D06L - D06Q](#))

NOTE

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

- "fabric" includes yarns in warp or sheet form;
- "textile material" includes fabrics, yarns or other fibrous materials;
- "indefinite length" means an extent of material having the characteristic that the longitudinal dimension is effectively infinite in so far as the procedure for advancing or moving the material is concerned.

- U D06B 1/00 **Applying liquids, gases or vapours on to textile materials to effect treatment, e.g. washing, dyeing, bleaching, sizing, impregnating (mercerising [D06B 7/00](#); solvent-treatment [D06B 9/00](#); treatment of selected parts of textile materials [D06B 11/00](#); with aid of vibration [D06B 13/00](#))**
- U D06B 1/10
- by contact with a member carrying the treating material
- U D06B 1/14
- • with a roller
- D06B 1/142
- • • {where an element is used to mitigate the quantity of treating material that the textile material can retain (if removing occurs later [see see D06B 15/00](#) and sub-groups)}
- D06B 21/00 **Successive treatments of textile materials by liquids, gases or vapours (successive treatments in which the characteristics of a single treatment are of interest only, or in which all treatments have characteristics provided for in a single main group, [see see](#) the relevant groups for the single treatment)**

- U D06B 23/00** Component parts, details, or accessories of apparatus or machines, specially adapted for the treating of textile materials, not restricted to a particular kind of apparatus, provided for in groups [D06B 1/00](#) - [D06B 21/00](#)
- D06B 23/20
- Arrangements of apparatus for treating processing-liquids, -gases or -vapours, e.g. purification, filtration, distillation (such apparatus ~~per se~~ *per se*, *see see* the relevant classes for the apparatus)

Project: N/A (D06C)

D06C **FINISHING, DRESSING, TENTERING OR STRETCHING TEXTILE FABRICS** (chemical matters, *see see* [D06L](#) - [D06Q](#); drying [F26B](#))

NOTE

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

- "fabric" includes yarns in warp or sheet form

- U D06C 3/00** Stretching, tentering, or spreading textile fabrics; Producing elasticity in textile fabrics (shaping or stretching tubular fabrics upon cores or internal frames [D06C 5/00](#); removing skew or disorientation of weft threads in woven fabrics [D06H 3/12](#))
- U D06C 3/02** • by endless chain or like apparatus (hooks or pin-blocks [D06C 3/10](#))
- D06C 3/025 • • {Driving or guiding means for stenter chains (chains ~~per se~~ *per se* [D06C 3/023](#))}
- D06C 7/00** Heating or cooling textile fabrics (during operations provided for elsewhere, *see see* the relevant groups for such operations; hosiery boarding [D06C 5/00](#); singeing [D06C 9/00](#); treating with liquids, gases or vapours [D06B](#))

Project: N/A (D06F)

D06F **LAUNDERING, DRYING, IRONING, PRESSING OR FOLDING TEXTILE ARTICLES** (apparatus for blocking, pressing, steaming, or stretching hats [A42C](#); treating textile materials by liquids, gases or vapours [D06B](#); chemical matters, *see see* [D06L](#), [D06M](#))

NOTES

1. This subclass ~~covers~~ *covers*:
 - domestic or laundry dry-cleaning apparatus using volatile solvents;
 - domestic, laundry, or tailors' ironing or other hot- pressing of clothes, linen, or other textile articles.
2. This subclass ~~does not cover~~ *does not cover*:
 - apparatus for wringing, washing, dry-cleaning, ironing, or other hot- pressing of textiles in manufacturing operations, which is covered by subclass [D06B](#), [D06C](#).

- U D06F 79/00** **Accessories for hand irons**
- D06F 79/04
- Stoves or other heating means specially adapted for heating irons externally {, e.g. by induction heating}(stoves in general [F24](#))

Project: N/A (D06H)

D06H **MARKING, INSPECTING, SEAMING OR SEVERING TEXTILE MATERIALS** (seaming by sewing [D05B](#); in connection with manufacturing, *see see* the relevant subclasses)

U D06H 3/00 **Inspecting textile materials (testing physical properties of textile materials [G01N](#); {unwinding or rewinding apparatus incorporating inspecting devices [B65H 16/026](#)})**

D06H 3/16 · Inspecting hosiery or other tubular fabric; Inspecting in combination with turning inside-out, classifying, or other handling (turning inside-out ~~per se~~ [per se](#) [D06G 3/00](#))

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](#) - [D06J](#))

NOTES

1. In each of the groups [D06M 11/00](#) - [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](#) - [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](#) - [D06M 15/00](#) is classified in each appropriate main group.
4. In this subclass, the treatment of textiles, not provided 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](#) - [D06M 16/00](#);
 - Treatment of textiles characterised by the process in group [D06M 23/00](#).

D06M 23/00

Treatment of fibres, threads, yarns, fabrics or fibrous goods made from such materials, characterised by the process

Project: N/A (D06N)

D06N 1/00

Linoleum {, e.g. linoxyn, polymerised or oxidised resin}

U 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 3/16

· with oil varnishes {, i.e. drying oil varnishes, preferably linseed-oil-based; factice (sulfurised oils), Turkish birdlime, resinates reacted with drying oils; naphthenic metal salts}

U D06N 7/00

Flexible sheet materials not otherwise provided for, e.g. textile threads, filaments, yarns or tow, glued on macromolecular material, {e.g. fibrous top layer with resin backing, plastic naps or dots on fabrics}

U D06N 7/0005

· {Floor covering on textile basis comprising a fibrous substrate being coated with at least one layer of a polymer on the top surface}

U D06N 7/0007

· · {characterised by their relief structure}

U D06N 7/0013

· · · {obtained by chemical embossing (chemisches Prägen)}

D06N 7/0015

· · · · {use of inhibitor for the blowing agent or inhibitor for the kicker, e.g. trimellitic anhydride, triazole}

- U D06N 7/0063
- {Floor covering on textile basis comprising a fibrous top layer being coated at the back with at least one polymer layer, e.g. carpets, rugs, synthetic turf}
- WARNING
Groups [D06N 7/0063-D06N 7/0084](#) are not complete, pending reorganisation.
See also [D06N 7/0036](#)
- U D06N 7/0071
- {characterised by their backing, e.g. pre-coat, back coating, secondary backing, cushion backing}
- D06N 7/0076
- • {the back coating or pre-coat being a thermoplastic material applied by, e.g. extrusion coating, powder coating or laminating a thermoplastic film}
- U D06N 2201/00** **Chemical constitution of the fibres, threads or yarns**
- U D06N 2201/02
- Synthetic macromolecular fibres
- U D06N 2201/0218
- • Vinyl resin fibres
- D06N 2201/0236
- • • Vinyl halide, e.g. PVC, PVDC, PVF, PVDF
- U D06N 2205/00** **Condition, form or state of the materials**
- D06N 2205/20
- Cured materials, e.g. vulcanised, cross-linked
- U D06N 2207/00** **Treatments by energy or chemical effects**
- D06N 2207/06
- using liquids, e.g. water
- U D06N 2209/00** **Properties of the materials**
- U D06N 2209/10
- having mechanical properties
- D06N 2209/103
- • Resistant to mechanical forces, e.g. shock, impact, puncture, flexion, shear, compression, tear

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:

D06P 3/84	covered by	D06P 3/82
D06P 3/85	" "	D06P 3/82
D06P 3/852	" "	D06P 3/82
D06P 3/86	" "	D06P 3/82
D06P 3/87	" "	D06P 3/82
D06P 3/872	" "	D06P 3/82
D06P 3/874	" "	D06P 3/82
D06P 5/24 – D06P 5/28	" "	D06P 5/003 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 1/0048
- {Converting dyes *in-situ* *in situ* in a non-appropriate form by hydrolysis, saponification, reduction with split-off of a substituent}

	D06P 1/0056	• {Dyeing with polymeric dyes involving building the polymeric dyes on the fibres (dyes per-se per se C09B)}
U	D06P 1/02	• using azo dyes (D06P 1/18, D06P 1/38, D06P 1/39, D06P 1/41 take precedence)
	D06P 1/12	• • prepared in-situ in situ
U	D06P 1/14	• using phthalocyanine dyes without vatting (D06P 1/38, D06P 1/40 take precedence)
	D06P 1/145	• • {using phthalocyanine dyes prepared in-situ in situ }
U	D06P 1/44	• using insoluble pigments or auxiliary substances, e.g. binders
U	D06P 1/52	• • using compositions containing synthetic macromolecular substances (D06P 1/60 takes precedence)
U	D06P 1/5207	• • • {Macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds}
U	D06P 1/5214	• • • • {Polymers of unsaturated compounds containing no COOH groups or functional derivatives thereof}
	D06P 1/5228	• • • • • {Polyalkenyl alcohols, e.g. PVA}
U	D06P 1/60	• • using compositions containing polyethers
U	D06P 1/607	• • • Nitrogen-containing polyethers {or their quaternary derivatives}
	D06P 1/6073	• • • • {containing CON=, OCON=, SO₂N SO₂N =, OSO₂N OSO₂N = groups}
U	D06P 1/64	• • using compositions containing low-molecular-weight organic compounds without sulfate or sulfonate groups
U	D06P 1/642	• • • Compounds containing nitrogen
U	D06P 1/649	• • • • Compounds containing carbonamide, thiocarbonamide or guanyl groups
	D06P 1/6494	• • • • • {Compounds containing a guanyl group R-C-N=, e.g. (bi)guanadine, dicyandiamid amidines}
U	D06P 1/6495	• • • • • {Compounds containing carbonamide -RCON= (R=H or hydrocarbons)}
	D06P 1/6498	• • • • • • {Compounds containing -CONCO-, e.g. phthalimides, hydantoine; Compounds containing RCONHSO₂R RCONHSO₂R (R=H or hydrocarbon)}
U	D06P 3/00	Special processes of dyeing or printing textiles, or dyeing leather, furs, or solid macromolecular substances in any form, classified according to the material treated
	D06P 3/007	• {preparing dyes in-situ in situ }
U	D06P 3/02	• material containing basic nitrogen
	D06P 3/027	• • {preparing dyes in-situ in situ }
U	D06P 3/58	• material containing hydroxyl groups
U	D06P 3/60	• • natural or regenerated cellulose
	D06P 3/605	• • • {dyeing with polymeric dyes; building polymeric dyes on fibre (dyes per-se per se C09B)}
	D06P 3/6058	• • • • {by using dyes with polymerisable groups, e.g. dye ---CH=CH ₂ }
	D06P 3/6066	• • • • {by using reactive polyfunctional compounds, e.g. crosslinkers}
U	D06P 3/82	• textiles which contain different kinds of fibres
U	D06P 3/8204	• • {fibres of different chemical nature}
U	D06P 3/8223	• • • {mixtures of fibres containing hydroxyl and ester groups}
U	D06P 3/8238	• • • • {using different kinds of dye}
	D06P 3/8257	• • • • • {using dispersed and azo dyes prepared in-situ in situ }

U D06P 5/00

Other features in dyeing or printing textiles, or dyeing leather, furs, or solid macromolecular substances in any form

D06P 5/22

- Effecting variation of dye affinity on textile material by chemical means that react with the fibre {(documents concerning material modified in the mass by compounding with modifying agents affecting the dye affinity after spinning, are not classified here: [see see](#) the relevant groups [C08](#), [D01F](#), [D06P 3/00](#); Grafting of monomers on textile materials [C08F](#), [D06M 11/00](#)}

Project: N/A (D06Q)

D06Q

DECORATING TEXTILES (for treatment of textiles by mechanical means, [see see](#) [D06B](#) - [D06J](#); metallising the entire surface of textiles [D06M 11/83](#); textile threads, filaments, yarns or tow, glued on macromolecular material [D06N 7/00](#); dyeing or printing [D06P](#))

NOTE

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

- "decorating" means "local treatment" or "local effects produced" as to change, e.g. optically, the appearance or the properties of textile materials

Project: N/A (D10)

D10

INDEXING SCHEME ASSOCIATED WITH SUBLASSES OF SECTION [D](#)[D](#), RELATING TO TEXTILES

Project: N/A (D10B)

D10B

INDEXING SCHEME ASSOCIATED WITH SUBLASSES OF SECTION [D](#)[D](#), RELATING TO TEXTILES

NOTES

1. This subclass constitutes a scheme for indexing only.
2. The indexing codes of this subclass, relating to the chemical constitution of the fibrous materials, are to be associated with groups of section [D](#)[D](#), with the exception of those of subclass [D06M](#), as far as these groups themselves do not give information about the chemical nature of the fibres.
3. In a number of fields, the indexing codes relating to the chemical constitution of the fibrous materials are not allotted to documents having an abstract in which the chemical constitution is clearly stated, e.g. if the abstract mentions "polyamide", code [D10B 2331/021](#) is not allotted.
4. Blends of fibres are indexed according to each constituent fibre.

Project: N/A (D21C)**U 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](#) - [D21H](#))}

U D21C 9/10

- Bleaching; {Apparatus therefor}

D21C 9/1068

- {with O₂ (closed, [see see](#) [D21C 9/147](#))}

D21C 9/1073

- {with O₃ (closed, [see see](#) [D21C 9/153](#))}

Project: N/A (D21G)

D21G 1/00

Calenders (if restricted to the treatment of particular materials [see see](#) the relevant class, e.g. [B29C 43/24](#), [D06](#)); Smoothing apparatus

Project: N/A (D21H)**D21H**

PULP COMPOSITIONS; PREPARATION THEREOF NOT COVERED BY SUBCLASSES [D21C](#) OR [D21D](#); IMPREGNATING OR COATING OF PAPER; TREATMENT OF FINISHED PAPER NOT COVERED BY CLASS [B31](#) OR SUBCLASS [D21G](#); PAPER NOT OTHERWISE PROVIDED FOR

NOTES

1. This subclass ~~covers~~[covers](#) also pulp compositions for the preparation of fireboard or other fibrous articles by wet processes.
2. In this subclass, the following terms are used with the meaning indicated:
 - "pulp" means a dispersion, { e.g. an aqueous sus-pension,} comprising paper-making fibres and optional additives, which is to be processed, and covers the term "stock"; it also means dry paper-making fibres which are to be made into paper by either wet or dry processes;
 - "paper" means paper, cardboard or wet-laid non-woven fabrics.
3. In groups [D21H 11/00](#) - [D21H 15/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
4. Attention is drawn to the use of Combination Sets as specified in the Notes after groups [D21H 17/00](#), [D21H 17/69](#), [D21H 17/71](#), [D21H 19/00](#), [D21H 21/00](#), [D21H 21/14](#), [D21H 23/00](#), [D21H 23/22](#), [D21H 25/00](#) and [D21H 27/00](#).

U D21H 5/00

Special paper or cardboard not otherwise provided for (duplicating or recording paper [B41M](#))

D21H 5/0005

- {Processes or apparatus specially adapted for applying liquids or other fluent materials to finished paper or board, e.g. impregnating, coating (applying liquids to surfaces in general [B05](#); treating textile materials by liquids, gases or vapours [D06B](#); impregnated or coated fibreboard [D21J 1/08](#); apparatus for making patterned paper [D21H 5/06](#); printing machines [B41F](#))}

NOTE

Equipment related to specific chemical treatment, ~~see~~[see](#) relevant sub-groups for this treatment; e.g. parchmmentising or vulcanising [D21H 5/08](#), treatment with viscose [D21H 17/25](#)

D21H 5/0012

- {by bringing paper into contact with an excess of fluids, the paper carrying away only a part of the fluid material, e.g. by passing through liquids, gases or vapours}

D21H 5/005

- {involving several different techniques of application (treatments in which the characteristics of a single treatment are of interest only, or in which all treatments have characteristics provided for in a single sub-group, ~~see~~[see](#) the relevant sub-groups for the single treatment; several superposed coatings [D21H 19/82](#); apparatus for making multi-ply material [D21H 1/06](#))}

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](#) - [D21H 15/00](#).

U D21H 17/03

- Non-macromolecular organic compounds

U D21H 17/05

- containing elements other than carbon and hydrogen only

- D21H 17/18
- • forming new compounds ~~in-situ~~*in situ*, e.g. within the pulp or paper, by chemical reaction with itself, or other added substances, e.g. by grafting on the fibres
- U D21H 17/63
- Inorganic compounds
- D21H 17/70
- • forming new compounds ~~in-situ~~*in situ*, e.g. within the pulp or paper, by chemical reaction with other substances added separately

Project: N/A (E01B)

- U E01B 27/00
- Placing, renewing, working, cleaning, or taking-up the ballast, with or without concurrent work on the track; Devices therefor; Packing sleepers**
- E01B 27/06
- Renewing or cleaning the ballast ~~in-situ~~*in situ*, with or without concurrent work on the track
- U E01B 29/00
- Laying, rebuilding, or taking-up tracks; Tools or machines therefor (E01B 27/00, E01B 31/00 take precedence)**
- E01B 29/005
- {Making of concrete parts of the track ~~in-situ~~*in situ*}
- U E01B 2204/00
- Characteristics of the track and its foundations**
- E01B 2204/10
- Making longitudinal or transverse sleepers or slabs ~~in-situ~~*in situ* or embedding them

Project: N/A (E01C)

- U 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 7/00
- Coherent pavings made ~~in-situ~~*in situ* (specially adapted for playgrounds or sports grounds E01C 13/06; for footpaths, sidewalks or cycle tracks E01C 15/00)**
- U E01C 7/02
- made of road-metal without binders
- E01C 7/06
- • by melting, burning, or vitrifying road-metal ~~in-situ~~*in situ*
- 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~~*in situ* E01C 7/12; small individual units from concrete cast ~~in-situ~~*in situ* E01C 9/001; arrangement or construction of joints E01C 11/04; reinforcements E01C 11/18)}
- U 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 7/187
- • {Repairing bituminous covers, e.g. regeneration of the covering material ~~in-situ~~*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 7/32	<ul style="list-style-type: none"> • of courses of different kind made in-situ<i>in situ</i> <p><u>NOTE</u> This group is limited to coverings consisting of layers with different binders, except for thin intermediate or surface layers, which are classified in group E01C 7/35</p>
U 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	<ul style="list-style-type: none"> • {Paving elements formed in-situ<i>in situ</i>; 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 9/002	<ul style="list-style-type: none"> • {Coverings, the surface of which consists partly of prefabricated units and partly of sections made in-situ<i>in situ</i>}
U 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)}
U E01C 11/02	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • for cement concrete paving {(E01C 9/001 takes precedence)}
U E01C 11/10	<ul style="list-style-type: none"> • • • Packing of plastic or elastic materials, {e.g. wood, resin (E01C 11/045 takes precedence)}
E01C 11/103	<ul style="list-style-type: none"> • • • {Joints with packings prepared only in-situ<i>in situ</i>; Materials therefor}
U E01C 11/12	<ul style="list-style-type: none"> • • • Packing of metal and plastic or elastic materials {(E01C 11/045 takes precedence)}
E01C 11/123	<ul style="list-style-type: none"> • • • {Joints with only metal and in-situ<i>in situ</i> prepared packing or filling}
U E01C 11/22	<ul style="list-style-type: none"> • Gutters; Kerbs (kerbs specially adapted for alerting road users E01F 9/535) {; Surface drainage of streets, roads or like traffic areas (for sports grounds E01C 13/00)}
U E01C 11/221	<ul style="list-style-type: none"> • • {Kerbs or like edging members, e.g. flush kerbs, shoulder retaining means (specially adapted for guiding or warning traffic or for display purposes E01F 9/535); Joint members, connecting or load-transfer means specially for kerbs}
E01C 11/223	<ul style="list-style-type: none"> • • • {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<i>per se</i> 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}
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 13/06	<ul style="list-style-type: none"> • Pavings made in-situ<i>in situ</i>, {e.g. for sand grounds, clay courts E01C 13/003, (E01C 13/08, E01C 13/10 take precedence)}
U 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)

- U 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 - B28C 9/00)}
- E01C 19/025
 - • {for preparing hydraulic-cement-bound mixtures of which at least one ingredient has previously been deposited on the surface, e.g. ~~in-situ~~ *in situ* mixing of concrete}
- U 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 19/1054
 - • • {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~~ *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)}
- U 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)
- U 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)
- 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 19/47
 - • Hydraulic cement concrete mixers combined with distributing means specially adapted for road building {(E01C 19/025 takes precedence } ; concrete mixers ~~per se~~ *per se* B28C)
- 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~~ *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 19/4813
 - • • {the materials being simultaneously but separately applied binders and granular or pulverulent material (such application ~~per se~~ *per se* E01C 19/21)}
- E01C 19/482
 - • • {the materials being uncoated stone or similar granular materials, e.g. sand (laying-down uncoated stone or similar materials ~~per se~~ *per se* E01C 19/15; distributing granular or pulverung materials ~~per se~~ *per se* E01C 19/20)}
- E01C 19/4826
 - • • {the materials being aggregate mixed with binders (distributing ~~per se~~ *per se* E01C 19/18)}
- E01C 19/4886
 - • {for forming in a continuous operation kerbs, gutters, berms, safety kerbs, median barriers or like structures ~~in-situ~~ *in situ*, e.g. by slip-forming, by extrusion (removable forms for kerbs, gutters or similar structures E01C 19/506; making conduits ~~in-situ~~ *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 - E01C 7/00, {E01C 9/00 - E01C 17/00} ; slip forms E01C 19/48); Devices or arrangements for forming individual paving elements, e.g. kerbs, ~~in-situ~~ *in situ*

- E01C 19/508
- {Devices or arrangements for forming individual paving elements ~~in-situ~~*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](#))}
- U 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~~*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](#))**
- 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~~*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
- U E01C 23/06** • Devices or arrangements for working the finished surface (working freshly laid paving [E01C 19/42](#) - [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~~*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~~*in situ* mixing of hydraulic cement concrete [E01C 19/025](#); apparatus for in-plant recycling [E01C 19/1004](#), [E01C 19/1036](#))}
- 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~~*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~~*per se* [E01F 9/50](#)); Protecting fresh markings
- E01C 23/20
- for forming markings ~~in-situ~~*in situ*

Project: N/A (E01D)

- U E01D 15/00** **Movable or portable bridges; Floating bridges**
- E01D 15/10
- Travelling bridges {~~;~~ i.e. roller bridges}; Sliding bridges; Rotary cylinder bridges, i.e. rotating about longitudinal axis to invert and raise the road
- U E01D 19/00** **Structural or constructional details of bridges**

- U E01D 19/06
- Arrangement, construction or bridging of expansion joints ({[E01D 19/005](#) takes precedence; in movable bridges [E01D 15/005](#) - [E01D 15/10](#)}; sealing joints not restricted to expansion joints for bridges [E04B 1/68](#))
- E01D 19/067
- • {Flat continuous joints cast ~~in situ~~[in situ](#)}
- E01D 19/08
- Damp-proof or other insulating layers; Drainage arrangements or devices {Bridge deck surfacings (bridge decks ~~per se~~[per se](#) [E01D 19/125](#))}

Project: N/A (E01F)

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; Arrangements for enforcing caution (for obstructing or restricting traffic [E01F 13/00](#))

WARNING

Group [E01F 9/00](#) is impacted by reclassification into group [E01F 13/00](#).

Groups [E01F 9/00](#) and [E01F 13/00](#) should be considered in order to perform a complete search.

U E01F 9/50

- Road surface markings; Kerbs or road edgings, specially adapted for alerting road users (for redirecting vehicles [E01F 15/00](#))

U E01F 9/506

- • characterised by the road surface marking material, e.g. comprising additives for improving friction or reflectivity; Methods of forming, installing or applying markings in, on or to road surfaces

WARNING

Group [E01F 9/506](#) is impacted by reclassification into group [E01F 9/518](#).

Groups [E01F 9/506](#) and [E01F 9/506](#) should be considered in order to perform a complete search.

E01F 9/518

- • formed ~~in situ~~[in situ](#), e.g. by painting, by casting into the road surface or by deforming the road surface

WARNING

Group [E01F 9/518](#) is incomplete pending reclassification of documents from group [E01F 9/506](#) and impacted by reclassification into group [E01F 9/576](#).

Groups [E01F 9/518](#), [E01F 9/576](#) and [E01F 9/506](#) should be considered in order to perform a complete search.

U E01F 9/576

- • Traffic lines

WARNING

Group [E01F 9/576](#) is incomplete pending reclassification of documents from group [E01F 9/518](#).

Groups [E01F 9/576](#) and [E01F 9/518](#) should be considered in order to perform a complete search.

E01F 9/578

- • {consisting of preformed elements, e.g. tapes, block-type elements specially designed or arranged to make up a traffic line ([E01F 9/582](#), [E01F 9/588](#), [E01F 9/594](#) take precedence; studs, blocks or like markers ~~per se~~[per se](#) [E01F 9/553](#))}

E01F 11/00

{Road engineering aspects of} Embedding pads or other sensitive devices in paving or other road surfaces {, e.g. traffic detectors, vehicle-operated pressure-sensitive actuators, devices for monitoring atmospheric or road conditions}(pressure-sensitive elements [G01L](#); traffic control systems [G08G](#))

Project: N/A (E01H)

U 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](#) - [A47L 13/00](#)})

E01H 1/005

- {Mobile installations, particularly for upkeeping ~~in-situ~~ *in situ* road or railway furniture, for instance road barricades, traffic signs; Mobile installations particularly for upkeeping tunnel walls (built-in cleaning devices [E21D 11/003](#))}

U E01H 1/006

- {Specially adapted for removing excrements (hand implements [E01H 1/12](#))}

E01H 1/008

- • {~~in-situ~~ *in situ* treatment of excrements}

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](#) - [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~~ *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](#)})

U E01H 1/0809

- • {Loosening or dislodging by blowing (with steam [E01H 1/10](#) combined with suction [E01H 1/0863](#); removing snow by blowing [E01H 5/106](#); removing fog by blowing [E01H 13/00](#); cleaning rails by blowing [E01H 8/105](#), [E01H 8/125](#); cleaning joints in road construction by blowing [E01C 23/0906](#)); Drying by means of gas streams (by heat only [E01H 1/08](#); combined with snow or ice melting [E01H 5/10](#), [E01H 5/106](#), [E01H 5/108](#))}

E01H 1/0818

- • • {in apparatus with mechanical loosening or feeding instruments, e.g. brushes, scrapers (brushing devices ~~per-se~~ *per se* [E01H 1/02](#), other loosening devices ~~per-se~~ *per se* [E01H 1/105](#))}

U E01H 1/0827

- • {Dislodging by suction; Mechanical dislodging-cleaning apparatus with independent or dependent exhaust, e.g. dislodging-sweeping machines with independent suction nozzles (combined with blowing [E01H 1/0872](#)); Mechanical loosening devices working under vacuum}

U E01H 1/0836

- • • {Apparatus dislodging all of the dirt by suction (liquids or semi-liquids [E01H 1/108](#); combined with loosening by blowing [E01H 1/0863](#); for cleaning rails [E01H 8/105](#), [E01H 8/125](#); removing snow by suction [E01H 5/106](#), [E01H 8/08](#)); Suction nozzles (independent suction nozzles in mechanical dislodging-cleaning devices [E01H 1/0827](#); suction and blowing nozzles [E01H 1/0863](#))}

E01H 1/0845

- • • • {with mechanical loosening or feeding instruments for the dirt to be sucked- up, e.g. brushes, scrapers (brushing installations ~~per-se~~ *per se* [E01H 1/02](#); other loosening devices ~~per-se~~ *per se* [E01H 1/105](#))}

U E01H 1/0863

- • {Apparatus loosening or removing the dirt by blowing and subsequently dislodging it at least partially by suction (liquids or semi-liquids [E01H 1/108](#)); Combined suction and blowing nozzles}

- E01H 1/0872
- • {with mechanical loosening or feeding instruments for the dirt to be removed pneumatically, e.g. brushes, scrapers (brushing installations ~~per se~~ ~~per se~~ [E01H 1/02](#); other loosening devices ~~per se~~ ~~per se~~ [E01H 1/105](#))}
- U E01H 1/12
- Hand implements, e.g. litter pickers ({blowing or suction instruments [E01H 1/08](#); spraying instruments [E01H 1/101](#)}; rakes [A01D 7/00](#); {brushes or brooms [A46B](#), [A46D](#); floor scrapers [A47L 13/02](#); floor squeegees [A47L 13/11](#))}
- E01H 1/1213
- • {~~in situ~~ [in situ](#) treatment of excrements}
- U 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](#))}**
- E01H 3/02
- Mobile apparatus, e.g. watering-vehicles (vehicle features [B60P 3/22](#); {moistening combined with the removal of undesirable matter [E01H 1/00](#); mobile flushing or washing installations [E01H 1/101](#)} applying liquid materials for road paving materials [E01C 19/16](#) {applying curing agents on concrete roads [E01C 23/03](#); applying marking-out agents [E01C 23/16](#); Road moistening devices in cleaning machines ~~per se~~ ~~per se~~; mobile apparatus specially adapted for applying liquid or semi-liquid thawing materials [E01H 10/007](#))}
- 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)
- E01H 5/045
- • {Means ~~per se~~ ~~per se~~ for conveying or discharging the dislodged material, e.g. rotary impellers, discharge chutes (dislodging apparatus provided therewith [E01H 5/07](#), [E01H 5/08](#), [E01H 5/104](#), [E01H 5/12](#))}
- 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 5/10
- by application of heat {for melting snow or ice, whether cleared or not, combined or not with clearing or removing mud or water, e.g. burners for melting ~~in situ~~ [in situ](#), heated clearing instruments}({drying by heat [E01H 1/0809](#); melting by application of defrosting agents [E01H 10/00](#); weed scorching devices which can also melt snow [E01H 11/00](#);} stationary blowing or paving heating means [E01C 11/26](#)); {Cleaning snow by blowing or suction only}
- E01H 5/108
- • {Devices for melting snow or ice ~~in situ~~ [in situ](#) and removing subsequently for the mud or melting water (melting ~~in situ~~ [in situ](#) [E01H 5/10](#); by means of hot gases or steam [E01H 5/106](#); removing water or mud [E01H 1/108](#))}
- 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](#))}
- U E01H 8/00
- Removing undesirable matter from the permanent way of railways; Removing undesirable matter from tramway rails ([E01H 1/00](#) - [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~~*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}
- U E01H 12/00
- Cleaning beaches {or sandboxes}**
- E01H 12/002
- {Treatment ~~in-situ~~*in situ* ([E01H 12/006](#) takes precedence)}

Project: N/A (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**
- U E02B 3/04
- Structures or apparatus for, or methods of, protecting banks, coasts, or harbours ({[E02B 1/003](#) takes precedence}; sealing or joints [E02B 3/16](#))
- U E02B 3/12
- • Revetment of banks, dams, water-courses, or the like, {e.g. the sea-floor}{of slopes in general [E02D 17/20](#)}
- E02B 3/128
- • • {Coherent linings made on the spot, e.g. cast ~~in-situ~~*in situ*, extruded on the spot (for canal linings [E02B 5/02](#))}
- E02B 3/16
- Sealings or joints ({[E02B 3/12](#) takes precedence; sealings for specific structural foundation elements, ~~see see~~ the relevant groups for those elements; sealings for barrage or lock gates [E02B 7/54](#)}; joints for foundation structures [E02D 29/16](#); sealing joints not restricted to hydraulic engineering work [E04B 1/68](#))
- 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](#))**
- 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~~; *materials for treating liquid pollutants, e.g. oil, gasoline, fat, C09K 3/32*; {separation of oil in sewage conduits [E03F 5/16](#)})
- U E02B 2201/00
- Devices, constructional details or methods of hydraulic engineering not otherwise provided for**
- E02B 2201/02
- Devices and methods for creating a buffer zone in the water to separate, e.g. salt and sweet water

Project: N/A (E02D)

- E02D 1/00
- Investigation of foundation soil ~~in-situ~~*in situ* (investigation involving boring or specially adapted to earth drilling [E21B 25/00](#), [E21B 49/00](#); investigating or analysing materials by determining their chemical or physical properties, in general [G01N](#), e.g. sampling [G01N 1/00](#))**
- U E02D 5/00
- Bulkheads, piles, or other structural elements specially adapted to foundation engineering (engineering elements in general [F16](#))**

- U E02D 5/02
 - Sheet piles or sheet pile bulkheads {(foundations made with sheet pile bulkheads [E02D 27/30](#); cofferdams [E02D 19/04](#))}
- E02D 5/03
 - • Prefabricated parts {, e.g. composite sheet piles}
- E02D 5/18
 - Bulkheads or similar walls made solely of concrete ~~in situ~~ *in situ* {(moulds therefor [E02D 5/68](#); making foundation slots [E02D 17/13](#); sealing diaphragms other than those made of concrete [E02D 19/18](#))}
- E02D 5/20
 - Bulkheads or similar walls made of prefabricated parts and concrete, including reinforced concrete, ~~in situ~~ *in situ*
- U E02D 5/22
 - Piles (sheet piles, {i.e. elements shaped to mutually lock or mate} [E02D 5/02](#); {pile shoes [E02D 5/72](#); foundations on piles [E02D 27/12](#), [E02D 27/20](#))}
- U E02D 5/34
 - • Concrete or concrete-like piles cast in position; {Apparatus for making same ([E02D 5/50](#) takes precedence; moulds [E02D 5/665](#); placing, removing moulds [E02D 7/00](#) - [E02D 11/00](#); placing the concrete [E02D 15/04](#))}
- E02D 5/46
 - • making ~~in situ~~ *in situ* by forcing bonding agents into gravel fillings or the soil (consolidating soil in general [E02D 3/12](#))
- E02D 5/50
 - • Piles comprising both precast concrete portions and concrete portions cast ~~in situ~~ *in situ* {([E02D 5/523](#) takes precedence)}
- U E02D 7/00

Methods or apparatus for placing sheet pile bulkheads, piles, mouldpipes, or other moulds (for both placing and removing [E02D 11/00](#); {accessories for coupling driver to piles or the like [E02D 13/10](#); for trees or other plants [A01G 17/16](#); placing posts [E04H 17/26](#))}
- U E02D 7/02
 - Placing by driving {([E02D 7/18](#) - [E02D 7/24](#) take precedence)}
- U E02D 7/06
 - • Power-driven drivers {(tampers [E02D 3/061](#))}
- U E02D 7/14
 - • • Components for drivers {inasmuch as not specially for a specific driver construction}
- E02D 7/16
 - • • • Scaffolds {or supports} for drivers {(guide frames for the elements to be driven ~~per se~~ *per se* [E02D 13/04](#); supports of the artificial island type [E02B 17/00](#))}
- E02D 7/22
 - Placing by screwing down {(screw piles ~~per se~~ *per se* [E02D 5/56](#))}
- U E02D 19/00

Keeping dry foundation sites or other areas in the ground (sheet piles or bulkheads [E02D 5/02](#))
- U E02D 19/02
 - Restraining of open water
- E02D 19/04
 - • by coffer-dams {, e.g. made of sheet piles (permanent sheet piling boxes [E02D 27/30](#))}
- U E02D 23/00

Caissons; Construction or placing of caissons (tunnels submerged into or built in open water [E02D 29/063](#); {moles, piers, quays, breakwaters incorporating caissons [E02B 3/06](#); foundation formed by caissons [E02D 27/18](#) - [E02D 27/22](#); caisson-like artificial islands [E02B 17/00](#))}
- E02D 23/02
 - Caissons able to be floated on water and to be lowered into water ~~in situ~~ *in situ* {(floating caisson foundations [E02D 27/06](#))}
- U E02D 27/00

Foundations as substructures
- U E02D 27/32
 - Foundations for special purposes {(for paving of roads [E01C 3/00](#))}
- E02D 27/40
 - • Foundations for dams across valleys or for dam constructions {(dams ~~per se~~ *per se* [E02B 3/10](#), [E02B 7/04](#))}
- E02D 27/42
 - • Foundations for poles, masts or chimneys {(sockets or holders for poles or masts ~~per se~~ *per se* [E04H 12/22](#))}
- E02D 27/425
 - • • {specially adapted for wind motors masts (wind motors ~~per se~~ *per se* [E03D 1/00](#))}

- 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
- U E02D 29/02** • Retaining or protecting walls (piers or quay walls [E02B 3/06](#))
- U E02D 29/0258** • {not used, see subgroups ([E02D 29/0208](#) - [E02D 29/025](#) take precedence)}
- E02D 29/0275** • • • {cast ~~in-situ~~ *in situ*}
- 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~~ *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](#))
- U E02D 31/00** Protective arrangements for foundations or foundation structures {(protective casings for piles [E02D 5/60](#))}; Ground foundation measures for protecting the soil or the subsoil water, e.g. preventing or counteracting oil pollution (spillage retaining means for tanks [B65D 90/24](#))
- E02D 31/002** • {Ground foundation measures for protecting the soil or subsoil water, e.g. preventing or counteracting oil pollution (not used, ~~see~~ *see* subgroups and [E02D 31/00](#))}
- E02D 33/00** Testing foundations or foundation structures (testing methods and apparatus, ~~see~~ *see* the relevant subclasses of class [G01](#); testing structures or apparatus as regards function, in general, [G01M](#); testing or determining chemical or physical properties, in general [G01N](#))
- U E02D 2250/00** Production methods
- E02D 2250/0023** • Cast, i.e. ~~in-situ~~ *in situ* or in a mold or other formwork

Project: N/A (E02F)**E02F****DREDGING; SOIL-SHIFTING (winning peat [E21C 49/00](#))**NOTE

This subclass ~~covers~~ *covers* :

- primarily equipment for excavating or loosening earth or for moving loose earth;
- equipment for working similarly on other materials and similar equipment for loading or unloading 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:

[E02F 3/39](#) covered by [E02F 3/286](#), [E02F 3/306](#), [E02F 3/3402](#)

[E02F 3/85](#) covered by [E02F 3/841](#), [E02F 3/842](#), [E02F 3/844](#), [E02F 3/845](#), [E02F 3/847](#)

- U E02F 3/00** Dredgers; Soil-shifting machines (for special purposes [E02F 5/00](#); other machines or apparatus for mining [E21C](#); tunnelling [E21D](#))
- U E02F 3/04** • mechanically-driven

- U 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 3/081
 - • • {mounted on floating substructures (floating substructures ~~per se~~ [per se](#) [E02F 9/06](#))}
- E02F 3/12
 - • • Component parts {, e.g. bucket troughs}
- U E02F 3/14
 - • • • Buckets; Chains; Guides for buckets or chains; Drives for chains {not used, see subgroups}
- E02F 3/142
 - • • • • {tools mounted on buckets or chains which loosen the soil, e.g. cutting wheels, or the like (teeth ~~per se~~ [per se](#) [E02F 9/28](#))}
- U 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 3/20
 - • • with tools that only loosen the material, {i.e. mill-type wheels}
- E02F 3/205
 - • • • {with a pair of digging wheels, e.g. slotting machines (implements for making foundation slots with definition of the walls or foundations [E02D 17/13](#); bulkheads or similar walls made solely of concrete ~~in situ~~ [in situ](#) [E02D 5/18](#); with a pair of buckets [E02F 3/475](#))}
- 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
- U E02F 3/3604
 - • • • {Devices to connect tools to arms, booms or the like}
- E02F 3/3609
 - • • • • {of the quick acting type, e.g. controlled from the operator seat (quick-acting couplers to connect booms or arms to tractors [E02F 3/627](#); quick-acting couplers for machines mounted on tractor [A01B 59/06](#); couplings of the quick-acting type ~~per se~~ [per se](#) [F16L 37/00](#))}
- 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)}
- U 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](#))}
- U E02F 3/413
 - • • • • with grabbing device {([E02F 3/404](#) takes precedence; with grab buckets moved by cables or hoisting ropes [E02F 3/47](#);} grab equipment for cranes [B66C](#))}
- E02F 3/4131
 - • • • • • {mounted on a floating substructure (floating substructures ~~per se~~ [per se](#) [E02F 9/06](#))}
- 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~~ [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 3/633
 - • • Drives therefor {(not used, ~~see~~ [see](#) [E02F 3/627](#))}
- U E02F 3/64
 - • Buckets cars, i.e. having scraper bowls {(for cable scrapers [E02F 3/54](#) takes precedence; soil working machines in agriculture [A01B](#))}
- U E02F 3/65
 - • • Component parts, e.g. drives, control devices

- U E02F 3/654
 - • • {Scraper bowls and components mounted on them}
- E02F 3/658
 - • • • {Cutting edge (for graders or bulldozer blades [E02F 3/8152](#), [E02F 3/8155](#); teeth ~~per se~~ [per se](#) [E02F 9/28](#))}
- U 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
- U E02F 3/815
 - • • • Blades; Levelling {or scarifying} tools {([E02F 3/40](#) takes precedence)}
- E02F 3/8152
 - • • • {Attachments therefor, e.g. wear resisting parts, cutting edges ([E02F 3/8155](#), [E02F 3/8157](#) take precedence; teeth ~~per se~~ [per se](#) [E02F 9/28](#))}
- U E02F 3/88
 - • with arrangements acting by a sucking or forcing effect, e.g. suction dredgers (pumps in general [F04](#))
- E02F 3/8808
 - • • {Stationary installations, e.g. installations using spuds or other stationary supports (spuds on floating substructures ~~per se~~ [per se](#) [E02F 9/062](#); cleaning the beds of waterways [E02B 3/02](#))}
- E02F 3/8833
 - • • {Floating installations (floating substructures ~~per se~~ [per se](#) [E02F 9/06](#))}
- E02F 3/90
 - • • Component parts {, e.g. arrangement or adaptation of pumps}
- E02F 3/905
 - • • • {Manipulating or supporting suction pipes or ladders; Mechanical supports or floaters therefor; pipe joints for suction pipes (for heave compensation [E02F 9/067](#) takes precedence; pipelines ~~per se~~ [per se](#) [E02F 7/10](#); joints for pipes in general [F16L](#))}
- U 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](#))}
- E02F 3/963
 - • • {Arrangements on backhoes for alternate use of different tools (backhoes ~~per se~~ [per se](#) [E02F 3/30](#); quick-acting devices to connect tools to arms [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 5/04
 - • with digging screws {([E02F 5/109](#) takes precedence; with digging screws ~~per se~~ [per se](#) [E02F 3/06](#))}
- E02F 5/06
 - • with digging elements mounted on an endless chain {([E02F 5/109](#) takes precedence; with digging elements mounted on an endless chain ~~per se~~ [per se](#) [E02F 3/08](#))}
- E02F 5/08
 - • with digging wheels turning round an axis {([E02F 5/109](#) takes precedence; with digging wheels ~~per se~~ [per se](#) [E02F 3/18](#))}
- 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~~ [per se](#) [F16L 1/00](#), making pipes ~~in situ~~ [in situ](#) [F16L 1/038](#); laying electric cables ~~per se~~ [per se](#) [H02G 1/06](#); {drainage device- laying apparatus [E02B 11/02](#))}
- E02F 5/104
 - • • {for burying conduits or cables in trenches under water (floating substructures ~~per se~~ [per se](#) [E02F 9/06](#))}
- E02F 5/107
 - • • • {using blowing-effect devices, e.g. jets (digging devices using a blowing effect ~~per se~~ [per se](#) [E02F 3/9206](#))}
- E02F 5/108
 - • • • {using suction-effect devices (suction heads ~~per se~~ [per se](#) [E02F 3/9243](#), [E02F 3/9256](#))}

- E02F 5/109
 - • • {using rotating digging elements (rotating digging elements ~~per se~~ per se [E02F 3/18](#))}
- U E02F 5/28
 - for cleaning watercourses or other ways {(stream regulation [E02B 3/02](#))}
- E02F 5/287
 - • {with jet nozzles (digging devices with blowing effect ~~per se~~ per se [E02F 3/9206](#))}
- U **E02F 9/00**

Component parts of dredgers or soil-shifting machines, not restricted to one of the kinds covered by groups [E02F 3/00](#) - [E02F 7/00](#) (laying-out or take-up devices for trailing electric cables [B66C](#))
- U E02F 9/08
 - Superstructures; Supports for superstructures {(arrangements for travelling gear, e.g. undercarriages for wheels, crawlers, caterpillars [E02F 9/02](#); for motor vehicles [B62D 25/00](#), [B62D 33/00](#))}
- U E02F 9/0858
 - • {Arrangement of component parts installed on superstructures not otherwise provided for, e.g. electric components, fenders, air-conditioning units ([E02F 9/16](#), [E02F 9/18](#) take precedence)}
- E02F 9/0875
 - • • {Arrangement of valve arrangements on superstructures (arrangement of hydraulic hoses [E02F 9/2275](#) takes precedence; valves ~~per se~~ per se [E02F 9/2267](#))}
- 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~~ per se [E02F 3/38](#); [E02F 3/34](#) for bucket-arms)}; Cable suspensions
- U E02F 9/20
 - Drives; Control devices (gearings in general [F16H](#); controlling in general [G05](#); electric multi-motor drives [H02K](#), [H02P](#))
- E02F 9/2004
 - • {Control mechanisms, e.g. control levers (control levers ~~per se~~ per se [G05G](#))}
- E02F 9/2016
 - • {Winches (winches ~~per se~~ per se [B66D](#))}
- E02F 9/202
 - • {Mechanical transmission, e.g. clutches, gears (clutches ~~per se~~ per se [F16D](#), gears ~~per se~~ per se [F16H](#))}
- E02F 9/24
 - Safety devices {, e.g. for preventing overload ([E02F 9/226](#) takes precedence)}

Project: N/A (E03B)

- U **E03B 3/00**

Methods or installations for obtaining or collecting drinking water or tap water (treatment of water [C02F](#))
- E03B 3/32
 - with artificial enrichment, e.g. by adding water from a pond or a river {(consolidating foundation soil by draining, e.g. by lowering the water level [E02D 3/00](#))}
- E03B 5/00**

Use of pumping plants or installations; Layouts thereof (pumps; pumping plants or installations ~~per se~~ per se [F04](#))
- U **E03B 7/00**

Water main or service pipe systems (pipes or tubes in general [F16L](#))
- E03B 7/07
 - Arrangement of devices, e.g. filters, flow controls, measuring devices, siphons, valves, in the pipe systems (devices ~~per se~~ per se, ~~see~~ see the relevant classes for these devices)
- E03B 9/00**

Methods or installations for drawing-off water (domestic water-drawing devices [E03C](#); taps or valves ~~per se~~ per se [F16K](#))
- U **E03B 11/00**

Arrangements or adaptations of tanks for water supply (water-butts [E03B 3/03](#); storage aspects [B65D](#), [B65G](#), [F17B](#), [F17C](#); foundations [E02D 27/38](#); construction or assembling of bulk storage containers employing civil engineering techniques [E04H 7/00](#); tower aspects [E04H 12/00](#))
- E03B 2011/005
 - {Tanks with two or more separate compartments divided by, e.g. a flexible membrane}

- U E03B 11/02 • for domestic or like local water supply
- E03B 11/04 • • without air regulators {, i.e. without air inlet or outlet valves; water tanks provided with flexible walls}

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
- E03C 1/05 • • Arrangements of devices on wash-basins, baths, sinks, or the like for remote control of taps (remote control of taps or the like ~~per se~~ [per se](#) [F16K](#))
- E03C 1/06 • • Devices for suspending or supporting the supply pipe or supply hose of a shower-bath {(showers ~~per se~~ [per se](#) [A47K 3/28](#))}
- U E03C 1/12 • Plumbing installation for waste water; Basins or fountains connected thereto (drainage devices in floors [E03F 5/04](#)); Sinks {(wash-basins not connected to the waste-pipe [A47K 1/04](#))}
- U E03C 1/22 • • Outlet devices mounted in basins, baths, or sinks (stoppers [A47K 1/14](#))
- U E03C 1/23 • • • with mechanical closure mechanisms
- E03C 1/232 • • • • combined with overflow devices (overflow devices for basins or baths ~~per se~~ [per se](#) [E03C 1/24](#))
- U E03C 1/26 • • Object-catching inserts or similar devices for waste pipes or outlets ([E03C 1/28](#) takes precedence)
- U E03C 1/266 • • • Arrangement of disintegrating apparatus in waste pipes or outlets; Disintegrating apparatus specially adapted for installation in waste pipes or outlets
- E03C 1/2665 • • • • {Disintegrating apparatus specially adapted for installation in waste pipes or outlets (disintegrating apparatus ~~per se~~ [per se](#) [B02C](#))}

Project: N/A (E03D)

- 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 11/13 • Parts or details of bowls; Special adaptations of pipe joints or couplings for use with bowls {, e.g. provisions in bowl construction preventing backflow of waste-water from the bowl in the flushing pipe or cistern, provisions for a secondary flushing, for noise-reducing}

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~~ [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 5/22 • Adaptations of pumping plants for lifting sewage (wheeled apparatus for emptying sewers or cesspools [E03F 7/10](#); pumps, pumping plants, ~~per se~~ [per se](#) [F04](#))

Project: N/A (E04B)

- 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 see](#) the relevant groups for those parts)**
- E04B 1/0023 • {Building characterised by incorporated canalisations ([E04B 1/34869](#), [E03C 1/01](#), [E04C 2/52](#), [E04F 17/00](#) take precedence; canalisation [per se](#) [per se](#) [F16L](#); conducts for ventilation, heating systems or air-conditioning [F24](#))}
- E04B 1/16 • Structures made from masses, e.g. of concrete, cast or similarly formed [in situ](#) [in situ](#) with or without making use of additional elements, such as permanent forms, substructures to be coated with load-bearing material ([E04B 1/32](#) - [E04B 1/36](#) take precedence)
- E04B 1/161 • • {with vertical and horizontal slabs, both being partially cast [in situ](#) [in situ](#)}
- E04B 1/163 • • {with vertical and horizontal slabs, only the vertical slabs being partially cast [in situ](#) [in situ](#) ([E04B 2/86](#) takes precedence)}
- E04B 1/164 • • {with vertical and horizontal slabs, only the horizontal slabs being partially cast [in situ](#) [in situ](#)}
- E04B 1/165 • • {with elongated load-supporting parts, cast [in situ](#) [in situ](#) ([E04B 1/161](#), [E04B 1/163](#) and [E04B 1/164](#) take precedence)}
- E04B 1/166 • • {with curved surfaces, at least partially cast [in situ](#) [in situ](#) in order to make a continuous concrete shell structure ([E04B 1/169](#) takes precedence)}
- E04B 1/342 • Structures covering a large free area, whether open-sided or not, e.g. hangars, halls (roof trusses [E04C 3/00](#); non-structural features for specified purposes, [see see](#) the relevant groups of [E04H](#))
- E04B 1/35 • Extraordinary methods of construction, e.g. lift-slab, jack-block ([E04B 1/34](#) takes precedence; falsework, shuttering for shaping walls, floors, ceilings or roofs [in situ](#) [in situ](#) [E04G 11/04](#); conveying or assembling of building materials [E04G 21/00](#); working measure on existing buildings [E04G 23/00](#))
- E04B 1/62 • Insulation or other protection; Elements or use of specified material therefor (chemical compositions [C01](#) - [C11](#); implements for applying insulation or sealings [E04F 21/00](#); buildings to withstand or to provide protection against external undesired influences [E04H 9/00](#); sealing pipes in walls or partitions [F16L 5/02](#); shielding against dangerous radiation [G21F](#); constructions of particular parts of buildings, [see see](#) the relevant groups for those parts)
- E04B 1/66 • • Sealings ({damp-proof courses [E04B 1/644](#); fire-proof sealings [E04B 1/948](#); additions of anti-leak properties to plaster [C04B](#); bituminous sealing masses [C08L 95/00](#); sealings for hydraulic engineering work in general [E02B 3/16](#); against ground humidity or ground water [E02D 31/02](#); coverings against rain or other precipitations of the atmosphere [E04D](#); composition of material or manufacture of sealing foils, [see see](#) the relevant classes for these foils)
- E04B 1/68 • • • of joints, e.g. expansion joints (packing for joints in roads or airfields [E01C 11/02](#); expansion joints for bridges [E01D 19/06](#); sealing joints between foundation piles [E02D 5/14](#); joints in foundation structures [E02D 29/16](#); devices for sealing the spaces or joints between roof-covering elements [E04D 1/36](#); sealing joints between roof-covering elements [E04D 3/38](#); {construction of joints for flooring or floor layers composed of a number of similar elements [E04F 15/02005](#); construction of joints for flooring or floor layers made of masses [in situ](#) [in situ](#) [E04F 15/14](#))
- E04B 1/6807 • • • {Expansion elements for parts cast [in situ](#) [in situ](#)}

- 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](#))
- U E04B 2/74** • Removable non-load-bearing partitions; Partitions with a free upper edge (framed panels [E04C 2/38](#)){modular coordination}
- U E04B 2/76** • • with framework or posts of metal {(details of connections, thresholds or skirtings [E04B 2/82](#))}
- U E04B 2/78** • • • characterised by special cross-section of the frame-members {as far as important for securing wall panels to a framework with or without the help of cover-strips (separate connecting means, e.g. clip [E04B 2/74](#); connections between uprights and cross-members [E04B 2/76](#))}
- U E04B 2/7809** • • • • {of single or multiple tubular form}
- E04B 2/7845** • • • • • {of curved cross-section, e.g. [circular](#)}; e.g. [circular](#)}
- E04B 2/84** • Walls made by casting, pouring, or tamping [in-situ in situ](#) ([E04B 2/02](#), [E04B 2/56](#) take precedence; forms therefor [E04G 11/06](#); working of concrete or similar masses able to be cast or poured [in-situ in situ](#) [E04G 21/02](#))
- 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](#))
- E04B 5/16** • Load-carrying floor structures wholly or partly cast or similarly formed [in-situ in situ](#) ([E04B 5/43](#) - [E04B 5/48](#) take precedence; floors merely characterised by the prefabricated elements [E04C](#))
- E04B 5/17** • • Floor structures partly formed [in-situ in situ](#)
- E04B 5/32** • • Floor structures wholly cast [in-situ in situ](#) with or without form units or reinforcements
- U E04B 7/00** Roofs; Roof construction with regard to insulation (structures for roofs as well as for floors [E04B 5/00](#); ceilings [E04B 9/00](#); greenhouses [A01G 9/14](#); large containers having floating covers [B65D 88/34](#); roof trusses, trusslike structures, joists [E04C 3/02](#); roof covering [E04D](#))
- E04B 7/08** • Vaulted roofs ([E04B 7/14](#) takes precedence; vaulted structures in general [E04B 1/32](#); inflatable tents or canopies, in general [E04H 15/20](#); inflatable forms for shaping [in-situ in situ](#) [E04G 11/04](#))
- 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](#))
- U E04B 9/06** • characterised by constructional features of the supporting construction, {e.g. cross section or material of framework members}
- E04B 9/08** • • having the capability of expansion {, e.g. in case of fire}

Project: N/A (E04C)

- 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 see](#) the relevant subclasses, e.g. [B27N](#), [D21J](#); made [in-situ 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 2/30** • characterised by the shape or structure (translucent [E04C 2/54](#))

- E04C 2/38
- with attached ribs, flanges, or the like, e.g. framed panels (concerned with attaching to other panels or elements to form a structure, [see](#) the places for the relevant structure, e.g. [E04B 2/00](#))

E04C 5/00 Reinforcing elements, e.g. for concrete; Auxiliary elements therefor ({methods or devices for making reinforcing materials [B21D](#)}; material composition {[C04B](#)}, [C21](#), [C22](#); arrangements of reinforcing elements, [see](#) the relevant subclasses)

NOTES

1. In this group, the following terms or expressions are used with the meanings indicated:

- "reinforcing" means increasing any physical strength characteristic of the end product, e.g. compressive or flexural strength;
- "elements" includes relatively large bodies, e.g. steel bars, as well as relatively small discrete bodies of any form, e.g. glass fibres.

2. Discrete reinforcing elements, which are small compared with the reinforced building element, only characterised by their composition are classified in [C04B](#), e.g. steel fibres [C04B 14/48](#), plastic elements with a shape other than granular or fibrous [C04B 16/12](#)

- E04C 5/08
- Members specially adapted to be used in prestressed constructions {(production of reinforced objects in general [B28B 23/00](#); prestressed structures produced ~~in-situ~~ [in situ](#) [E04G 21/12](#))}
- E04C 5/12
- Anchoring devices (tools or methods for tensioning {~~in-situ~~ [in situ](#) [E04G 21/12](#)})

Project: N/A (E04D)

E04D 7/00 Roof covering {exclusively consisting of} sealing masses applied ~~in-situ~~ [in situ](#); Graveling of flat roofs

- U E04D 11/00
- Roof covering, as far as not restricted to features covered by only one of groups [E04D 1/00](#) - [E04D 9/00](#); Roof covering in ways not provided for by groups [E04D 1/00](#) - [E04D 9/00](#), {e.g. built-up roofs, elevated load-supporting roof coverings}

- E04D 11/02
- Build-up roofs, i.e. consisting of two or more layers bonded together ~~in-situ~~ [in situ](#), at least one of the layers being of watertight composition (graveling of flat roofs [E04D 7/00](#); venting or ventilation [E04D 13/17](#))

E04D 13/00 Special arrangements or devices in connection with roof coverings; {Protection against birds}; Roof drainage; {Sky-lights} (ventilation tiles [E04D 1/30](#); ventilation slabs [E04D 3/40](#); internal channels [E04F 17/00](#); elements therefor, [see](#) the relevant groups)

- U E04D 13/16
- Insulating devices or arrangements in so far as the roof covering is concerned, {e.g. characterised by the material or composition of the roof insulating material or its integration in the roof structure}
- U E04D 13/1606
- {Insulation of the roof covering characterised by its integration in the roof structure (self-supporting insulating slabs [E04B 7/22](#), [E04B 7/225](#))}
- E04D 13/1668
- {the insulating material being masses or granules applied ~~in-situ~~ [in situ](#)}

Project: N/A (E04F)

- U 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
- U E04F 13/072
 - • composed of specially adapted, structured or shaped covering or lining elements
- E04F 13/076
 - • • characterised by the joints between neighbouring elements, e.g. with joint fillings or with tongue and groove connections {(not used, [see see E04F 13/0889](#))}
- E04F 13/077
 - • • composed of several layers, e.g. sandwich panels ([E04F 13/075](#) takes precedence){(not used, [see see E04F 13/0866](#))}
- E04F 13/078
 - • • Stretched foil- or web-like elements attached with edge gripping devices {(not used, [see see E04F 13/005](#))}
- U 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 13/09
 - • • of elements attached to a common web, support plate or grid {(not used, [see see E04F 13/0862](#))}
- E04F 13/21
 - • Fastening means specially adapted for covering or lining elements {(not used, [see see E04F 13/0801](#))}
- E04F 13/22
 - • • Anchors, support angles or consoles {(not used, [see see E04F 13/0801](#))}
- E04F 13/23
 - • • • adjustable {(not used, [see see E04F 13/0801](#))}
- E04F 13/24
 - • • Hidden fastening means on the rear of the covering or lining elements ([E04F 13/30](#) takes precedence){(not used, [see see E04F 13/0801](#))}
- E04F 13/25
 - • • • adjustable {(not used, [see see E04F 13/0801](#))}
- E04F 13/26
 - • • Edge engaging fastening means, e.g. clamps, clips or border profiles {(not used, [see see E04F 13/0801](#))}
- E04F 13/28
 - • • • adjustable {(not used, [see see E04F 13/0801](#))}
- E04F 13/30
 - • • Magnetic fastening means {(not used, [see see E04F 13/0883](#))}
- U 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](#))
- E04F 15/12
 - Flooring or floor layers made of masses [in-situ in situ](#), e.g. seamless magnesite floors, terrazzo {gypsum floors}{inorganic or bituminous masses [C04B](#); organic plastic masses [C08L](#)}
- U E04F 15/18
 - Separately-laid insulating layers; Other additional insulating measures; Floating floors (insulating of buildings in general [E04B 1/62](#))
- E04F 15/188
 - • {Edge insulation strips, e.g. for floor screed layers (boundary strips in layers made of masses [in-situ in situ](#) [E04F 15/142](#))}
- 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 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 21/18
 - 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)}
- U 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](#)})
- E04F 21/24
 - • of masses made **in-situ** *in situ*, e.g. smoothing tools {([E04F 21/04](#) takes precedence; finishing of concrete roads or pavings [E01C 19/40](#); devices for levelling concrete floors [E04G 21/10](#); devices for solidifying concrete floors by vibrating [E04G 21/066](#))}
- U E04F 21/28
 - for glazing (glass cutters [C03B 33/10](#))
- E04F 21/30
 - • Putty squeezers or guns {(not used, **see** [B05C 17/002](#))}

Project: N/A (E04G)

- U **E04G 1/00** **Scaffolds primarily resting on the ground**
 - E04G 1/18
 - adjustable in height {(lifting devices for movable platforms, e.g. on vehicles [B66F 11/04](#))}
- U **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})**
 - E04G 3/28
 - Mobile scaffolds; Scaffolds with mobile platforms {(movable inspection or maintenance platforms for bridges [E01D 19/106](#), lifting devices for movable platforms, e.g. on vehicles [B66F 11/04](#))}
 - U E04G 3/30
 - • suspended by flexible supporting elements, e.g. cables
 - U E04G 3/32
 - • • Hoisting devices; Safety devices
 - E04G 3/325
 - • • • {Safety devices for stabilising the mobile platform, e.g. to avoid it swinging in the wind}
- U **E04G 5/00** **Component parts or accessories for scaffolds (connections [E04G 7/00](#))**
 - E04G 5/006
 - {Scaffold with cantilevered sections, e.g. to accommodate overhangs or recesses in the facade}
 - U E04G 5/14
 - Railings
 - E04G 5/144
 - • {specific for the lateral, i.e. short side of a scaffold}
- E04G 9/00 - E04G 27/00** **Falsework, forms, or shutterings for shaping of building parts **in-situ** *in situ* (scaffolding in general [E04G 1/00](#); moulds for making units for prefabricated buildings or prefabricated stair units [B28B 7/22](#); forms or shutterings of the construction [E04B](#), [E04C](#))**
 - U E04G 9/08
 - Forming boards or similar elements, which are collapsible, foldable, or able to be rolled up
 - E04G 9/086
 - • {which are specially adapted to be degradable in time, e.g. by moisture or water}
- 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](#))}**
 - E04G 11/04
 - for structures of spherical, spheroid or similar shape, or for cupola structures of circular or polygonal horizontal or vertical section; Inflatable forms (connection of valves to inflatable elastic bodies [B60C 29/00](#); {structures made from masses cast **in-situ** *in situ* with permanent forms [E04B 1/16](#))}
 - 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	<ul style="list-style-type: none"> • 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 <i>in situ</i> made in permanent forms E04B 2/84})
U E04G 11/20	<ul style="list-style-type: none"> • Movable forms; Movable forms for moulding cylindrical, conical or hyperbolical structures; Templates serving as forms for positioning blocks or the like (E04G 11/04 takes precedence)
E04G 11/32	<ul style="list-style-type: none"> • Tiltable forms or tilting tables for making walls as a whole or in parts in situ <i>in situ</i>
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)}
U E04G 17/00	Connecting or other auxiliary members for forms, falsework structure, or shutterings
E04G 17/005	<ul style="list-style-type: none"> • {Strips for covering joints between form sections, e.g. to avoid burring or spilling of laitance}
E04G 17/06	<ul style="list-style-type: none"> • 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)}
E04G 21/00	Preparing, conveying, or working-up building materials or building elements in situ <i>in situ</i>; 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Devices for both conveying and distributing (concrete pumps F04)
U E04G 21/0418	<ul style="list-style-type: none"> • {with distribution hose}
E04G 21/0427	<ul style="list-style-type: none"> • {on a static support, e.g. crane}
E04G 21/0436	<ul style="list-style-type: none"> • {on a mobile support, e.g. truck}
U E04G 21/12	<ul style="list-style-type: none"> • Mounting of reinforcing inserts; Prestressing (shell tubes for prestressing members E04C 5/10; anchoring means E04C 5/12; connections of reinforcing elements and spacers E04C 5/16)
U E04G 21/122	<ul style="list-style-type: none"> • {Machines for joining reinforcing bars}
E04G 21/123	<ul style="list-style-type: none"> • {Wire twisting tools (bundling articles by twisting, e.g. wire B65B 13/28; bundling rods, sticks, or like elongated objects with, e.g. wire B65B 27/10; tying devices for hops, vines or trees with, e.g. wire A01G 17/08)}
E04G 2021/127	<ul style="list-style-type: none"> • {Circular prestressing of, e.g. columns, tanks, domes}
U E04G 21/14	<ul style="list-style-type: none"> • Conveying or assembling building elements (roofing E04D; finishing work E04F)
U E04G 21/16	<ul style="list-style-type: none"> • Tools or apparatus (devices for erecting fences E04H 17/26)
U E04G 21/167	<ul style="list-style-type: none"> • {specially adapted for working-up plates, panels or slab shaped building elements}
E04G 21/168	<ul style="list-style-type: none"> • {used for tilting, e.g. from horizontal to vertical position or vice-versa <i>vice versa</i>}
U E04G 21/18	<ul style="list-style-type: none"> • Adjusting tools; Templates; {(workshop marking tools B25H; for coverings or linings E04F 21/18)}

- U E04G 21/1841
 - • • {Means for positioning building parts or elements (strutting means for wall parts [E04G 21/26](#))}
- E04G 21/1858
 - • • • {Templates for window or door openings, e.g. in a masonry wall ([E04G 15/02](#) takes precedence)}
- U E04G 21/24
 - Safety or protective measures preventing damage to building parts or finishing work during construction (as auxiliary structures for scaffolds [E04G](#), [E04G 5/12](#))}
- E04G 21/246
 - • {specially adapted for curing concrete ~~in situ~~[in situ](#), e.g. by covering it with protective sheets}
- 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.
- E04G 23/008
 - {Working measures on existing vertical ducts, e.g. chimneys, garbage chutes}
- 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](#))}
- U E04G 23/0203
 - • {Arrangements for filling cracks or cavities in building constructions}
- E04G 23/0207
 - • • {in hollow structures, e.g. cavity walls}
- U E04G 23/0218
 - • {Increasing or restoring the load-bearing capacity of building construction elements ([E04G 23/0203](#) and [E04G 23/0266](#) take precedence)}
- E04G 23/0225
 - • • {of circular building elements, e.g. by circular bracing}
- U E04G 2023/0251
 - • • {by using fiber reinforced plastic elements}
- E04G 2023/0262
 - • • • {Devices specifically adapted for anchoring the fiber reinforced plastic elements, e.g. to avoid peeling off}
- E04G 23/0296
 - • {Repairing or restoring facades (covering or linings, e.g. for walls [E04F 13/00](#))}

Project: N/A (E04H)**E04H**

BUILDINGS OR LIKE STRUCTURES FOR PARTICULAR PURPOSES; SWIMMING OR SPLASH BATHS OR POOLS; MASTS; FENCING; TENTS OR CANOPIES, IN GENERAL (foundations [E02D](#))

NOTES

1. This subclass deals primarily with the layout of buildings as a whole, but includes details which are peculiar to types of buildings or buildings for special purposes, specified in the groups. The word "buildings" does not exclude engineering structures and other constructions
2. This subclass provides for canopies in general and for canopies similar in construction to tents. For canopies having special application, ~~see~~[see](#) the

relevant class, e.g. bed canopies [A47C 29/00](#); protecting chairs against the weather [A47C 7/66](#); sunshades or awnings for buildings [E04F 10/00](#)

3. In this subclass, the term "tent" means a tent or canopy having a supporting means, e.g. frame and a flexible cover

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:

[E04H 4/02](#) covered by [E04H 4/0018](#), [E04H 4/0075](#)

[E04H 4/04](#) covered by [E04H 4/0018](#), [E04H 4/0075](#)

- U **E04H 4/00** **Swimming or splash baths or pools (wave-producers for baths [A47K 3/10](#); separation [B01D](#); treatment of water [C02F](#); wave-producing pumps [F04D 35/00](#))**
- U E04H 4/0075
 - {made of concrete ([E04H 4/0012](#) takes precedence)}
- E04H 4/0081
 - • {with walls and floor cast ~~in-situ~~ [in situ](#)}
- E04H 4/0087
 - • {with walls prefabricated and floor cast ~~in-situ~~ [in situ](#)}
- E04H 7/00** **Construction or assembling of bulk storage containers employing civil engineering techniques ~~in-situ~~ [in situ](#) or off the site (tower aspects [E04H 12/00](#); storage aspects, e.g. floating roofs, sealing means, filling or discharging means [B65D](#), [B65G](#), [F17B](#), [F17C](#); foundations [E02D 27/38](#))**
- U **E04H 12/00** **Towers; Masts or poles; Chimney stacks; Water-towers; Methods of erecting such structures (cooling-towers [E04H 5/12](#); supports for road signs [E01F 9/60](#); foundation piles [E02D 5/22](#); foundations for masts, poles or chimneys [E02D 27/42](#); structural elongated members in general [E04C 3/00](#); fixed climbing irons [E06C 9/04](#); derricks for oil drilling [E21B 15/00](#))**
- U E04H 12/34
 - Arrangements for erecting or lowering towers, masts, poles, chimney stacks, or the like
- E04H 12/341
 - • {Arrangements for casting ~~in-situ~~ [in situ](#) concrete towers or the like}
- U **E04H 15/00** **Tents or canopies, in general**
- U E04H 15/02
 - Tents combined or specially associated with other devices
- E04H 15/10
 - • Heating, lighting or ventilating (for heating, lighting or ventilating devices ~~per se~~ [seper se](#), [see see](#) the relevant classes, e.g. [F21](#), [F24](#))
- U E04H 15/32
 - Parts, components, construction details, accessories, interior equipment, specially adapted for tents, e.g. guy-line equipment, skirts, thresholds
- E04H 15/324
 - • {Beds constituted by the tent supporting means (Beds ~~per se~~ [seper se](#), [A47C](#))}
- U **E04H 17/00** **Fencing, e.g. fences, enclosures, corrals (features peculiar to electrified fences [A01K 3/00](#), [H05C](#); means for allowing passage through fences, barriers, or the like [E06B 11/00](#))**
- U E04H 17/02
 - Wire fencing ([E04H 17/14](#) takes precedence)
- E04H 17/04
 - • using wire, barbed wire, wire mesh, toothed strips, or the like; Coupling means therefor (wire netting [B21F 27/00](#); other metallic fabrics [see see](#) the relevant classes; {turnbuckles [F16G 11/12](#)})

Project: MP0185 (E05B)**M E05B****LOCKS; ACCESSORIES THEREFOR; HANDCUFFS****NOTES**

1. Operating or controlling of locks for vehicle wings are classified in groups [E05B 77/00-E05B 81/00](#).
2. Knobs, handles or press buttons for locks of vehicle wings are classified in [E05B 79/00-E05B 85/00](#).
3. *{In this subclass, it is desirable to add the indexing code(s) of E05Y.}*

Project: N/A (E05B)**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 9/10

- 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 15/00

Other details of locks; Parts for engagement by bolts of fastening devices (fastening devices for wings other than locks or associated with locks [E05C](#))

E05B 15/10

- Bolts of locks or night latches {(made of hard materials, e.g. to prevent sawing [E05B 15/1614](#); lengthwise adjustable [E05B 63/06](#))}

E05B 19/00

Keys; Accessories therefor (making keys, [see 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 see](#) also [E05B 35/14](#))}

U E05B 39/00

Locks giving indication of {authorised} or unauthorised unlocking {(with key identification means [E05B 35/001](#); alarm locks [E05B 45/00](#))}

E05B 39/02

- with destructible seal closures or paper closures (seals ~~per se~~ [per se](#) [G09F 3/00](#))

U E05B 47/00

Operating or controlling locks or other fastening devices by electric or magnetic means (electric permutation locks [E05B 49/00](#); holding in open position or limiting movement of wings by magnetic or electromagnetic attraction [E05C 17/56](#); {[E05B 17/0029](#), [E05B 17/147](#), [E05B 81/00](#), [E05C 19/16](#) take precedence})

U E05B 47/0001

- {with electric actuators; Constructional features thereof (for vehicles [E05B 81/04](#))}

E05B 47/0011

- {with piezo-electric actuators (piezo-electric devices ~~per se~~ [per se](#) [H01L 41/00](#))}

E05B 47/0012

- {with rotary electromotors (actuators with rotary electromotors ~~per se~~ [per se](#) [H02K 7/06](#), [H02K 23/68](#))}

U E05B 63/00

Locks {or fastenings} with special structural characteristics

U E05B 63/24

- Arrangements in which the fastening members which engage one another are mounted respectively on the wing and the frame and are both movable, e.g. for release by moving either of them (hasp locks [E05B 65/48](#); hasp fastenings [E05C 19/08](#) {[E05B 47/0046](#), [E05B 47/0696](#), [E05B 63/128](#), [E05B 65/48](#), [E05C 19/08](#) take precedence})

E05B 63/242

- {Auxiliary bolts on the frame, actuated by bolts on the wing, or ~~vice-versa~~ [vice versa](#)}

- E05B 63/244 • {the striker being movable for latching, the bolt for unlatching, or ~~vice-versa~~*vice versa*}
- E05B 63/248 • {the striker being movable for latching, and pushed back by a member on the wing for unlatching, or ~~vice-versa~~*vice versa*}
- U 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 65/02 • for thin, hollow, or thin-metal wings {, e.g. lockers}
- E05B 65/52 • Other locks for chests, boxes, trunks, baskets, travelling bags, or the like (closures for bags or trunks [A45C 13/06](#), [A45C 13/10](#), [A45C 13/16](#); {hasp locks [E05B 65/50](#); permutation locks [E05B 37/00](#); toggles [E05C 19/14](#); locking slide fasteners [A44B 19/301](#))}

Project: MP0185 (E05C)

- M E05C BOLTS OR FASTENING DEVICES FOR WINGS, SPECIALLY FOR DOORS OR WINDOWS (latching means for sideboard or tailgate structures for vehicles [B62D](#), {[B62D 33/02](#)}; fastening devices for constructional or engineering elements [E04](#), [F16B](#); locks, fastening devices structurally or operatively combined or having significant cooperation with locks [E05B](#); means for operating or controlling wing fasteners in conjunction with mechanisms for moving the wing [E05F](#))**

NOTES

1. In this subclass only the movement essential for securing the wing is considered, e.g. a sliding bolt which is rotated on its axis to prevent its withdrawal is classified as having only a sliding movement
2. Attention is drawn to the definition following the title of class [E05](#)
3. *{In this subclass, it is desirable to add the indexing code(s) of [E05Y](#).}*

Project: N/A (E05C)

- U E05C 3/00 Fastening devices with bolts moving pivotally or rotatively**
- U E05C 3/12 • with latching action (devices in which the securing part is formed or merely carried by a spring and moves only by distortion of the spring, e.g. snaps, [E05C 19/06](#); tilt-plate latches [E05C 19/007](#))
- U E05C 3/16 • • with operating handle or equivalent member moving otherwise than rigidly with the latch {([E05C 3/122](#) takes precedence)}
- U E05C 3/22 • • • the bolt being spring controlled
- U E05C 3/24 • • • • in the form of a bifurcated member {(automatic catches with a bifurcated latch [E05C 19/024](#); locks with a bifurcated bolt [E05B 65/0046](#), [E05B 85/243](#))}
- E05C 3/26 • • • • • engaging a stud-like keeper (stud-like keepers ~~per se~~*per se* [E05B 2015/0235](#))
- 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 • by mechanical means ([E05C 17/60](#) takes precedence)

E05C 17/38

- with a curved rail rigid with the frame for engagement with means on the wing, or ~~vice-versa~~ vice versa

Project: N/A (E05D)**U 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 7/08

- for use in suspensions comprising two spigots placed at opposite edges of the wing, especially at the top and the bottom, e.g. trunnions ({[E05D 15/266](#) takes precedence})

U E05D 7/082

- the pivot axis of the wing being situated at a considerable distance from the edges of the wing, {e.g. for balanced wings}

E05D 7/086

- Braking devices structurally combined with hinges (braking devices for windows ~~per-se~~ per se [E05F 5/00](#))

Project: N/A (E05F)**U E05F 1/00**

Closers or openers for wings, not otherwise provided for in this subclass

E05F 1/08

- spring-actuated, {e.g. for horizontally sliding wings (counterbalancing sliding or lifting wings [E05D](#); springs ~~per-se~~ per se [F16F](#), e.g. gas-springs [F16F 9/00](#))}

U E05F 3/00

Closers or openers with braking devices, e.g. checks; Construction of pneumatic or liquid braking devices (construction of non-pneumatic or non-liquid braking devices [E05F 5/00](#); friction devices in hinges [E05D 11/08](#))

U E05F 3/04

- with liquid piston brakes (rotary type [E05F 3/14](#))

E05F 3/12

- Special devices controlling the circulation of the liquid, e.g. valve arrangement ({[E05F 3/223](#) takes precedence}; valves ~~per-se~~ per se [F16K](#))

Project: N/A (E05G)**E05G**

SAFES OR STRONG-ROOMS FOR VALUABLES; BANK PROTECTION DEVICES; SAFETY TRANSACTION PARTITIONS ({devices to prevent theft of bags, trunks or baskets [A45C 13/18](#)}; alarm arrangements ~~per-se~~ per se [G08B](#))

NOTE

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

- "bank" is a building or portion of a building devoted to the safekeeping or exchange of valuables between the "bank" and its customers;
- "bank protection device" is a mechanism in or on a bank for protecting the valuables or repelling attacks by stealth or force.

U E05G 1/00

Safes or strong-rooms for valuables (savings boxes [A45C 1/12](#); floatable safes [B63C 7/30](#); storage containers without attack or fire repellent features [B65D](#); bank buildings in general, e.g. modular construction, floor plan, [E04H 1/06](#); buildings resistant to earthquakes or war action [E04H 9/00](#))

E05G 1/10

- with alarm, signal or indicator ({[E05G 1/14](#) takes precedence}; burglar, theft or intruder alarm ~~per-se~~ per se [G08B 13/00](#); fire or explosion alarm ~~per-se~~ per se [G08B 17/00](#))

Project: N/A (E05Y)**U E05Y 2201/00**

Constructional elements; Accessories therefore

E05Y 2201/20

- Brakes; Disengaging means, e.g. clutches; Holders, e.g. locks; Stops; Accessories therefore

- E05Y 2201/25
- • Force or torque adjustment therefore (~~E05Y 2400/21 takes precedence~~ E05Y 2400/21 takes precedence)
- U E05Y 2201/60
- Suspension or transmission members; Accessories therefore
- U E05Y 2201/606
- • Accessories therefore
- U E05Y 2201/61
- • • Cooperation between suspension or transmission members
- E05Y 2201/616
- • • • to ensure mutual engagement, e.g. counter-rollers
- U E05Y 2800/00**
- Details, accessories and auxiliary operations not otherwise provided for**
- E05Y 2800/40
- Protection (~~E05Y 2400/50, E05Y 2400/52 take precedence~~ E05Y 2400/50, E05Y 2400/52 take precedence)
- U E05Y 2800/424
- • against unintended use
- E05Y 2800/426
- • • against unauthorised use (~~E05Y 2400/51, E05Y 2400/522 take precedence~~ E05Y 2400/51, E05Y 2400/522 take precedence)
- E05Y 2800/74
- Specific positions (~~E05Y 2400/35 takes precedence~~ E05Y 2400/35 takes precedence)

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~~ 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](#)

- U 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~~ per se [E06B 1/56](#))}

- U 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 3/02 • Wings made completely of glass {([E06B 3/4681](#) takes precedence)}
- E06B 3/025 • • {consisting of multiple glazing units (units ~~per se~~ [per se](#) [E06B 3/66](#))}
- 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 3/06 • • Single frames
- U E06B 3/08 • • • Constructions depending on the use of specified materials ([E06B 3/24](#) takes precedence)
- U E06B 3/12 • • • • of metal
- E06B 3/14 • • • • • of special cross-section {(not used, ~~see~~ [see](#) subgroup and [E06B 3/12](#))}
- 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~~ [in situ](#) [E06B 3/2675](#))}
- E06B 3/267 • • • with insulating elements formed ~~in situ~~ [in situ](#)
- U E06B 3/96 • Corner joints or edge joints for windows, doors, or the like frames or wings {([E06B 3/663](#) takes precedence)}
- E06B 3/9612 • • {by filling ~~in situ~~ [in situ](#) the hollow ends of the abutted frame members with a hardenable substance}
- U E06B 3/964 • • using separate connection pieces, e.g. T-connection pieces ([E06B 3/9604](#) - [E06B 3/9636](#) and [E06B 3/984](#) - [E06B 3/99](#) 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 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](#))
- E06B 7/02 • for providing ventilation, e.g. through double windows; Arrangement of ventilation roses (airflow control members ~~per se~~ [per se](#) [F24F 13/08](#))
- U 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 7/34 • • Doors containing cupboards (cabinet constructions ~~per se~~ [per se](#) [A47B](#))
- U 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](#))
- U 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](#))

- E06B 2009/2464 • • {featuring transparency control by applying voltage, *e.g. LCD, electrochromic panels*; ~~e.g. LCD, electrochromic panels~~}

U E06B 11/00 **Means for allowing passage through fences, barriers or the like, e.g. stiles (general features of doors [E06B 1/00](#) - [E06B 9/00](#); {cattle grids [A01K 3/002](#); features peculiar to electrified wire fencing [A01K 3/005](#)})**

- U E06B 11/02 • Gates; Doors
- E06B 11/04 • • characterised by the kind of suspension (suspensions ~~per se~~ *per se* [E05D](#))

Project: N/A (E06C)

U E06C 5/00 **Ladders characterised by being mounted on undercarriages or vehicles Securing ladders on vehicles (ladders having wheels, rollers, or runners [E06C 1/397](#) {ladders on boats [B63B 27/14](#)})**

- E06C 5/32 • Accessories {, *e.g. brakes on ladders*}

Project: N/A (E21B)

U E21B 1/00 **Percussion drilling (drives used in the borehole [E21B 4/00](#); rotary drilling machines in general [B23B](#))**

- U E21B 1/02 • Surface drives for percussion drilling
- E21B 1/04 • • Devices for reversing the movement of the rod or cable at the surface {(not used, ~~see see~~ *see see* [E21B 1/02](#))}

U E21B 7/00 **Special methods or apparatus for drilling**

- U E21B 7/04 • Directional drilling (derricks or masts specially adapted therefor [E21B 15/04](#))
- U E21B 7/06 • • Deflecting the direction of boreholes {(directional window cutting [E21B 29/06](#); deflecting the direction of fishing tools [E21B 31/14](#))}
- E21B 7/068 • • • {drilled by a down-hole drilling motor (down-hole drives ~~per se~~ *per se* [E21B 4/00](#), [E21B 7/067](#) takes precedence)}
- U E21B 7/20 • Driving or forcing casings or pipes into boreholes, e.g. sinking; Simultaneously drilling and casing boreholes (surface means for applying to-and-fro rotation movements to the casing [E21B 3/025](#); {pushing means outside of the borehole [E21B 19/08](#);} placing piles [E02D 7/00](#); sinking shafts while moving the lining downwards [E21D 1/08](#); {making galleries by forcing prefabricated elements through the ground [E21D 9/005](#)})
- U E21B 7/201 • • {with helical conveying means (drilling with helical conveying means [E21B 7/005](#); augers [E21B 10/44](#); drilling rods or pipes with helical structure [E21B 17/22](#))}
- E21B 7/203 • • • {using down-hole drives (down-hole drives ~~per se~~ *per se* [E21B 4/00](#))}
- U E21B 7/205 • • {without earth removal ([E21B 7/30](#) takes precedence)}

NOTE

Special methods or apparatus for drilling without earth removal [E21B 7/26](#)

- E21B 7/206 • • • {using down-hole drives (down-hole drives ~~per se~~ *per se* [E21B 4/00](#))}
- E21B 7/208 • • {using down-hole drives (down-hole drives ~~per se~~ *per se* [E21B 4/00](#); [E21B 7/203](#) and [E21B 7/206](#) take precedence)}

U E21B 21/00 **Methods or apparatus for flushing boreholes, e.g. by use of exhaust air from motor (freeing objects stuck in boreholes by flushing [E21B 31/03](#); well drilling compositions [C09K 8/02](#))**

- E21B 21/06 • Arrangements for treating drilling fluids outside the borehole (treating steps ~~per se~~ *per se*, ~~see see~~ the relevant subclasses)

- U E21B 31/00** Fishing for or freeing objects in boreholes or wells ({using junk baskets or the like [E21B 27/00](#)}; provisions on well heads for introducing or removing objects [E21B 33/068](#); Locating or determining the position of objects in boreholes or wells [E21B 47/09](#))
- U E21B 31/12** • Grappling tools, e.g. tongs or grabs
- E21B 31/16** • • combined with cutting or destroying means (cutting or destroying means ~~per se~~ [per se](#) [E21B 29/00](#))
- 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 37/08** • cleaning ~~in-situ~~ [in situ](#) of down-hole filters, screens, {e.g. casing perforations,} or gravel packs ([E21B 37/06](#) takes precedence)
- U E21B 41/00** **Equipment or details not covered by groups [E21B 15/00](#) - [E21B 40/00](#)**
- E21B 41/0085** • {Adaptations of electric power generating means for use in boreholes (generation of electric power ~~per se~~ [per se](#) [H02](#))}
- E21B 41/02** • ~~in-situ~~ [in situ](#) inhibition of corrosion in boreholes or wells (dump bailers [E21B 27/02](#); chemical compositions therefor [C09K 8/54](#); inhibiting corrosion in general [C23F](#))
- 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](#))**
- E21B 43/16** • Enhanced recovery methods for obtaining hydrocarbons (fracturing [E21B 43/26](#); obtaining slurry [E21B 43/29](#); reclamation of contaminated soil ~~in situ~~ [in situ](#) [B09C](#); {chemical compositions therefor [C09K 8/58](#)})
- U E21B 43/24** • • using heat, e.g. steam injection (heating, cooling or insulating wells [E21B 36/00](#) {; in combination with organic material [C09K 8/592](#)})
- E21B 43/243** • • • Combustion ~~in-situ~~ [in situ](#)
- U E21B 43/25** • Methods for stimulating production (dump bailers [E21B 27/02](#); vibration generating arrangements [E21B 28/00](#) {; by vibrating earth formations [E21B 43/003](#)}; chemical compositions therefor [C09K 8/60](#))
- U E21B 43/26** • • by forming crevices or fractures {(chemical compositions therefor [C09K 8/62](#))}
- E21B 43/263** • • • using explosives {(Combustion ~~in-situ~~ [in situ](#) using explosives [E21B 43/248](#))}
- E21B 43/34** • Arrangements for separating materials produced by the well (separating apparatus ~~per se~~ [per se](#), [see](#) [see](#) the relevant subclasses)
- E21B 44/00** **Automatic control systems specially adapted for drilling operations, i.e. self-operating systems which function to carry out or modify a drilling operation without intervention of a human operator, e.g. computer-controlled drilling systems (for non-automatic drilling control, [see](#) [see](#) the operation controlled; automatic feeding from rack and connecting of drilling pipes [E21B 19/20](#); controlling pressure or flow of drilling fluid [E21B 21/08](#); control systems in general [G05](#)); Systems specially adapted for monitoring a plurality of drilling variables or conditions (means for transmitting measuring-signals from the well to the surface [E21B 47/12](#))**
- U E21B 47/00** **Survey of boreholes or wells (monitoring pressure or flow of drilling fluid [E21B 21/08](#); geophysical logging [G01V](#))**

- E21B 47/01
- Devices for supporting measuring instruments on a drill pipe, rod or wireline (setting or locking tools in boreholes or wells [E21B 23/00](#)); {(flexible centering means ~~per se~~ [per se](#) [E21B 17/1014](#))}
 - Protecting measuring instruments in boreholes against heat, shock, pressure or the like

NOTE

Devices for both supporting and protecting measuring instruments are only classified in [E21B 47/011](#)

U E21B 49/00

Testing the nature of borehole walls; Formation testing; Methods or apparatus for obtaining samples of soil or well fluids, specially adapted to earth drilling or wells (sampling in general [G01N 1/00](#))

- E21B 49/005
- {Testing the nature of borehole walls or the formation by using drilling mud or cutting data (investigating chemical or physical properties of materials ~~per se~~ [per se](#) [G01N](#))}
- E21B 49/02
- by mechanically taking samples of the soil (apparatus for obtaining undisturbed cores [E21B 25/00](#); investigation of foundation soil ~~in situ~~ [in situ](#) [E02D 1/00](#))

Project: N/A (E21C)**E21C****MINING OR QUARRYING****NOTES**

1. This subclass ~~covers~~ [covers](#) methods or apparatus specific to mining or quarrying
2. This subclass ~~does not cover~~ [does not cover](#), even though they may be disclosed only for mining or quarrying, drill bits, bore reamers, core taking devices, drilling pipes or rods, handling, racking or connecting arrangements for drilling pipes or rods, counterboring or enlarging drilled holes, flame drilling, or other drilling apparatus, which are covered by subclass [E21B](#)

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:

E21B 3/02	covered by	E21B 3/02
E21B 3/035	" "	E21B 3/035
E21B 3/025	" "	E21B 3/025
E21B 3/03	" "	E21B 3/03
E21B 6/00	" "	E21B 6/00
E21C 3/08	" "	B25D 9/06 , B25D15/00
E21C 3/10	" "	B25D15/02
E21C 3/12	" "	B25D 11/00
E21C 3/14	" "	B25D 11/00
E21C 3/20	" "	B25D 9/12
E21C 3/22	" "	B25D 9/125
B25D 11/005	" "	B25D 9/265
E21C 3/34	" "	B25D 17/08
E21B 19/081	" "	E21B 19/081
E21B 19/083	" "	E21B 19/083
E21B 19/084	" "	E21B 19/084
E21B 19/089	" "	E21B 19/089
E21B 44/08	" "	E21B 44/08
E21B 44/00	" "	E21B 44/00
E21B 21/14	" "	E21B 21/14
E21B 7/02	" "	E21B 7/02
E21C 37/24	" "	B25D
E21C 37/26	" "	B25D
E21C 41/18	" "	E21C 41/16

E21C 41/20	"	"	E21C 41/16
E21C 41/22	"	"	E21C 41/16
E21C 41/24	"	"	E21C 41/16
E21C 41/28	"	"	E21C 41/26
E21C 41/30	"	"	E21C 41/26
E21C 45/02	"	"	E21C 25/60 , E21C 45/00
E21C 45/04	"	"	E21C 25/60 , E21C 45/00
E21C 45/06	"	"	E21C 25/60 , E21C 45/00
E21C 45/08	"	"	E21C 25/60 , E21C 45/00
E21C 50/00	"	"	E02F 3/88
E21C 50/02	"	"	E02F 3/88

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 see](#) subgroup and [E21B 3/00](#)})

U E21C 3/00 Drilling machines with reciprocating tool that is intermittently turned when out of contact with the working face (portable percussion tools in general [B25D](#))

E21C 3/06 • Means for driving the impulse member {(not used, [see see](#) subgroups and [B25D](#))}

E21C 5/00 Devices for feeding tool to working face (feeding devices for metal-boring machines [B23B](#) {not used, [see see](#) subgroups and [E21B 19/08](#)})

E21C 5/08 • Means for driving feed mechanism {(not used, [see see](#) subgroups and [E21B 19/08](#))}

E21C 7/00 Dust eliminating or dust removing while drilling ({[see see](#) also [E21B 21/00](#)}; equipment for preventing the formation of dust by slitting or dislodging machines [E21C 35/22](#); {by foam [E21B 21/14](#)}; exhausting dust from mines [E21F 5/20](#))

U E21C 35/00 Miscellaneous items relating to machines for slitting or completely freeing the mineral from the seam

E21C 35/20 • General features of equipment for removal of chippings, e.g. for loading on conveyer

E21C 39/00 Devices for testing [in situ](#) [in situ](#) the hardness or other properties of minerals, e.g. for giving information as to the selection of suitable mining tools

Project: N/A (E21D)

E21D 9/00 Tunnels or galleries, with or without linings; Methods or apparatus for making thereof ([E02D 29/045](#), [E02D 29/063](#) take precedence; linings [per se](#) [per se](#) [E21D 11/00](#)); Layout of tunnels or galleries

E21D 9/006 • {by making use of blasting methods (explosive compositions [C06B](#); blasting [per se](#) [per se](#) [F42](#))}

E21D 11/00 Lining tunnels, galleries or other underground cavities, e.g. large underground chambers; Linings therefor; Making such linings [in situ](#) [in situ](#), e.g. by assembling ([E21D 15/00](#) - [E21D 23/00](#) take precedence; specially for shafts [E21D 5/00](#); {driving shields in combination with means for lining the tunnel [E21D 9/06](#)}; lining pressure water galleries, linings therefor [E02B 9/06](#))

U E21D 11/04 • Lining with building materials ([E21D 11/02](#), [E21D 11/14](#) take precedence; {compositions of mortars, concrete or like building materials [C04B](#); placing filling-up materials in underground workings [E21F 15/00](#)})

- U E21D 11/06 • • with bricks
- E21D 11/07 • • • using brick- laying machines {(brick-laying machines ~~per se~~ *per se* [E04G 21/22](#))}
- E21D 11/10 • • with concrete cast ~~in situ~~ *in situ*; Shuttering {also lost shutterings, e.g. made of blocks, of metal plates} or other equipment adapted therefor
- U E21D 15/00 Props (in the building art [E04G 25/00](#)); Chocks, {e.g. made of flexible containers filled with backfilling material}**
- U E21D 15/14 • Telescopic props (general means for fixing telescopic parts together {[F16B 7/10](#)})
- E21D 15/44 • • Hydraulic, pneumatic, or hydraulic-pneumatic props {(see *see* also [E21D 15/51](#))}
- U E21D 15/50 • Component parts or details of props ([E21D 15/43](#), [E21D 15/58](#), [E21D 15/60](#) take precedence)
- E21D 15/51 • • specially adapted to hydraulic, pneumatic, or hydraulic-pneumatic props, e.g. arrangements of relief valves {(not used, ~~see~~ *see* subgroups and [E21D 15/44](#))}
- U E21D 23/00 Mine roof supports for step- by- step movement, e.g. in combination with provisions for shifting of conveyors, mining machines, or guides therefor ({transport of mine roof support units [E21F 13/008](#); } shifting of mine conveyors at the working face [E21F 13/08](#))**
- U E21D 23/04 • Structural features of the supporting construction, e.g. linking members between adjacent frames or sets of props; Means for counteracting lateral sliding on inclined floor ([E21D 23/14](#) takes precedence)
- E21D 23/0481 • • {Supports specially adapted for use in combination with the placing of filling-up materials (placing filling-up materials in underground workings ~~per se~~ *per se* [E21F 15/00](#))}
- WARNING
Group [E21D 23/0481](#) is not complete. See also other groups of [E21D 23/00](#)

Project: N/A (E21F)

- U E21F 17/00 Methods or devices for use in mines or tunnels, not covered elsewhere (mine lighting [F21](#), [H05B](#))**
- E21F 17/18 • Special adaptations of signalling or alarm devices (for mine lifts [B66B](#); gas-sensitive devices ~~per se~~ *per se* [G01N](#))

Project: N/A (F)**F****MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING ENGINES OR PUMPS**NOTE

~~Guide to the use of this subsection (classes F01 to F04)~~ *Guide to the use of this subsection (classes F01-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~~ *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 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 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 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](#) - [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

- a. *The principal classifying characteristic of the subclass is that of genera of apparatus, of which there are three possible:*

Machines; engines; pumps.

- b. *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.

- c. *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.~~

Simple reciprocating piston; rotary or oscillating piston; other kind.

d. 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
	rotary			
	reci- pro- cillat- ing piston placement	or os- cillat- other	liquid and elastic fluid	
			elastic fluid	
			elastic fluid	
			liquid	
MACHINES				
X	X		X	X
X		X	X	
X	X	X	F01D	F01C
X		X	F03B	
X		X		X
X				X
ENGINES				
X	X		X	X
X		X	X	
X	X	X	F01D	F01C
X		X	F03B	
X	X	X		X
PUMPS				
				F03C

X		X		X	X	X	F04B
X			X	X	X		F04C
X	X	X	X	F04D			

~~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.~~

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

MACHINES OR ENGINES, IN GENERAL OR OF POSITIVE-DISPLACEMENT TYPE, e.g. STEAM ENGINES (of rotaty-piston or oscillating-piston type [F01C](#); of non-positive-displacement type [F01D](#); internal-combustion aspects of reciprocating-piston engines [F02B 57/00](#), [F02B 59/00](#); crankshafts, crossheads, connecting-rods [F16C](#); flywheels [F16F](#); gearings for interconverting rotary motion and reciprocating motion in general [F16H](#); pistons, piston rods, cylinders, for engines in general [F16J](#))

NOTES

1. This subclass ~~covers~~*covers*, with the exception of the matter provided for in subclasses [F01C](#) - [F01P](#) :

- engines for elastic fluids, e.g. steam engines;
- engines for liquids and elastic fluids;
- machines for elastic fluids;
- machines for liquids and elastic fluids.

2. Attention is drawn to the note preceding class [F01](#), especially as regards the definitions of "steam" and "special vapour".

U F01B 7/00

Machines or engines with two or more pistons reciprocating within same cylinder or within essentially coaxial cylinders (in opposite arrangement relative to main shaft [F01B 1/08](#))

U F01B 7/02

• with oppositely reciprocating pistons

U F01B 7/04

• • acting on same main shaft

F01B 7/06

• • • using only connecting-rods for conversion of reciprocatory into rotary motion or ~~vice-versa~~*vice versa*

- U F01B 11/00** Reciprocating-piston machines or engines without rotary main shaft, e.g. of free-piston type
- F01B 11/04 • Engines combined with reciprocatory driven devices, e.g. hammers (with pumps [F01B 23/08](#); predominating aspects of driven devices, [see see](#) the relevant classes for the devices)
- F01B 21/00** Combinations of two or more machines or engines ([F01B 23/00](#) takes precedence; regulating or controlling, [see see](#) the relevant groups; combinations of two or more pumps [F04](#); fluid gearing [F16H](#))
- F01B 23/00** Adaptations of machines or engines for special use; Combinations of engines with devices driven thereby ([F01B 11/00](#) takes precedence; fluid gearing [F16H](#); aspects predominantly concerning driven devices, [see see](#) the relevant classes for these devices; regulating or controlling, [see see](#) the relevant groups)
- F01B 23/02 • Adaptations for driving vehicles, e.g. locomotives (arrangements in vehicles, [see see](#) the relevant classes for vehicles)
- U F01B 31/00** Component parts, details, or accessories not provided for in, or of interest apart from, other groups (machine or engine casings, other than those peculiar to steam engines, [F16M](#))
- F01B 31/12 • Arrangements of measuring or indicating devices (warning apparatus [F01B 25/26](#); measuring instruments or the like [per se](#) [per se](#) [G01](#))

Project: N/A (F01C)**F01C****ROTARY-PISTON OR OSCILLATING-PISTON MACHINES OR ENGINES**
(internal-combustion aspects [F02B 53/00](#), [F02B 55/00](#))NOTES

1. This subclass [covers covers](#):
 - rotary-piston or oscillating-piston engines for elastic fluids, e.g. steam;
 - rotary-piston or oscillating-piston engines for liquids and elastic fluids;
 - rotary-piston or oscillating-piston machines for elastic fluids;
 - rotary-piston or oscillating-piston machines for liquids and elastic fluids.
2. In this subclass, the following expression is used with the meaning indicated:
 - "rotary-piston machine" includes the German expressions "Drehkolbenmaschinen", "Kreiskolbenmaschinen" and "Umlaufkolbenmaschinen".
3. Attention is drawn to the Notes preceding class [F01](#), especially as regards the definitions of "rotary-piston machine", "oscillating-piston machine", "rotary piston", "co-operating members", "movement of co-operating members", "teeth or tooth-equivalents" and "internal-axis".

F01C 13/00

Adaptations of machines or engines for special use; Combinations of engines with devices driven thereby (aspects predominantly concerning driven devices, [see see](#) the relevant classes for these devices)

U F01C 21/00

Component parts, details or accessories not provided for in groups [F01C 1/00](#) - [F01C 20/00](#)

F01C 21/008

- {Driving elements, brakes, couplings, transmissions specially adapted for rotary or oscillating-piston machines or engines (brakes, couplings, transmissions [per se](#) [per se](#) [F16](#), [B60](#))}

Project: N/A (F01D)**F01D**

NON-POSITIVE DISPLACEMENT MACHINES OR ENGINES, e.g. STEAM TURBINES (machines or engines for liquids [F03](#); non-positive displacement pumps [F04D](#))

NOTES

1. This subclass ~~covers~~ **covers**:

- non-positive-displacement engines for elastic fluids, e.g. steam turbines;
- non-positive-displacement engines for liquids and elastic fluids;
- non-positive-displacement machines for elastic fluids;
- non-positive-displacement machines for liquids and elastic fluids.

2. Attention is drawn to the Notes preceding class [F01](#), especially as regards the definitions of "reaction type", e.g. with airfoil-like blades, and "impulse type", e.g. bucket turbines.

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:

[F01D 5/32](#) covered by [F01D 5/30](#)

- | | | |
|----------|------------------|--|
| U | F01D 1/00 | Non-positive-displacement machines or engines, e.g. steam turbines (with working-fluid flows in opposite axial directions for balancing axial thrust F01D 3/02; with other than pure rotation F01D 23/00; turbines characterised by their use in special steam systems, cycles, or processes, regulating devices therefor F01K) |
| U | F01D 1/02 | • with stationary working-fluid guiding means and bladed or like rotor, {e.g. multi-bladed impulse steam turbines}(F01D 1/24 takes precedence; without stationary working-fluid guiding means F01D 1/18) |
| | F01D 1/026 | • {Impact turbines with buckets, i.e. impulse turbines, e.g. Pelton turbines (F01D 1/16 , F01D 1/34 take precedence)} |
| | F01D 1/32 | • with pressure velocity transformation exclusively in rotor, e.g. the rotor rotating under the influence of jets issuing from the rotor, {e.g. Heron turbines (the working fluid being a combustion products F02C 3/165 ; jet propulsion plants per se per se F02K)} |
| U | F01D 5/00 | Blades; Blade-carrying members (nozzle boxes F01D 9/02); Heating, heat-insulating, cooling or anti-vibration means on the blades or the members {(special arrangements in rotors dealing with breaking off of part thereof F01D 21/045)} |
| U | F01D 5/02 | • Blade-carrying members, e.g. rotors (rotors of non-bladed type F01D 1/34 ; stators F01D 9/00 {selecting particular materials F01D 5/28 }) |
| U | F01D 5/04 | • • for radial-flow machines or engines |
| | F01D 5/043 | • • • {of the axial inlet- radial outlet, or vice-versa vice versa , type} |
| | F01D 5/045 | • • • {the wheel comprising two adjacent bladed wheel portions, e.g. with interengaging blades for damping vibrations} |
| U | F01D 5/06 | • • Rotors for more than one axial stage, e.g. of drum or multiple disc type; Details thereof, e.g. shafts, shaft connections {(F01D 5/022 , F01D 5/023 take precedence)} |
| | F01D 5/063 | • • • {Welded rotors (welding per se per se B23K)} |
| | F01D 5/34 | • Rotor-blade aggregates of unitary construction {, e.g. formed of sheet laminae; (discs formed of sheet laminae F01D 5/028 ; Ceramic materials F01D 5/284 , composite materials F01D 5/282)} |
| | F01D 9/00 | Stators (non-fluid guiding aspects of casings, regulating, controlling, or safety aspects, see see the relevant groups) |

- F01D 9/02
 - Nozzles; Nozzle boxes; Stator blades; Guide conduits {, e.g. individual nozzles (nozzle boxes [F01D 9/047](#))}
- U F01D 9/06
 - Fluid supply conduits to nozzles or the like
- F01D 9/065
 - {Fluid supply or removal conduits traversing the working fluid flow, e.g. for lubrication-, cooling-, or sealing fluids (see also [F01D 25/16](#), [F01D 25/24](#) and [F01D 25/26](#))}
- F01D 13/00**

Combinations of two or more machines or engines ([F01D 15/00](#) takes precedence; regulating or controlling, ~~see~~[see](#) the relevant groups; combinations of two or more pumps [F04](#); fluid gearing [F16H](#))
- F01D 15/00**

Adaptations of machines or engines for special use; Combinations of engines with devices driven thereby (regulating or controlling ~~see~~[see](#) the relevant groups; aspects predominantly concerning driven devices, ~~see~~[see](#) the relevant classes for the devices)
- U **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](#)})
- F01D 17/02
 - Arrangement of sensing elements (sensing elements ~~per se~~[per se](#): ~~see~~[see](#) the relevant subclasses)
- U F01D 17/10
 - Final actuators (valves in general [F16K](#) {blades with variable camber [F01D 5/148](#)})
- U F01D 17/12
 - • arranged in stator parts
- U F01D 17/14
 - • • varying effective cross-sectional area of nozzles or guide conduits
- U F01D 17/16
 - • • • by means of nozzle vanes
- F01D 17/162
 - • • • • ~~{for axial flow;}~~ [{for axial flow}](#), i.e. the vanes turning around axes which are essentially perpendicular to the rotor centre line ([F01D 17/167](#) takes precedence)}
- F01D 17/165
 - • • • • ~~{for radial flow;}~~ [{for radial flow}](#), i.e. the vanes turning around axes which are essentially parallel to the rotor centre line ([F01D 17/167](#) takes precedence)}
- F01D 17/18
 - • • varying effective number of nozzles or guide conduits {, e.g. sequentially operable valves for steam turbines}
- U **F01D 21/00**

Shutting-down of machines or engines, e.g. in emergency; Regulating, controlling, or safety means not otherwise provided for
- F01D 21/006
 - {Arrangements of brakes (brakes ~~per se~~[per se](#) [F16D](#))}
- U **F01D 25/00**

Component parts, details, or accessories, not provided for in, or of interest apart from, other groups
- F01D 25/16
 - Arrangement of bearings; Supporting or mounting bearings in casings (bearings ~~per se~~[per se](#) [F16C](#))

Project: N/A (F01K)

- U **F01K 3/00**

Plants characterised by the use of steam or heat accumulators, or intermediate steam heaters, therein (regenerating exhaust steam [F01K 19/00](#))
- F01K 3/008
 - {Use of steam accumulators of the Ruth type for storing steam in water; Regulating thereof (Ruth accumulators ~~per se~~[per se](#) [F01K 1/04](#))}
- F01K 3/14
 - having both steam accumulator and heater, e.g. superheating accumulator (steam superheaters ~~per se~~[per se](#) [F22G](#))

- F01K 3/18
 - having heaters (having both steam accumulator and heater [F01K 3/14](#); steam heaters [per se](#) [per se](#) [F22](#))
- U F01K 3/26
 - • with heating by steam
- F01K 3/267
 - • • {by mixing with steam, e.g. LOFFLER-boiler}
- F01K 9/00**

Plants characterised by condensers arranged or modified to co-operate with the engines (by condensers structurally combined with engines [F01K 11/00](#); steam condensers [per se](#) [per se](#) [F28B](#))([F01K 23/04](#) takes precedence)
- U **F01K 17/00**

Using steam or condensate extracted or exhausted from steam engine plant (for heating feed-water [F01K 7/34](#); returning condensate to boiler [F22D](#) {[F01K 7/36](#) takes precedence})
- F01K 17/005
 - {by means of a heat pump (heat pumps systems [per se](#) [per se](#) [F25B](#))}
- U **F01K 23/00**

Plants characterised by more than one engine delivering power external to the plant, the engines being driven by different fluids
- U F01K 23/02
 - the engine cycles being thermally coupled
- U F01K 23/06
 - • combustion heat from one cycle heating the fluid in another cycle
- F01K 23/061
 - • • {with combustion in a fluidised bed (plants with a fluidised-bed combustor comprising only gas-turbines [F02C 3/205](#); fluidised-bed apparatus [per se](#) [per se](#) [B01J 8/18](#); fluidised-bed combustors [F23C 10/00](#); fluidised-bed steam-boilers [F22B 31/0007](#))}
- F01K 23/062
 - • • {the combustion bed being pressurised (pressurised fluid bed combustion [per se](#) [per se](#) [F23C 10/16](#))}
- F01K 23/064
 - • • {in combination with an industrial process, e.g. chemical, metallurgical (particularly adapted for a specific process [see see](#) the relevant classes)}

Project: N/A (F01L)

- F01L 1/00**

Valve-gear or valve arrangements, e.g. lift-valve gear (lift-valve and valve-seat assemblies [per se](#) [per se](#) [F01L 3/00](#); slide-valve gear [F01L 5/00](#); actuated non-mechanically [F01L 9/00](#); valve arrangements in working piston or piston rod [F01L 11/00](#); modifications of valve-gear to facilitate reversing, braking, starting, changing compression ratio, or other specific operations [F01L 13/00](#))
- U F01L 1/02
 - Valve drive (transmitting-gear between valve drive and valve [F01L 1/12](#))
- U F01L 1/04
 - • by means of cams, camshafts, cam discs, eccentrics or the like ([F01L 1/10](#) takes precedence)
- U F01L 1/047
 - • • Camshafts
- U F01L 2001/0471
 - • • • {Assembled camshafts, e.g. "gebaute Nockenwelle"}
- F01L 2001/0473
 - • • • • {Composite camshafts, e.g. with cams or cam sleeve being able to move relative to the inner camshaft or a cam adjusting rod}
- U **F01L 5/00**

Slide valve-gear or valve-arrangements (with pure rotary or oscillatory movement [F01L 7/00](#))
- F01L 5/02
 - with other than cylindrical, sleeve or part annularly shaped valves, e.g. with flat-type valves
- F01L 15/00**

Valve-gear or valve arrangements, e.g. with reciprocatory slide valves, other than provided for in groups [F01L 17/00](#) - [F01L 29/00](#) (valve drive or external valve-adjustment during operation, [see see](#) the relevant groups, e.g. [F01L 31/00](#); tripping-gear or tripping of valves [F01L 31/00](#))

Project: N/A (F01M)

- U F01M 1/00** **Pressure lubrication**
- F01M 1/02 • using lubricating pumps (pumps in general [F04](#); lubricating pumps ~~per se~~ [per se F16N](#))
 - F01M 1/06 • Lubricating systems characterised by the provision therein of crankshafts or connecting rods with lubricant passageways, e.g. bores (crankshafts, connecting-rods, ~~per se~~ [per se F16C](#))

Project: N/A (F01N)

- F01N 5/00** **Exhaust or silencing apparatus combined or associated with devices profiting from exhaust energy (using kinetic or wave energy of exhaust gases in exhaust systems for charging [F02B](#); predominant aspects of such devices, [see see](#) the relevant classes for the devices)**
- U 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](#) - [F01N 5/00](#), [F01N 9/00](#), [F01N 11/00](#)}**
- F01N 13/04 • having two or more silencers in parallel, e.g. having interconnections for multi-cylinder engines
- U F01N 2510/00** **Surface coverings**
- U F01N 2510/06 • for exhaust purification, e.g. catalytic reaction
 - U F01N 2510/068 • • characterised by the distribution of the catalytic coatings
 - F01N 2510/0682 • • • having a discontinuous, uneven or partially overlapping coating of catalytic material, e.g. higher amount of material upstream than downstream or ~~vice versa~~ [vice versa](#)

Project: N/A (F01P)

- F01P 1/00 - F01P 3/00** **Air cooling; Liquid cooling (propelling cooling-air or liquid coolants [F01P 5/00](#); controlling supply or circulation of coolants [F01P 7/00](#); cylinders, pistons, valves, fuel injectors, sparking-plugs, or other engine or machine parts, modified to facilitate cooling, [see see](#) the relevant classes for such parts)**
- U F01P 7/00** **Controlling of coolant flow**
- U F01P 7/02 • the coolant being cooling-air
 - U F01P 7/04 • • by varying pump speed, e.g. by changing pump-drive gear ratio
 - F01P 7/042 • • • {using fluid couplings (couplings or clutches of this type ~~per se~~ [per se F16D 35/00](#))}
- F01P 2025/00 - F01P 2070/00** **Air cooling; Liquid cooling (propelling cooling-air or liquid coolants [F01P 5/00](#); controlling supply or circulation of coolants [F01P 7/00](#); cylinders, pistons, valves, fuel injectors, sparking-plugs, or other engine or machine parts, modified to facilitate cooling, [see see](#) the relevant classes for such parts)**

Project: N/A (F02B)

- U 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 11/02 • convertible from fuel-air mixture compression to air compression or ~~vice-versa~~[vice versa](#)
- U F02B 19/00 Engines characterised by precombustion chambers (engines with incandescent chambers [F02B 9/08](#))**
- U F02B 19/10 • with fuel introduced partly into pre-combustion chamber, and partly into cylinder ([F02B 19/02](#) - [F02B 19/08](#) take precedence)
- U F02B 19/1019 • • {with only one pre-combustion chamber ([F02B 19/1004](#) take precedence)}
- U F02B 19/1023 • • • {pre-combustion chamber and cylinder being fed with fuel-air mixture(s)}
- U F02B 19/1028 • • • • {pre-combustion chamber and cylinder having both intake ports or valves, e.g. HONDS CVCC}
- F02B 19/1061 • • • • • {with residuel gas chamber, e.g. containing spark plug}
- U 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](#)
- U F02B 33/32 • Engines with pumps other than of reciprocating-piston type (with crankcase pumps [F02B 33/02](#))
- F02B 33/42 • • with driven apparatus for immediate conversion of combustion gas pressure into pressure of fresh charge, e.g. with cell-type pressure exchangers (pressure exchangers ~~per se~~[per se](#) [F04F 13/00](#))
- 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~~[see](#) the relevant classes, e.g. [C10](#))**
- U 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 45/02 • operating on powdered fuel, e.g. powdered coal (operating on fuel containing oxidant [F02B 45/06](#))
- U F02B 53/00 Internal-combustion aspects of rotary-piston or oscillating-piston engines (internal-combustion aspects of rotary pistons or outer members for co-operation therewith [F02B 55/00](#))**
- NOTE**
- in this group the following indexing codes are used:
[F02B 2730/01](#) - [F02B 2730/09](#)
- F02B 53/14 • Adaptations of engines for driving, or engine combinations with, other devices (aspects predominantly concerning such devices, ~~see~~[see](#) the relevant classes for the devices)

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, seesee 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, seesee the relevant classes for vehicles)
U F02B 71/00	Free-piston engines; Engines without rotary main shaft
F02B 71/04	<ul style="list-style-type: none"> • Adaptations of such engines for special use; Combinations of such engines with apparatus driven thereby (aspects predominantly concerning driven apparatus, seesee the relevant classes for such apparatus)
F02B 71/06	<ul style="list-style-type: none"> • • Free-piston combustion gas generators per seper se
U F02B 75/00	Other engines
F02B 75/10	<ul style="list-style-type: none"> • Engines with means for rendering exhaust gases innocuous (apparatus per seper se F01N)

Project: N/A (F02C)

F02C	GAS-TURBINE PLANTS; AIR INTAKES FOR JET-PROPULSION PLANTS; CONTROLLING FUEL SUPPLY IN AIR-BREATHING JET-PROPULSION PLANTS (construction of turbines F01D; jet-propulsion plants F02K; construction of compressors or fans F04; gas-turbine combustion chambers F23R; using gas turbines in compression refrigeration plants F25B 11/00; using gas-turbine plants in vehicles, see the relevant vehicle classes)
	NOTES
	<ol style="list-style-type: none"> 1. This subclass coverscovers: <ul style="list-style-type: none"> • combustion product or hot gas turbine plants; • internal combustion turbines or turbine plants; • turbine plants in which the working fluid is an unheated, pressurised gas. 2. This subclass does not coverdoes not cover: <ul style="list-style-type: none"> • steam turbine plants, which are covered by subclass F01K; • special vapour plants, which are covered by subclass F01K. • { combined cycle plants, which are covered by subclass F01K 23/00} 3. In this subclass, the following expression is used with the meaning indicated: <ul style="list-style-type: none"> • "gas-turbine plants" covers all the subject matter of Note (1) above and covers also features of jet-propulsion plants common to gas-turbine plants. 4. Attention is drawn to the Notes preceding class F01.
U F02C 3/00	Gas-turbine plants characterised by the use of combustion products as the working fluid (generated by intermittent combustion F02C 5/00)
F02C 3/02	<ul style="list-style-type: none"> • using exhaust-gas pressure in a pressure exchanger to compress combustion-air (pressure exchangers per seper se F04F 13/00)
F02C 3/14	<ul style="list-style-type: none"> • characterised by the arrangement of the combustion chamber in the plant (combustion chambers per seper se F23R; F02C 3/205 takes precedence)
U F02C 3/20	<ul style="list-style-type: none"> • using a special fuel, oxidant, or dilution fluid to generate the combustion products
F02C 3/205	<ul style="list-style-type: none"> • • {in a fluidised-bed combustor (in combination with a steam cycle seesee F01K 23/061; fluidised-bed apparatus in general B01J 8/18; fluidised-bed combustors in general F23C 10/00)}

- U F02C 5/00** **Gas-turbine plants characterised by the working fluid being generated by intermittent combustion**
- F02C 5/02 • characterised by the arrangement of the combustion chamber in the chamber in the plant (combustion chambers ~~per se~~ ~~per se~~ [F23R](#))
- F02C 6/00** **Plural gas-turbine plants; Combinations of gas-turbine plants with other apparatus (aspects predominantly concerning such apparatus, ~~see~~~~see~~ the relevant classes for the apparatus); Adaptations of gas- turbine plants for special use**
- F02C 6/18 • Using the waste heat of gas-turbine plants outside the plants themselves, e.g. gas-turbine power heat plants (using waste heat as source of energy for refrigeration plants [F25B 27/02](#); using the waste heat of a gasturbine for steam generation or in a steam cycle ~~see~~~~see~~ [F01K 23/10](#))
- U F02C 7/00** **Features, components parts, details or accessories, not provided for in, or of interest apart form groups [F02C 1/00](#) - [F02C 6/00](#); Air intakes for jet-propulsion plants (controlling [F02C 9/00](#))**
- U F02C 7/08 • Heating air supply before combustion, e.g. by exhaust gases
- U F02C 7/10 • • by means of regenerative heat-exchangers
- F02C 7/105 • • of the rotary type (rotary heat exchangers ~~per se~~ ~~per se~~ [F28D](#))
- F02C 7/12 • Cooling of plants (of component parts, ~~see~~~~see~~ the relevant subclasses, e.g. [F01D](#); cooling of engines in general [F01P](#))

Project: N/A (F02D)

- F02D** **CONTROLLING COMBUSTION ENGINES (cyclically operating valves for combustion engines [F01L](#); controlling combustion engine lubrication [F01M](#); cooling internal combustion engines [F01P](#); supplying combustion engines with combustible mixtures or constituents thereof, e.g. carburettors, injection pumps [F02M](#); starting of combustion engines [F02N](#); controlling of ignition [F02P](#); controlling gas-turbine plants, jet-propulsion plants, or combustion-product engine plants, ~~see~~~~see~~ the relevant subclasses for these plants)**
- NOTES**
1. Attention is drawn to the notes preceding class [F01](#).
2. In this subclass, the following words are used with the meanings indicated:
- "Fuel injection" means the introduction of a combustible substance into a space, e.g. cylinder, by means of a pressure source, e.g. a pump, continuously or cyclically acting behind the substance;
 - "Supercharging" means supplying to the working space, e.g. cylinder, combustion-air pressurised by means of a pressure source, e.g. a pump.
- 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~~~~see~~ that group; programme-control in general [G05B 19/00](#))**
- 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~~ ~~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 41/0002 • {Controlling intake air}

F02D 41/0007	<ul style="list-style-type: none"> • {for control of turbo-charged or super-charged engines (control of the pumps per se per se F02B 37/12)}
U F02D 41/0025	<ul style="list-style-type: none"> • {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	<ul style="list-style-type: none"> • {Controlling exhaust gas recirculation [EGR] (temperature control with cooler in recirculation circuit F02M 26/33)}
U F02D 41/005	<ul style="list-style-type: none"> • • {according to engine operating conditions}
F02D 41/0057	<ul style="list-style-type: none"> • • • {Specific combustion modes (combustion modes per se per se F02D 41/3017)}
U F02D 41/02	<ul style="list-style-type: none"> • Circuit arrangements for generating control signals
F02D 41/0205	<ul style="list-style-type: none"> • {using an auxiliary engine speed control (engine speed control per se per se F02D 31/00)}
U F02D 41/021	<ul style="list-style-type: none"> • {Introducing corrections for particular conditions exterior to the engine (conjoint control of vehicle sub-units for propelling the vehicle B60W 30/18)}
F02D 41/0235	<ul style="list-style-type: none"> • • {in relation with the state of the exhaust gas treating apparatus (control of exhaust gas treating apparatus per se per se F01N)}
U F02D 41/04	<ul style="list-style-type: none"> • • Introducing corrections for particular operating conditions (F02D 41/14 takes precedence)
U F02D 41/06	<ul style="list-style-type: none"> • • • for engine starting or warming up {(F02D 41/0255 takes precedence)}
U F02D 41/062	<ul style="list-style-type: none"> • • • {for starting (F02D 41/061 takes precedence)}
F02D 41/067	<ul style="list-style-type: none"> • • • • {with control of the choke (non electronic control of choke see see F02M 1/10)}
F02D 43/00	Conjoint electrical control of two or more functions, e.g. ignition, fuel-air mixture, recirculation, supercharging, exhaust-gas treatment (electrical control of exhaust gas treating apparatus per se per se F01N 9/00)

Project: N/A (F02F)

U F02F 1/00	Cylinders; Cylinder heads (in general F16J)
U F02F 1/18	<ul style="list-style-type: none"> • Other cylinders
F02F 1/186	<ul style="list-style-type: none"> • {for use in engines with two or more pistons reciprocating within same cylinder (such engines per se per se F02B 75/28)}
F02F 5/00	Piston rings, e.g. associated with piston crown {(not used see see F16J 9/00)}
U F02F 7/00	Casings, e.g. crankcases (engine casings in general F16M){or frames}
U F02F 7/0065	<ul style="list-style-type: none"> • {Shape of casings for other machine parts and purposes, e.g. utilisation purposes, safety}
F02F 7/008	<ul style="list-style-type: none"> • {Sound insulation (see see also F02B 77/13)}
F02F 11/00	Arrangements of sealings in combustion engines (piston rings F02F 5/00 {not used, see see F16J 9/00 } ; sealings per se per se F16J)

Project: N/A (F02K)

U F02K 1/00	Plants characterised by the form or arrangement of the jet pipe or nozzle; Jet pipes or nozzles peculiar thereto (rocket nozzles F02K 9/97)
U F02K 1/38	<ul style="list-style-type: none"> • Introducing air inside the jet (F02K 1/28 takes precedence)
F02K 1/386	<ul style="list-style-type: none"> • • {mixing devices in the jet pipe, e.g. for mixing primary and secondary flow}

- U 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](#)})
- U F02K 9/42 • using liquid or gaseous propellants ([F02K 9/72](#) takes precedence)
- U F02K 9/44 • • Feeding propellants
- F02K 9/46 • • • using pumps (pumps ~~per se~~ ~~per se~~ [F04](#) {control of propellant feed pumps [F02K 9/563](#)})
- F02K 9/54 • • • Leakage detectors; Purging systems; Filtration systems (filters ~~per se~~ ~~per~~ [se B01D](#))
- U F02K 9/56 • • • Control
- F02K 9/566 • • • {elements and safety devices, e.g. pressure relief valves}

Project: N/A (F02M)

- U F02M 17/00** Carburettors having pertinent characteristics not provided for in, or of interest apart from, the apparatus of preceding main groups (apparatus for treating combustion-air, fuel, or fuel-air mixture by catalysts, electric means, magnetism, rays, sound waves, or the like [F02M 27/00](#); combinations of carburettors and low-pressure fuel-injection apparatus [F02M 71/00](#))
- F02M 17/34 • Other carburettors combined or associated with other apparatus, e.g. air filters (predominant aspects of the apparatus, ~~see~~~~see~~ the relevant classes for such apparatus)
- F02M 17/44 • Carburettors characterised by draught direction and not otherwise provided for {, e.g. for model aeroplanes}
- F02M 17/52 • Use of cold, produced by carburettors, for other purposes (apparatus using the cold, ~~see~~~~see~~ the relevant classes for such apparatus)
- U 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](#) - [F02M 17/00](#) (measuring or testing apparatus in general [G01](#))
- U F02M 19/08 • Venturis
- F02M 19/10 • • in multiple arrangement {, e.g. arranged in series, fixed, arranged radially offset with respect to each other}
- F02M 19/12 • External control gear, e.g. having dashpots (dampening means in later stages of multistage carburettors [F02M 11/04](#); carburettor control gear in which the carburettor aspects do not predominate, ~~see~~~~see~~ the relevant classes)
- U F02M 31/00** Apparatus for thermally treating combustion-air, fuel, or fuel-air mixture ([F02M 21/06](#), [F02M 21/10](#) take precedence; such apparatus being part of a carburettor or fuel-injection apparatus [F02M 15/00](#), [F02M 53/00](#); adding hot secondary air to fuel-air mixture [F02M 23/14](#))
- F02M 31/005 • {using a heat-pipe (heat-pipe ~~per se~~ ~~per se~~ [F28D](#))}
- U F02M 31/02 • for heating {([F02M 31/005](#) takes precedence)}
- U F02M 31/04 • • combustion-air or fuel-air mixture (electrically [F02M 31/12](#); by using heat from working cylinders or cylinder heads [F02M 31/14](#); heating of combustion-air as an engine starting aid [F02N 7/04](#))
- U F02M 31/06 • • • by hot gases, e.g. by mixing cold and hot air
- U F02M 31/08 • • • the gases being exhaust gases {(adding exhaust gases to the air intake passage [F02M 26/00](#))}

- F02M 31/0805 • • • • {Pneumatic control of the amount of exhaust gas or combustion air directed to the heat exchange surfaces, e.g. as a function of the pressure in the air intake passage}
- 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 35/10 • Air intakes; Induction systems (using kinetic or wave energy of charge in induction systems for improving quantity of charge {[F02B 27/00](#)})
- U F02M 35/10209 • • {Fluid connections to the air intake system; their arrangement of pipes, valves or the like}
- F02M 35/10229 • • • {the intake system acting as a vacuum or overpressure source for auxiliary devices, e.g. [brake systems](#); ~~e.g. brake systems~~; Vacuum chambers (air storage chamber [F02B 21/00](#))}
- F02M 35/16 • characterised by use in vehicles (predominant vehicle aspects, ~~see~~[see](#) the relevant classes for the vehicles)
- F02M 35/164 • • (~~Heavy-duty vehicles~~; [Heavy duty vehicles](#), e.g. trucks, trains, agricultural or construction machines)
- F02M 37/00 Apparatus or systems for feeding liquid fuel from storage containers to carburettors or fuel-injection apparatus ([F02M 69/00](#) takes precedence {; fuel injection apparatus characterised by their conduits and venting means [F02M 55/00](#); fuel injection apparatus having a common rail [F02M 63/0225](#); control of fuel feeding [F02D 33/003](#)}; feeding liquid fuel to combustion apparatus, in general [F23K 5/00](#); fuel supply to apparatus for generating combustion products of high pressure or high velocity [F23R 3/28](#)); Arrangements for purifying liquid fuel specially adapted for, or arranged on, internal-combustion engines (separating apparatus, filters ~~per se~~ [per se](#) [B01D](#); centrifuges [B04B](#))**
- U F02M 37/02 • Feeding by means of suction apparatus, e.g. by air flow through carburettors (by driven pumps [F02M 37/04](#))
- F02M 37/025 • • {Feeding by means of a liquid fuel-driven jet pump (jet pumps ~~per se~~ [per se](#) [F04F](#))}
- U F02M 41/00 Fuel-injection apparatus with two or more injectors fed from a common pressure-source sequentially by means of a distributor**
- NOTE
- in this group the following indexing codes are used: [F02M 2700/1329](#)
- U F02M 41/08 • the distributor and pumping elements being combined
- U F02M 41/14 • • rotary distributor supporting pump pistons
- U F02M 2041/1438 • • • {Arrangements or details pertaining to the devices classified in [F02M 41/14](#) and subgroups}
- F02M 2041/1455 • • • • {Shuttles ~~per se~~ [per se](#), or shuttles associated with throttle valve for metering fuel admitted to the pumping chamber}
- U F02M 51/00 Fuel-injection apparatus characterised by being operated electrically**
- F02M 51/02 • specially for low-pressure fuel-injection ({[F02M 51/005](#) takes precedence}; pumps ~~per se~~ [per se](#) [F02M 51/04](#))

- U F02M 63/00** Other fuel-injection apparatus having pertinent characteristics not provided for in groups [F02M 39/00](#) - [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](#) - [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 63/0012
- {Valves (for fuel metering ~~see see~~ the relevant groups, e.g. [F02M 59/34](#); inlet or outlet check valves for fuel injection pumps [F02M 59/46](#); for fuel injectors ~~see see~~ the relevant groups, e.g. [F02M 61/00](#))}
- U F02M 63/02**
- Fuel-injection apparatus having several injectors fed by a common pumping element, or having several pumping elements feeding a common injector; Fuel-injection apparatus having provision for cutting-out pumps, pumping elements, or injectors; Fuel-injection apparatus having provisions for variably interconnecting pumping elements and injectors alternatively
- U F02M 63/0225**
- • {Fuel-injection apparatus having a common rail feeding several injectors ([F02M 63/0003](#) takes precedence); Means for varying pressure in common rails; Pumps feeding common rails}
- U F02M 63/0275**
- • • {Arrangement of common rails}
- U F02M 63/0285**
- • • • {having more than one common rail}
- F02M 63/029
- • • • • {~~per-cylinder bank~~; [per cylinder bank](#), e.g. storing different fuels or fuels at different pressure levels per cylinder bank}

- U F02M 71/00** Combinations of carburettors and low-pressure fuel-injection apparatus (means for enriching charge on sudden air throttle opening of carburettors [F02M 7/06](#))

NOTE

- in this group the following indexing codes are used: [F02M 2700/1347](#)

- F02M 71/04
- with carburettor being used at starting or idling only and injection apparatus being used during normal operation of engine {or ~~vice-versa~~ [vice versa](#)}
- U F02M 2200/00** Details of fuel-injection apparatus, not otherwise provided for
- U F02M 2200/85**
- Mounting of fuel injection apparatus
- F02M 2200/856
- • characterised by mounting injector to fuel or common rail, or ~~vice-versa~~ [vice versa](#)

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~~; [electrical components in general see Section H](#); {ignition coils [H01F 38/12](#)}; sparking plugs [H01T 13/00](#))

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](#))

Project: N/A (F03B)**U F03B 3/00**

Machines or engines of reaction type; Parts or details peculiar thereto

F03B 3/02

- with radial flow at high-pressure side and axial flow at low-pressure side of rotors, e.g. Francis turbines {(rotors ~~per se~~ ~~per se~~ [F03B 3/125](#))}

F03B 3/04

- with substantially axial flow throughout rotors, e.g. propeller turbines {(rotors ~~per se~~ ~~per se~~ [F03B 3/126](#))}

F03B 3/06

- • with adjustable blades, e.g. Kaplan turbines {(rotors ~~per se~~ ~~per se~~ [F03B 3/14](#))}

U F03B 3/12

- Blades; Blade-carrying rotors

U F03B 3/14

- • Rotors having adjustable blades {(blade form or construction [F03B 3/123](#))}

F03B 3/145

- • • {Mechanisms for adjusting the blades (if the regulation aspect is preponderant, ~~see~~ ~~see~~ [F03B 15/00](#) and subgroups)}

F03B 13/00

Adaptations of machines or engines for special use; Combinations of machines or engines with driving or driven apparatus (if the apparatus aspects are predominant, ~~see~~ ~~see~~ the relevant subclasses for such apparatus, e.g. [H02K 7/18](#)); Power stations or aggregates (incorporating only machines or engines of positive-displacement type [F03C](#); hydraulic engineering aspects [E02B](#); {combinations with wind energy converters [F03D 9/008](#))}

U F03B 13/12

- characterised by using wave or tide energy

U F03B 13/14

- • using wave energy

U F03B 13/16

- • • using the relative movement between a wave-operated member, {i.e. a "wom"} and another member, {i.e. a reaction member or "rem"}

F03B 13/20

- • • • wherein both members {, i.e. wom and rem} are movable relative to the sea bed or shore

U F03B 17/00

Other machines or engines

F03B 17/005

- {Installations wherein the liquid circulates in a closed loop ([F03B 13/06](#) takes precedence); Alleged ~~perpetua mobilia~~ ~~perpetua mobilia~~ of this or similar kind (~~perpetua mobilia~~ ~~perpetua mobilia~~ using hydrostatic thrust or buoyancy [F03B 17/04](#))}

U F03B 17/02

- using hydrostatic thrust

F03B 17/04

- • Alleged ~~perpetua mobilia~~ ~~perpetua mobilia~~ {(with closed loop circulation or similar [F03B 17/005](#))}

Project: N/A (F03C)**U F03C 1/00**

Reciprocating-piston liquid engines

U F03C 1/02

- with multiple-cylinders, characterised by the number or arrangement of cylinders (with movable cylinders [F03C 1/22](#); of flexible-wall type [F03C 7/00](#))

U F03C 1/04

- • with cylinders in star or fan arrangement {([F03C 1/22](#) takes precedence)}

U F03C 1/0403

- • • {Details, component parts specially adapted of such engines}

U F03C 1/0409

- • • • {Cams}

F03C 1/0412

- • • • • {consisting of several cylindrical elements, e.g. rollers}

F03C 1/26

- adapted for special use or combined with apparatus driven thereby (aspects predominantly concerning the driven apparatus [see](#)[see](#) the relevant classes for such apparatus)

Project: N/A (F03D)**U F03D 7/00****Controlling wind motors**

U F03D 7/02

- the wind motors having rotation axis substantially in wind direction

F03D 7/0272

- • {by measures acting on the electrical generator (controlling electric generator ~~per se~~ [per se](#) [H02P](#))}

Project: N/A (F03G)**U F03G 6/00****Devices for producing mechanical power from solar energy (solar boilers [F24](#))**

F03G 6/06

- with means for concentrating solar rays (means ~~per se~~ [per se](#) [F24J 2/06](#))

U F03G 7/00**Mechanical-power-producing mechanisms, not otherwise provided for or using energy sources not otherwise provided for {(micro-structural devices or systems, e.g. micro-mechanical devices [B81B](#))}**

F03G 7/10

- Alleged ~~perpetua mobilia~~ [perpetua mobilia](#) (of buoyancy principle [F03B 17/04](#))

Project: N/A (F03H)**F03H 1/00****Using plasma to produce a reactive propulsive thrust (generating plasma [H05H 1/00](#)){(ion sources ~~per se~~ [per se](#) [H01J 27/02](#), ion sources for plasma processing or ion beams [H01J 37/08](#))}**

F03H 1/0093

- {Electro-thermal plasma thrusters, i.e. thrusters heating the particles in a plasma (resistojets ~~per se~~ [per se](#) [B64G 1/406](#))}

Project: N/A (F04B)**F04B 3/00****Machines or pumps with pistons coacting within one cylinder, e.g. multi-stage****U F04B 27/00****Multi-cylinder pumps characterised by number or arrangement of cylinders ([F04B 25/00](#) takes precedence; control of reciprocating machines or pumps in general [F04B 49/00](#))**

U F04B 27/08

- having cylinders coaxial with, or parallel or inclined to, main shaft axis

F04B 27/0804

- • {having rotary cylinder block ([see](#)[see](#) [F01B 3/0032](#), [F03C 1/0636](#), [F03C 1/20](#))}

F04B 27/0817

- • • {arrangements for pressing the cylinder barrel against the valve plate, e.g. by fluid pressure}

F04B 31/00**Free-piston pumps; Systems incorporating such pumps (muscle-driven pumps in which the stroke is not defined by gearing [F04B 33/00](#); free-piston combustion engines, free-piston gas generators [F02B 71/00](#); systems predominated by prime mover aspects, [see](#)[see](#) the relevant classes for the prime mover)****F04B 35/00****Piston pumps characterised by the driving means to their working members, or by combination with, or adaptation to, specific driving engines or motors, not otherwise provided for (predominant aspects of the engines or motors, [see](#)[see](#) the relevant classes)****U F04B 37/00****Pumps having pertinent characteristics not provided for in, or of interest apart from, groups [F04B 25/00](#) - [F04B 35/00](#)**

- F04B 37/02 • for evacuating by absorption or adsorption (absorption or adsorption in general [B01J](#); {for gas-filled discharge tubes [see](#) [H01J 17/24](#)})
- F04B 49/00** **Control {e.g. of pump delivery, or pump pressure} of, or safety measures for, machines, pumps, or pumping installations, not otherwise provided for, or of interest apart from, groups [F04B 1/00](#) - [F04B 47/00](#)**

NOTE

The classification symbols in group [F04B 49/00](#) and subgroups can be followed by additional symbols preceded by the sign "+". The symbols are applied in subgroups [F04B 49/06](#), [F04B 49/08](#), [F04B 49/16](#) and [F04B 49/225](#). The symbols have the meanings as listed below:

- +**C** specially adapted for pumps for elastic fluids,
e.g. compressors
- +**P** specially adapted for pumps for liquids

Project: N/A (F04C)

- U F04C 15/00** **Component parts, details or accessories of machines, pumps or pumping installations, not provided for in groups [F04C 2/00](#) - [F04C 14/00](#) (of pumps specially adapted for elastic fluids [F04C 18/00](#) - [F04C 29/00](#))**
- F04C 15/0057 • {Driving elements, brakes, couplings, transmission specially adapted for machines or pumps (brakes, couplings, transmissions [per se](#) [per se](#) [F16](#), [B60](#))}
- U F04C 23/00** **Combinations of two or more pumps, each being of rotary-piston or oscillating-piston type, specially adapted for elastic fluids; Pumping installations specially adapted for elastic fluids; Multi-stage pumps specially adapted for elastic fluids ([F04C 25/00](#) takes precedence)**
- NOTE**
- Multi-stage pumps or compressors with stages connected in series or in parallel are not considered as having complementary function
- F04C 23/02 • Pumps characterised by combination with or adaptation to specific driving engines or motors (predominant aspects of the engines or motors, [see](#) [see](#) the relevant classes)
- U F04C 29/00** **Component parts, details or accessories of pumps or pumping installations, not provided for in groups [F04C 18/00](#) - [F04C 28/00](#)**
- F04C 29/0042 • {Driving elements, brakes, couplings, transmissions specially adapted for pumps (brakes, couplings, transmissions [per se](#) [per se](#) [F16](#), [B60](#))}
- U F04C 2210/00** **Fluid**
- U F04C 2210/10 • working
- F04C 2210/1022 • • [C3HmFn](#) [C3HmFn](#)

Project: N/A (F04D)**F04D NON-POSITIVE DISPLACEMENT PUMPS****NOTES**

1. This subclass [covers](#) [covers](#) non-positive-displacement pumps for liquids, for elastic fluids, or for liquids and elastic fluids whether rotary or not having pure rotation.
2. This subclass [does not cover](#) [does not cover](#) combinations of non-positive-displacement pumps with other pumps, which are covered by subclass [F04B](#),

except that the use of such other pumps for priming or boosting non-positive-displacement is covered by this subclass.

3. Attention is drawn to the Notes preceding class [F01](#), especially as regards the definition of "pump".

- U F04D 13/00** **Pumping installations or systems (controlling [F04D 15/00](#))**

F04D 13/02 • Units comprising pumps and their driving means (predominant aspects of the driving means, ~~see~~[see](#) the relevant classes for such means)
- F04D 17/00** **Radial-flow pumps, e.g. centrifugal pumps; Helico-centrifugal pumps ([F04D 21/00](#) takes precedence)**

 - U F04D 17/08 • Centrifugal pumps
 - U F04D 17/16 • • for displacing without appreciable compression
 - F04D 17/167 • • • {Operating by means of fibrous or porous elements (suction filters [F04D 29/701](#)), e.g. with sponge rotors}; ~~e.g. with sponge rotors~~
 - F04D 17/18 • • characterised by use of centrifugal force of liquids entrained in pumps {(, e.g. by means of an auxiliary liquid; fluid ring compressors [F04C 19/00](#))}
- U F04D 25/00** **Pumping installations or systems (controlling [F04D 27/00](#))**

F04D 25/02 • Units comprising pumps and their driving means (predominant aspect of the driving means, ~~see~~[see](#) the relevant classes for such means)
- U F04D 29/00** **Details, component parts, or accessories (machine elements in general [F16](#))**

 - U F04D 29/26 • Rotors specially for elastic fluids
 - U F04D 29/28 • • for centrifugal or helico-centrifugal pumps {for radial-flow or helico-centrifugal pumps}
 - F04D 29/288 • • • {Part of the wheel having an ejecting effect, e.g. being bladeless diffuser}
 - U F04D 29/40 • Casings; Connections of working fluid {(bleed or by-pass valves [F04D 15/0011](#), [F04D 27/0215](#))}
 - U F04D 29/42 • • for radial or helico-centrifugal pumps
 - U F04D 29/426 • • • {especially adapted for liquid pumps}
 - F04D 29/4286 • • • • {inside lining, e.g. rubber}

Project: N/A (F15B)

- 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~~[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](#))**
- 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 11/028 • • for controlling the actuating force ([F15B 11/024](#) takes precedence)
 - F15B 11/032 • • • by means of fluid-pressure converters (fluid-pressure converters ~~per se~~[per se](#) [F15B 3/00](#))
 - F15B 11/036 • • • by means of servomotors having a plurality of working chambers (servomotors ~~per se~~[per se](#) [F15B 15/00](#))
- U F15B 15/00** **Fluid-actuated devices for displacing a member from one position to another (motors for continuous movement [F01](#) - [F03](#)); Gearing associated therewith**

F15B 15/20

- Other details {, e.g. assembly with regulating devices}

Project: N/A (F16B)**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)

U F16B 7/18

- using screw-thread elements {(F16B 7/025 takes precedence; for turnbuckles F16B 7/06)}

F16B 7/187

- {with sliding nuts or other additional connecting members for joining profiles provided with grooves or channels (channel nuts ~~per se~~ ~~per se~~ F16B 37/045)}

F16B 12/00

Jointing of furniture or the like, e.g. hidden from exterior (F16B 2/00 - F16B 11/00 take precedence; fastening means ~~per se~~ ~~per se~~ F16B 13/00 - F16B 47/00; wood-working B27)

F16B 12/10

- using pegs, bolts, tenons, clamps, or the like (glued F16B 12/04; fastening means ~~per se~~ ~~per se~~ F16B 15/00 - F16B 47/00)

U F16B 13/00

Dowels or other devices fastened in walls or the like by inserting them in holes made therein for that purpose (nails F16B 15/00; self-locking pins or bolts in general, stud-and-socket releasable fastenings F16B 21/00; dowels or bolts for railroad sleepers E01B 9/00; ans means for anchoring structural elements or bulkheads specially adapted to foundation engineering E02D 5/74; bolts or dowels used while laying bricks or casting concrete sleepers E04B 1/38; setting anchoring bolts in shafts, tunnels or galleries E21D 20/00; anchoring bolts for shafts, tunnels or galleries E21D 21/00)

F16B 13/14

- Non-metallic plugs or sleeves {(not used, ~~see see~~ F16B 13/002- F16B 13/12)}; Use of liquid, loose solid or kneadable material therefor

**F16B 23/00 -
F16B 47/00**

Fastening means using screw-thread (wall-dowels F16B 13/00; manufacture of threaded fastening means B21H, B21K, B23G; screws or bolts for railway sleepers E01B 9/10; screw mechanisms F16H)

U F16B 39/00

Locking of screws, bolts or nuts ({F16B 35/005 takes precedence); locking of bottle closures B65D; locking of rail-fastening bolts for permanent ways E01B 9/12; locking of fastening means for railway fishplates E01B 11/38; locking devices for valves or cocks F16K)

NOTE

In this group, heads of screws or bolts are put on a par with nuts as far as pertains to locking; an object into which a screw is threaded is put on a par with a nut.

U F16B 39/02

- in which the locking takes place after screwing down (F16B 39/01 takes precedence; split-pins, circlips, or the like for preventing relative axial movement only F16B 21/10; fastening nuts by welding or riveting F16B 37/06)

U F16B 39/12

- • by means of locknuts

F16B 39/14

- • made of thin sheet material or formed as spring-washers (locknuts ~~per se~~ ~~per se~~ made of thin sheet metal F16B 37/02)

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 see~~ the relevant classes); Bearings or mountings therefor

- U 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 29/04 · Ball or roller bearings
- U F16C 29/06 · · in which the rolling bodies circulate partly without carrying load
- U F16C 29/0633 · · · {with a bearing body defining a U-shaped carriage, i.e. surrounding a guide rail or track on three sides}
- F16C 29/0669 · · · · {whereby the main body of the U-shaped carriage is an assembly of at least three major parts, e.g. an assembly of a top plate with two separate legs attached thereto in the form of bearing shoes (bearing shoes **per se** **per se** **F16C 29/0614**)}
- U F16C 32/00** Bearings not otherwise provided for
- U F16C 32/06 · with moving member supported by a fluid cushion formed, at least to a large extent, otherwise than by movement of the shaft, e.g. hydrostatic air-cushion bearings
- U F16C 32/0629 · · {supported by a liquid cushion, e.g. oil cushion}
- U F16C 32/064 · · · {the liquid being supplied under pressure}
- F16C 32/0651 · · · · {Details of the bearing area **per se** **per se**}
- F16C 33/00** Parts of bearings; Special methods for making bearings or parts thereof (metal-working or like operations, **see see** the relevant classes)
- U F16C 33/72 · Sealings
- U F16C 33/76 · · of ball or roller bearings
- U F16C 33/78 · · · with a diaphragm, disc, or ring, with or without resilient members {(F16C 33/761 takes precedence)}
- U F16C 33/784 · · · · {mounted to a groove in the inner surface of the outer race and extending toward the inner race}
- U F16C 33/7859 · · · · · {with a further sealing element}
- F16C 33/7863 · · · · · {mounted to the inner race, e.g. a flinger to use centrifugal effect}

Project: N/A (F16D)

- U 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**)
- F16D 3/02 · adapted to specific functions (universal joints, **see see** the appropriate groups)
- 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)
- U F16D 3/74 · · · the intermediate member or members being made of rubber or other {rubber-like} flexible material
- F16D 2003/745 · · · · {Tyre type coupling, i.e. bellows with only one fold}
- U F16D 3/84 · Shrouds, e.g. casings, covers; Sealing means specially adapted therefor
- U F16D 3/843 · · {enclosed covers}
- U F16D 3/845 · · · {allowing relative movement of joint parts due to the flexing of the cover}
- F16D 2003/846 · · · · {Venting arrangements for flexible seals, e.g. ventilation holes}

- U 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](#) - [F16D 35/00](#))**
- F16D 7/02
- of the friction type (couplings in which overload initiates a decrease of coupling pressure or a disconnection, ~~see~~~~see~~ the relevant groups for clutches {, e.g. for friction overload clutches [F16D 43/21](#)})
- U F16D 23/00** **Details of mechanically-actuated clutches not specific for one distinct type**
- U F16D 23/02**
- Arrangements for synchronisation, also for power-operated clutches (shape or mounting of interengaging parts of clutch members to facilitate engagement [F16D 11/08](#))
- F16D 23/04
- • with an additional friction clutch (synchro rings ~~per se~~ [per se F16D 23/025](#))
- F16D 35/00** **Fluid clutches in which the clutching is predominantly obtained by fluid adhesion ([F16D 37/00](#) takes precedence {; arrangements of viscous clutches in four-wheel drives - [B60K 17/3465](#) and [B60K 17/351](#)})**
- U 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](#) - [F16D 48/066](#) are in the process of being reorganised to [F16D 48/00](#), [F16D 48/08](#), [F16D 48/10](#)
- U F16D 48/02**
- Control by fluid pressure
- F16D 2048/0227
- • {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~~ [per se F16D 25/088](#), [F16D 29/005](#))}
- F16D 2048/023
- • • {by pedal actuation (for pedals ~~per se~~ [per se G01G 1/30](#))}
- U F16D 2048/0233**
- • • {by rotary pump actuation}
- F16D 2048/0251
- • • • {Electric motor driving a piston, e.g. for actuating the master cylinder (for details of the actuator ~~per se~~ [per se F16D 29/00](#))}
- U F16D 69/00** **Friction linings; Attachment thereof; Selection of coacting friction substances or surfaces (clutching elements [F16D 13/60](#); braking members [F16D 65/02](#))**
- U F16D 69/04**
- Attachment of linings
- U F16D 2069/0425**
- • {Attachment methods or devices}
- F16D 2069/0483
- • • {Lining or lining carrier material shaped ~~in situ~~ [in situ](#)}
- U F16D 2125/00** **Components of actuators**
- U F16D 2125/18**
- Mechanical mechanisms
- F16D 2125/20
- • converting rotation to linear movement or ~~vice-versa~~ [vice versa](#)
- U F16D 2125/58**
- • transmitting linear movement
- F16D 2125/587
- • • {Articulation, e.g. ball-socket}
- U F16D 2500/00** **External control of clutches by electric or electronic means**
- U F16D 2500/50**
- Problem to be solved by the control system
- U F16D 2500/502**
- • Relating the clutch
- F16D 2500/50236
- • • Adaptations of the clutch characteristics, e.g. curve clutch capacity torque - clutch actuator displacement
- U F16D 2500/506**
- • Relating the transmission

F16D 2500/50638

• • • Shaft speed synchronising, e.g. using engine, clutch outside transmission

Project: N/A (F16F)**F16F****SPRINGS; SHOCK-ABSORBERS; MEANS FOR DAMPING VIBRATION****NOTES**

1. This subclass ~~covers~~ 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~~ 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

B61F Rail vehicle suspensions

B61G 11/00 Buffers for railway or tramway
vehicles

B62D 21/15 Vehicle chassis frames having impact
absorbing means

B62J 1/02 Resiliently mounted saddles on cycles

B62K 21/08 Steering dampers

B63H 21/30 Anti-vibration mounting of marine
propulsion plant in ships

B64C 25/58 Arrangement of shock-absorbers or springs
in aeroplane alighting gear

B65D 81/02 Containers, packing elements or packages
with shock-absorbing means

D06F 37/20 Resilient mountings in washing
machines

D06F 49/06 Resilient mountings in domestic spin-
dryers

{ E04B 1/98 Protection of buildings against vibrations
or shocks }

E05D 7/086 Braking devices structurally combined with
hinges

F03G 1/00 Spring motors

{ F16L 3/20 Pipe or cable supports }

F21V 15/04	Resilient mounting of lighting devices
F41A 25/00	Gun cradles to permit recoil
F41B 5/1426	Vibration dampers for archery bows
G01D 11/00	Indicating or recording in connection with measuring
G01G 21/10	Weighing apparatus, e.g. arrangement of shock-absorbers in weighing apparatus
G04B	Clocks, watches
G12B 3/08	Damping of movements in instruments
G21C 7/20	Disposition of shock-absorbing devices for displaceable control elements in nuclear reactors. nuclear reactors.
H02G 7/14	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](#) - [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:

F16F 3/07	covered by	F16F 13/00
F16F 9/24	covered by	F16F 9/22
F16F 9/40	covered by	F16F 9/00 - F16F 9/50
F16F 9/508	covered by	F16F 9/512
F16F 11/00	covered by	F16F 7/00 , F16F 9/00 ,
F16F 15/00		
F16F 13/12	covered by	F16F 13/08

U [F16F 1/00](#)

U [F16F 1/36](#)

[F16F 1/38](#)

Springs (working with fluid [F16F 5/00](#), [F16F 9/00](#))

- made of rubber or other material having high internal friction, {e.g. thermoplastic elastomers (spring units consisting of several springs [F16F 3/08](#))}
- 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~~ ~~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](#))}

- U 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 9/06** • using both gas and liquid {([F16F 9/486](#) take precedence; self-pumping fluid springs [B60G 17/044](#))}
- F16F 9/08** • • {where gas is} in a chamber with a flexible wall {(pressurised fluid system accumulators ~~per se~~ [per se](#) [F15B 1/04](#))}
- U F16F 9/32** • Details
- F16F 9/3278** • • {for lubrication (lubricating ~~per se~~ [per se](#) [F16N](#))}
- F16F 9/3285** • • {for filtering (filters ~~per se~~ [per se](#) [B01D](#))}
- U 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
- U 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 9/3484** • • • {characterised by features of the annular discs ~~per se~~ [per se](#), singularly or in combination}
- 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~~ [per se](#) [C10M 171/001](#); magnetorheological fluids ~~per se~~ [per se](#) [H01F 1/447](#))}
- F16F 9/54** • • Arrangements for attachment {(grommet-type rubber mounting springs ~~per se~~ [per se](#) [F16F 1/3732](#); construction of cylinder ends [F16F 9/3242](#); attachments to vehicles [B60G 13/001](#), [B60G 15/00](#))}
- U 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)
- 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)
- F16F 13/22** • • • characterised by comprising also a dynamic damper (dampers using inertia effect ~~per se~~ [per se](#) [F16F 7/10](#))
- U 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 15/002** • {characterised by the control method or circuitry (control of mechanical oscillations ~~per se~~ [per se](#) [G05D 19/00](#))}

- 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~~ [per se](#) [H01L 41/00](#))}
- U 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~~ [per se](#) [F16F 9/12](#); suppression of vibrations in rotating systems containing a fluid [F16F 15/16](#))}
- U 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 15/223
 - • {Use of systems involving rotary unbalanced masses where the phase-angle of masses mounted on counter-rotating shafts can be varied (generation of mechanical vibrations ~~per se~~ [per se](#) with such systems [B06B 1/166](#))}

Project: N/A (F16G)

- U F16G 13/00 **Chains (making thereof [B21L](#))**
- U F16G 13/18
 - Chains having special overall characteristics
- F16G 13/22
 - • extensible {(not used, [see see](#) [F16G 13/18](#))}
- F16G 13/24
 - • • resilient {(not used, [see see](#) [F16G 13/18](#))}

Project: MP0240 (F16H)

- M 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](#) - [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 , helicopters	B64C 27/58 Transmissions for
B64D 35/00	Transmissions for aircraft }
F01 - 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.

Project: N/A (F16H)

U	F16H 1/00	Toothed gearings for conveying rotary motion (specific for conveying rotary motion with variable gear ratio or for reversing rotary motion F16H 3/00)
U	F16H 1/28 F16H 1/48	<ul style="list-style-type: none"> • with gears having orbital motion • • Special means compensating for misalignment of axes {, e.g. for equalising distribution of load on the face width of the teeth (in combination with distribution of load on the planet-wheels F16H 1/2809)}
U	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 7/08	• 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 conveyors B65G 23/44)}
U	F16H 7/10	• • by adjusting the axis of a pulley {(F16H 7/0827 takes precedence)}
U	F16H 7/12 F16H 7/1209	<ul style="list-style-type: none"> • • • of an idle pulley • • • • {with vibration damping means (vibration damping per se F16F)}

- U 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 19/02** • for interconverting rotary {or oscillating} motion and reciprocating motion
- U F16H 19/04** • • comprising a rack
- F16H 19/043** • • • {for converting reciprocating movement in a continuous rotary movement or ~~vice versa~~[vice versa](#), e.g. by opposite racks engaging intermittently for a part of the stroke}
- U F16H 19/06** • • comprising {flexible members, e.g. an} endless flexible member
- WARNING**
Groups [F16H 19/0604](#) - [F16H 19/0672](#) are not complete pending reclassification; see also this group
- F16H 19/0622** • • • {for converting reciprocating movement into oscillating movement and ~~vice versa~~[vice versa](#), the reciprocating movement is perpendicular to the axis of oscillation}
- 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 see~~ the appropriate groups)**
- U F16H 35/00** **Gearings or mechanisms with other special functional features**
- F16H 35/02** • for conveying rotary motion with cyclically varying velocity ratio (speed-changing mechanisms operating cyclically, ~~see see~~ the appropriate groups)
- 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 see~~ the appropriate group for the main gearing)
- U F16H 41/00** **Rotary fluid gearing of the hydrokinetic type (control of exclusively fluid gearing [F16H 61/38](#))**
- F16H 41/32** • Selection of working fluids (chemical aspects, ~~see see~~ the relevant classes)
- U F16H 48/00** **Differential gearings (cooling or lubricating of differential gearing [F16H 57/04](#))**
- NOTE**
When classifying in this main group, in the absence of an indication to the contrary, classification is made in all appropriate places.
- U F16H 48/20** • Arrangements for suppressing or influencing the differential action, e.g. locking devices
- F16H 48/27** • • using internally-actuatable fluid pressure, e.g. internal pump types
- U 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 2057/0087** • {Computer aided design [CAD] specially adapted for gearing features (computer aided design ~~per se~~ [per se](#) [G06F 17/50](#)) Analysis of gear systems}
- 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 see](#) also arrangements for shifting planetary gears [F16H 3/62](#), [F16H 63/3026](#))}
- 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}**
- U F16H 61/0021
- {Generation or control of line pressure}
- F16H 2061/0037
- {characterised by controlled fluid supply to lubrication circuits of the gearing ([see see](#) also lubrication control [F16H 57/0446](#))}
- U F16H 61/04
- Smoothing ratio shift
- F16H 2061/0466
- {Smoothing shift shock by apply or release of band brake servos, e.g. overlap control of band brake and a clutch or ~~vice versa~~ [vice versa](#)}

Project: N/A (F16J)

- F16J 10/00** **Engine or like cylinders (pressure vessels in general [F16J 12/00](#); cylinders for engines or other apparatus of particular kinds, [see see](#) the appropriate subclasses, e.g. for combustion engines [F02F](#)); Features of hollow, e.g. cylindrical, bodies in general**
- F16J 12/00** **Pressure vessels in general (covers therefor [F16J 13/00](#); for particular applications, [see see](#) the relevant subclasses, e.g. [B01J](#), [F17C](#), [G21C](#))**

Project: N/A (F16K)

- U 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 1/16
- with pivoted closure-members
- U F16K 1/18
- • with pivoted discs or flaps
- U F16K 1/20
- • • with axis of rotation arranged externally of valve member
- F16K 1/2007
- • • {specially adapted operating means therefor (operating means ~~per se~~ [per se](#) [F16K 31/00](#))}
- U F16K 1/22
- • • with axis of rotation crossing the valve member, e.g. butterfly valves
- F16K 1/221
- • • {specially adapted operating means therefor (operating means ~~per se~~ [per se](#) [F16K 31/00](#))}
- 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~~ [per se](#), are classified in the appropriate groups of this subclass.
- 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 see](#) the appropriate subclass, e.g. [F24F](#))**

- F16K 25/00** Details relating to contact between valve members and seat (sealing constructions, **see see** the appropriate groups according to the type of valve; movement of valve members other than for opening and closing [F16K 29/00](#))
- U F16K 31/00** {Actuating devices;} Operating means; Releasing devices {(regulating means [G05D](#))}
- U F16K 31/02** • electric {([F16K 31/004](#) takes precedence)}; magnetic
- F16K 31/06** • • using a magnet {, e.g. diaphragm valves, cutting off by means of a liquid}
- F16K 47/00** Means in valves for absorbing fluid energy {, e.g. cushioning of opening or closure movement, eliminating of vibrations of the valve member}{for pipes [F16L 55/00](#)}
- F16K 47/02** • for preventing water-hammer or noise {, e.g. for sanitary applications, toilet flush reservoirs ([F16K 47/04](#) and [F16K 47/08](#) take precedence)}

Project: N/A (F16L)

- F16L 1/00** Laying or reclaiming pipes; Repairing or joining pipes on or under water (soldering or welding [B23K](#); lifting-gear and load-engaging elements [B66](#); hydraulic installations, soil drainage [E02B](#); excavations or underwater constructions [E02D](#); {conduits made of concrete **in situ** [E02D 29/10](#)}; machines for digging trenches in combination with pipe-assembly [E02F](#); laying sewer pipes [E03F 3/06](#); in earth boreholes or wells [E21B](#); tunnelling [E21D](#); laying electric, or combined optical and electric, cables [H02G](#); making special pipes joint, **see see** the relevant groups for the joints)
- U F16L 1/12** • Laying or reclaiming pipes on or under water (buoyant hoses [F16L 11/133](#))
- U F16L 1/20** • • Accessories therefor, e.g. floats, weights, (buoys [B63B 22/00](#))
- F16L 1/24** • • • Floats; Weights {(salvaging sunken vessels or other underwater objects [B63C 7/00](#); floats **per se** [B63B 22/00](#))}
- F16L 1/26** • Repairing or joining pipes on or under water (buoyant hoses [F16L 11/133](#); joints **per se** [F16L 13/00](#) - [F16L 49/00](#); {Joining pipes to underwater installations [E21B](#)})
- F16L 15/00** Screw-threaded joints {(hose connections with parts screwed directly on or into the hose [F16L 33/24](#); joining pipes to wall [F16L 41/00](#)}; casing joints used in deep-drilling [E21B 17/08](#); joints sealed primarily by means other than engagement of screw-threads, **see see** the relevant groups characterised by the sealing arrangements); Forms of screw-threads for such joints
- U F16L 19/00** Joints in which sealing surfaces are pressed together by means of a member, e.g. a swivel nut, screwed on or into one of the joint parts {(screw-threaded joints [F16L 15/00](#)}; [F16L 17/00](#) takes precedence; if using bolts or equivalent connecting means [F16L 23/00](#); {electrically insulating [F16L 25/02](#); adjustable joints, joints allowing movement [F16L 27/00](#); specially adapted for pipes of brittle material [F16L 49/06](#))}
- F16L 19/005** • {comprising locking means for the threaded member (locking of screws or nuts **per se** [F16B 39/00](#))}
- U F16L 19/02** • Pipe ends provided with collars or flanges, integral with the pipe or not, pressed together by a screwed member
- F16L 19/0237** • • {specially adapted for use with attachments, e.g. reduction units, T-pieces, bends or the like (branch units **per se** [F16L 41/02](#); bends **per se** [F16L 43/00](#); pipe units with cleaning aperture **per se** [F16L 45/00](#))}
- U F16L 19/04** • using additional rigid rings, sealing directly on at least one pipe end, which is flared either before or during the making of the connection

- F16L 19/048
- {specially adapted for use with attachments, e.g. reduction units, T-pieces, bends or the like (branch units [per-se-per se F16L 41/02](#); bends [per-se-per se F16L 43/00](#); pipe units with cleaning aperture [per-se-per se F16L 45/00](#))}
- U F16L 19/06
- in which radial clamping is obtained by wedging action on non-deformed pipe ends
- F16L 19/062
- {specially adapted for use with attachments, e.g. reduction units, T-pieces, bends or the like (branch units [per-se-per se F16L 41/02](#); bends [per-se-per se F16L 43/00](#); pipe units with cleaning aperture [per-se-per se F16L 45/00](#))}
- U F16L 33/00
- Arrangements for connecting hoses to rigid members (hand tools for inserting fittings into hoses [B25B 27/10](#)); Rigid hose connectors, i.e. single members engaging both hoses {(hoses or hose couplings specially adapted for suction cleaners [A47L 9/24](#))}**
- U F16L 33/24
- with parts screwed directly on or into the hose ([F16L 33/22](#) takes precedence)
- F16L 33/245
- {the inner or outer part being moulded [in-situ in situ](#)}
- F16L 41/00
- Branching pipes; Joining pipes to walls ([F16L 39/00](#) takes precedence; joints suitable for connecting together pipe-ends [see see](#) the relevant groups {specially adapted to be made of plastics or to be used with pipes made of plastics [F16L 47/26](#); characterised by couplings of the quick-acting type [F16L 37/008](#);} connections not designed for conveying fluid [F16B 9/00](#))**
- F16L 41/04
- Tapping pipe walls, i.e. making connections through the walls of pipes while they are carrying fluids; Fittings therefor (apparatus or operations relating to metal-working steps, [see see](#) the relevant classes for metal-working)
- U F16L 55/00
- Devices or appurtenances for use in, or in connection with, pipes or pipe systems (the preceding groups and groups [F16L 57/00](#), [F16L 59/00](#) take precedence; repairing or joining pipes on or under water [F16L 1/26](#); nozzles [B05B](#); cleaning of pipes [B08B 9/02](#); {arrangements of draining devices for water main or service pipe systems [E03B 7/08](#);} devices for preventing bursting of water pipes by freezing [E03B 7/10](#); {draining devices for hydrants [E03B 9/14](#);} for domestic plumbing installations [E03C 1/00](#); {steam traps for draining of liquids from enclosures containing gases or vapours [F16T](#)}; arrangements for sealing leaky tubes or conduits of heat-exchangers [F28F 11/00](#))**
- F16L 55/07
- Arrangement or mounting of devices, e.g. valves, for venting or aerating or draining (arrangement of draining devices in water supply systems [E03B 7/08](#); apparatus for draining [F16K](#), [F16T](#); venting or aerating devices [per-se-per se F16K 24/00](#))
- U F16L 55/10
- Means for stopping flow from or in pipes or hoses ([F16L 29/00](#), [F16L 37/28](#) take precedence; valves [F16K](#))
- F16L 55/12
- • by introducing into the pipe a member expandable [in-situ in situ](#) (inflatable cut-off valves [F16K 7/10](#))
- U F16L 58/00
- Protection of pipes or pipe fittings against corrosion or incrustation (supporting of pipes inside other pipes or sleeves [F16L 7/00](#); compound tubes [F16L 9/14](#); cleaning pipes or tubes [B08B 9/02](#))**
- F16L 58/02
- by means of internal or external coatings (coatings for thermal insulation [F16L 59/00](#); methods or machines for applying coatings [see see](#) the relevant classes, e.g. [B28B 21/00](#))
- F16L 58/04
- • Coatings characterised by the materials used ([F16L 58/16](#) takes precedence; compositions, [see see](#) the relevant classes, e.g. [C04B](#))

- U 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](#))
- F16L 59/02 • Shape or form of insulating materials, with or without coverings integral with the insulating materials (chemical aspects [see see](#) the relevant classes)

Project: N/A (F16M)

- 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 see](#) the appropriate subclasses)
- U F16M 11/20** • Undercarriages with or without wheels
- U 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
- U F16M 11/2035** • • • {in more than one direction}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- U F16M 11/2042** • • • • {constituted of several dependent joints}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#)
- F16M 11/205** • • • • • {the axis of rotation intersecting in a single point, e.g. gimbals}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#) }
- F16M 11/2071** • • • • • {for panning and rolling ([F16M 11/2078](#) takes precedence)}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/12](#) }
- F16M 11/2078** • • • • • {with ball-joint (ball-jointed hinges [F16C 11/06](#))}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/14](#) }
- U F16M 11/24** • • changeable in height or length of legs, also for transport only, {e.g. by means of tubes screwed into each other}([F16M 11/42](#) takes precedence)

- F16M 11/242
- • {by spreading of the legs ([F16M 11/32](#) takes precedence)}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/24](#) or [F16M 11/32](#) }
- U F16M 11/42
- with arrangement for propelling the support {stands on wheels}
- F16M 11/425
- • {along guiding means}
- WARNING
This group is not complete pending reclassification; see also group [F16M 11/42](#) }
- U 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](#))}**
- U F16M 13/02
- for supporting on, or attaching to, an object, e.g. tree, gate, window-frame, cycle
- F16M 13/025
- • {Corner supports}
- WARNING
This group is not complete pending reclassification; see also group [F16M 13/02](#) }

Project: N/A (F16N)

- F16N 15/00
- Lubrication with substances other than oil or grease; Lubrication characterised by the use of particular lubricants in particular apparatus or conditions ([F16N 17/00](#) takes precedence; lubricating compositions, selection of particular substances as lubricants in general [C10M](#); bearings with surfaces incorporating lubricant [F16C 33/04](#); lubrication specially adapted to machines or apparatus provided for in a single other class, [see see](#) the relevant class for the machine or apparatus)**
- F16N 29/00
- Special means in lubricating arrangements or systems providing for the indication or detection of undesired conditions; Use of devices responsive to conditions in lubricating arrangements or systems (in bearings [F16C](#); constructions of apparatus outside the lubricating arrangements or systems, [see see](#) the relevant classes)**

Project: N/A (F16P)

- F16P 7/00
- Emergency devices preventing damage to a machine or apparatus ([F16P 1/00](#), [F16P 3/00](#), [F16P 5/00](#) take precedence; indicating means, [see see](#) the appropriate classes)**

Project: N/A (F16S)

- F16S
- CONSTRUCTIONAL ELEMENTS IN GENERAL; STRUCTURES BUILT-UP FROM SUCH ELEMENTS, IN GENERAL**
- NOTE
This subclass ~~does not cover~~ [does not cover](#) similar elements and structures, restricted to use in the building art, which are covered by subclass [E04C](#).

Project: N/A (F17C)

- F17C 1/00** Pressure vessels, e.g. gas cylinder, gas tank, replaceable cartridge (pressurised apparatus for purposes other than storage, **see see** the relevant subclasses such as [A62C](#), [B05B](#); associated with vehicles, **see see** the appropriate subclass of classes [B60](#) - [B64](#); pressure vessels in general [F16J 12/00](#); {autoclaves [B01J 3/04](#); tank vehicles [B60P 3/22](#); railway tank wagons for carrying fluent materials [B61D 5/00](#); accumulators for supplying fluid under pressure [F15B 1/04](#); liquified gas stoves [F24C 3/00](#)})
- F17C 1/10** • with provision for protection against corrosion, e.g. due to gaseous acid ({[F17C 1/14](#), [F17C 1/16](#) take precedence}; inhibiting corrosion of metallic material or incrustation in general [C23F](#))
- U F17C 13/00** **Details of vessels or of the filling or discharging of vessels**
- F17C 13/04** • Arrangement or mounting of valves (valves **per se** [F16K](#); {snap-coupling of nipples [F16L 37/00](#)})

Project: N/A (F17D)

- F17D** **PIPE-LINE SYSTEMS; PIPE-LINES** (pumps or compressors [F04](#); fluid dynamics [F15D](#); valves or the like [F16K](#); pipes, laying pipes, supports, joints, branches, repairing, work on the entire line, accessories [F16L](#); steam traps or the like [F16T](#); fluid-pressure electric cables [H01B 9/06](#))
- NOTE**
In this subclass, pipe-line systems are interpreted as systems described in flow sheets as well as arrangements of co-operating elements, the elements **per se** [per se](#) being covered in the relevant subclasses.
- F17D 1/00** Pipe-line systems (conveying articles or materials through a pipe- line by means of a fluid carrier [B65G 51/00](#), [B65G 53/00](#); liquids [B67D](#); special devices for transferring liquids from bulk storage containers into vehicles or boats or **vice versa** [vice versa](#), e.g. loading or unloading vehicles or portable containers [B67D 7/00](#); conveying material which has been excavated by a dredger or soil shifter through a pipe-line [E02F 7/10](#); sewer pipe-line systems [E03F 3/00](#); thermal insulation of pipe-lines [F16L 59/00](#); central heating systems [F24D](#))
- U F17D 3/00** **Arrangements for supervising or controlling working operations**
- U F17D 3/03** • for controlling, signalling, or supervising the conveyance of several different products following one another in the same conduit, e.g. for switching from one receiving tank to another
- F17D 3/08** • • the different products being separated by "go-devils", e.g. spheres (cleaning devices moved along inside a pipe-line by fluid pressure [B08B 9/04](#); {pigs or moles **per se** [per se](#), their launching and detection [F16L 55/26](#)})

Project: N/A (F21)

- F21** **LIGHTING** (electric aspects or elements, **see see** section [H](#), e.g. electric light sources [H01J](#), [H01K](#), [H05B](#))
- NOTE**
In this class, the following terms are used with the meanings indicated:
- "Portable" means "intended to be carried personally"
 - "Non-portable" means "not intended to be carried personally, even if capable of being moved from place to place"

Project: RP0313 (F21K)**M F21K****LIGHT SOURCES NOT OTHERWISE PROVIDED FOR****NOTE**

In this subclass, it is desirable to add the indexing codes of subclasses F21W and F21Y.

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:

*F21K 5/04 covered by G03B 15/0457;
 F21K 5/06 covered by G03B 15/0442;
 F21K 5/08 covered by F21K 5/02, G03B 15/0442;
 F21K 5/10 covered by G03B 15/0442;
 F21K 5/12 covered by F21K 5/023;
 F21K 5/14 covered by F21K 5/026, G03B 15/0489;
 F21K 5/16 covered by G03B 15/0452;
 F21K 5/18 covered by G03B 15/0452;
 F21K 5/20 covered by G03B 15/0447;
 F21K 5/22 covered by G03B 15/0442.*

M 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~~light sources using a charge of combustible material F21K 5/00)

M F21K 2/005

• {excited by infra-red radiation using up-conversion-~~(frequency changing of light G02F 2/02)~~}

Project: N/A (F21K)**U F21K 2/06**

• using chemiluminescence

F21K 2/08

• • activated by an electric field, i.e. electrochemiluminescence

Project: RP0313 (F21K)**M 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)~~

Project: N/A (F21K)**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)~~}

Project: RP0313 (F21K)**M F21K 5/026**

• • {using mechanical firing, e.g. percussion of a fulminating charge-~~(if included in a camera G03B 15/0489)~~}

C F21K 9/00

{Electric lamps **Light sources** 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)}

NOTES

1. In this group, the following expressions are used with the meaning indicated:
 - "light source" means a light-generating component intended for installation in a fitting or holder incorporated in a lighting device;
 - "retrofit light source" means a light source comprising substantially the same attachment means as those of incandescent lamps or fluorescent lamps. "Retrofit light sources" are specially adapted for replacing or substituting such lamps.
2. Semiconductor devices per se, or assemblies thereof, specially adapted for light emission, e.g. for use in light sources (in the sense of Note (1)) are covered by subclass H01L, e.g. H01L 33/00 or H01L 51/50, or by subclass H01S.
3. Lighting devices or systems in which light sources are used are covered by subclasses F21L or F21S.
4. When classifying in this group, classification is also made in subclass F21V if detail aspects covered by that subclass are of interest.

WARNING

1. This group **Group F21K 9/00** is **not complete** **incomplete** pending a **reclassification**; see also **reclassification of documents from groups F21K 99/00, H01L 33/00 F21V 19/042, H01S 5/00 F21V 19/045, H05B 35/00 F21S 2/00.** All groups listed in this Warning should be considered in order to perform a complete search.

2. Group **F21K 9/00** is impacted by reclassification into groups **F21K 9/20, F21K 9/23, F21K 9/232, F21K 9/233, F21K 9/235, F21K 9/237, F21K 9/238, F21K 9/27, F21K 9/272, F21K 9/275, F21K 9/278, F21K 9/60, F21K 9/61, F21K 9/62, F21K 9/64, F21K 9/65, F21K 9/66, F21K 9/68, F21K 9/69, F21K 9/90 and F21K 99/00.**

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

- D F21K 9/10 • {specially adapted for retrofitting or substituting conventional lamps, e.g. for substitution of incandescent lamps or fluorescent tubes}
- D F21K 9/13 • • {with only one fitting, e.g. a bayonet or screw based fitting}
- D F21K 9/135 • • • {specially adapted for generating an omni-directional light distribution, e.g. with a glass bulb}
- D F21K 9/1355 • • • {Details of the base; Arrangements of components inside the base}
- D F21K 9/137 • • • {specially adapted for generating a spot light distribution, e.g. to substitute reflector lamps}
- D F21K 9/1375 • • • • {Details of the base; Arrangements of components in the base}
- D F21K 9/17 • • {with two fittings, e.g. for substituting a fluorescent tube}
- D F21K 9/175 • • • {Details of the base; Arrangements of components in the base}
- Q F21K 9/20 • Light sources comprising attachment means

WARNINGS

1. Group **F21K 9/20** is incomplete pending reclassification of documents from groups **F21K 9/00, F21K 99/00, F21S 2/00, F21V 19/042 and F21V 19/045.**

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

2. Group [F21K 9/20](#) is impacted by reclassification into groups [F21K 9/23](#), [F21K 9/232](#), [F21K 9/233](#), [F21K 9/235](#), [F21K 9/237](#), [F21K 9/238](#), [F21K 9/27](#), [F21K 9/272](#), [F21K 9/275](#) and [F21K 9/278](#).

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

Q F21K 9/23

- • Retrofit light sources for lighting devices with a single fitting for each light source, e.g. for substitution of incandescent lamps with bayonet or threaded fittings

WARNINGS

1. Group [F21K 9/23](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

2. Group [F21K 9/23](#) is impacted by reclassification into [F21K 9/235](#), [F21K 9/237](#) and [F21K 9/238](#).

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

N F21K 9/232

- • specially adapted for generating an essentially omnidirectional light distribution, e.g. with a glass bulb

WARNING

Group [F21K 9/232](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

N F21K 9/233

- • specially adapted for generating a spot light distribution, e.g. for substitution of reflector lamps

WARNING

Group [F21K 9/233](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

N F21K 9/235

- • Details of bases or caps, i.e. the parts that connect the light source to a fitting; Arrangement of components within bases or caps ([F21K 9/238](#) takes precedence)

WARNING

Group [F21K 9/235](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/23](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

- N F21K 9/237
- Details of housings or cases, i.e. the parts between the light-generating element and the bases; Arrangement of components within housings or cases ([F21K 9/238](#) takes precedence)
- WARNING
- Group [F21K 9/237](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/23](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- N F21K 9/238
- Arrangement or mounting of circuit elements integrated in the light source
- WARNING
- Group [F21K 9/238](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/23](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#), [F21V 19/045](#), [F21V 23/003](#), [F21V 23/004](#), [F21V 23/005](#) and [F21V 23/006](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- Q F21K 9/27
- Retrofit light sources for lighting devices with two fittings for each light source, e.g. for substitution of fluorescent tubes
- WARNINGS
1. Group [F21K 9/27](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#), [F21V 19/045](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
2. Group [F21K 9/27](#) is impacted by reclassification into groups [F21K 9/272](#), [F21K 9/275](#) and [F21K 9/278](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- N F21K 9/272
- Details of end parts, i.e. the parts that connect the light source to a fitting; Arrangement of components within end parts ([F21K 9/278](#) takes precedence)
- WARNING
- Group [F21K 9/272](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/27](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- N F21K 9/275
- Details of bases or housings, i.e. the parts between the light-generating element and the end caps; Arrangement of components within bases or housings ([F21K 9/278](#) takes precedence)
- WARNING
- Group [F21K 9/275](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/27](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- N F21K 9/278
- Arrangement or mounting of circuit elements integrated in the light source
- WARNING
- Group [F21K 9/278](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/27](#), [F21K 99/00](#), [F21S 2/00](#),

[F21V 19/042](#), [F21V 19/045](#), [F21V 23/003](#), [F21V 23/004](#), [F21V 23/005](#) and [F21V 23/006](#).

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

- D F21K 9/30 • {LED lamps or modules comprising attachment means not covered by groups F21K 9/10 to F21K 9/175}
- D F21K 9/50 • {Optical arrangements, i.e. for improving the color rendering index or the light extraction}
- D F21K 9/52 • • {using a light guide}
- D F21K 9/54 • • {using a mixing chamber, e.g. a housing with reflective walls}
- D F21K 9/56 • • {using wavelength conversion means distinct or spaced from the light generating element, e.g. a remote phosphor layer}
- D F21K 9/58 • • {specially adapted for changing the characteristics or the distribution of the light, e.g. by movement of parts}
- Q F21K 9/60 • Optical arrangements integrated in the light source, e.g. for improving the colour rendering index or the light extraction

WARNINGS

1. Group [F21K 9/60](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#). All groups listed in this Warning should be considered in order to perform a complete search.

2. Group [F21K 9/60](#) is impacted by reclassification into groups [F21K 9/66](#), [F21K 9/68](#) and [F21K 9/69](#).

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

- N F21K 9/61 • • using light guides

WARNING

Group [F21K 9/61](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N F21K 9/62 • • using mixing chambers, e.g. housings with reflective walls

WARNING

Group [F21K 9/62](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N F21K 9/64 • • using wavelength conversion means distinct or spaced from the light-generating element, e.g. a remote phosphor layer

WARNING

Group [F21K 9/64](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N F21K 9/65 • • specially adapted for changing the characteristics or the distribution of the light, e.g. by adjustment of parts

WARNING

Group [F21K 9/65](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

N F21K 9/66

- Details of globes or covers forming part of the light source

WARNING

Group [F21K 9/66](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/60](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

N F21K 9/68

- Details of reflectors forming part of the light source

WARNING

Group [F21K 9/68](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/60](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

N F21K 9/69

- Details of refractors forming part of the light source

WARNING

Group [F21K 9/69](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 9/60](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).

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

E F21K 9/90

- ~~{Manufacturing methods}~~ [Methods of manufacture](#)

WARNING

Group [F21K 9/90](#) is incomplete pending reclassification of documents from groups [F21K 9/00](#), [F21K 99/00](#), [F21S 2/00](#), [F21V 19/042](#) and [F21V 19/045](#).
All groups listed in this Warning should be considered in order to perform a complete search.

C F21K 99/00

Subject matter not provided for in other groups of this subclass

WARNINGS

1. Group [F21K 99/00](#) is incomplete pending reclassification of documents from groups [F21V 19/042](#) and [F21V 19/045](#).

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

2. Group [F21K 99/00](#) is impacted by reclassification into groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/23](#), [F21K 9/232](#), [F21K 9/233](#), [F21K 9/235](#), [F21K 9/237](#), [F21K 9/238](#), [F21K 9/27](#), [F21K 9/272](#), [F21K 9/275](#), [F21K 9/278](#), [F21K 9/60](#), [F21K 9/61](#), [F21K 9/62](#), [F21K 9/64](#), [F21K 9/65](#), [F21K 9/66](#), [F21K 9/68](#), [F21K 9/69](#) and [F21K 9/90](#).

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

U F21K 2099/005

- {Other light sources comprising light emitting diodes associated with conversion means}

Project: N/A (F21L)**F21L****LIGHTING DEVICES OR SYSTEMS THEREOF, BEING PORTABLE OR SPECIALLY ADAPTED FOR TRANSPORTATION****NOTES**

1. This subclass ~~covers~~**covers** devices or systems designed or specially adapted to be carried, e.g. by hand, or otherwise transported from place to place, e.g. on wheeled supports, in order to provide illumination as and where required.
2. This subclass ~~does not cover~~**does not cover** devices or systems intended for fixed installation, e.g. vehicle lighting, or for use essentially at a permanent location, which are covered by subclass [F21S](#).
3. Non-electric lighting devices are classified in groups [F21L 17/00-F21L 26/00](#) only if a special adaptation related to the use of a non-electric light source is of interest.

U F21L 4/00**Electric lighting devices with self-contained electric batteries or cells**

F21L 4/08

- characterised by means for ~~in-situ~~**in situ** recharging of the batteries or cells

F21L 27/00**Lighting devices or systems, employing combinations of electric and non electric light sources; Replacing or exchanging electric light sources with non-electric light sources or ~~vice versa~~**vice versa** in lighting devices or systems****Project: N/A (F21S)****F21S****NON-PORTABLE LIGHTING DEVICES OR SYSTEMS THEREOF (burners [F23D](#))****NOTES**

1. This subclass ~~covers~~**covers** devices or systems intended for fixed installation, e.g. vehicle lighting, or for use at a permanent location, e.g. free-standing floor- or table-lamps.
2. This subclass ~~does not cover~~**does not cover** devices or systems specially adapted for transportation, which are covered by subclass [F21L](#).
3. Non-electric lighting devices or systems are classified in groups [F21S 11/00](#) - [F21S 15/00](#) only if a special adaptation related to the use of a non-electric light source is of interest.

Project: RP0313 (F21S)**C F21S 2/00****Systems of lighting devices, not provided for in main groups [F21S 4/00](#) - [F21S 10/00](#) or [F21S 19/00](#), e.g. of modular construction****WARNING**

Group [F21S 2/00](#) is impacted by reclassification into groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/23](#), [F21K 9/232](#), [F21K 9/233](#), [F21K 9/235](#), [F21K 9/237](#), [F21K 9/238](#), [F21K 9/27](#), [F21K 9/272](#), [F21K 9/275](#), [F21K 9/278](#), [F21K 9/60](#), [F21K 9/61](#), [F21K 9/62](#), [F21K 9/64](#), [F21K 9/65](#), [F21K 9/66](#), [F21K 9/68](#), [F21K 9/69](#) and [F21K 9/90](#).

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

Project: N/A (F21S)**F21S 19/00****Lighting devices or systems employing combinations of electric and non-electric light sources; Replacing or exchanging electric light sources with non-electric light sources or ~~vice versa~~**vice versa****

- U F21S 48/00** {Lighting devices or systems specially adapted for vehicles (arrangements or adaptations for ships or waterborne vessels [B63B 45/00](#))}
- U F21S 48/10** · {Headlamps}
- U F21S 48/12** · · {characterised by refractors, transparent cover plates or filters}
- U F21S 48/1225** · · · {Type of refractor, transparent cover plates or filters}
- F21S 48/1241** · · · · {Light guides (light guides ~~per se~~ *per se* [G02B 6/0001](#))}
- U F21S 48/20** · {Signal lamps, e.g. brake lamps or turn signal lamps}
- U F21S 48/22** · · {characterised by refractors, filters or transparent cover plates}
- U F21S 48/2212** · · · {Type of refractors, filters or transparent cover plates}
- F21S 48/2225** · · · · {Light guides (light guides ~~per se~~ *per se* [G02B 6/0001](#))}

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 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 see~~ the relevant group; changing the characteristics or distribution of the light emitted by adjustment of parts [F21V 14/00](#))

Project: RP0313 (F21V)

U 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 19/04 · with provision for changing light source, e.g. turret {(auxiliary devices for cleaning, placing, or removing incandescent lamps [H01K 3/32](#), fluorescent lamps [H01J 9/006](#))}

F F21V 19/042 · · {the light source being a semiconductor, e.g. an LED}
(Frozen)

WARNING

Group F21V 19/042 is no longer used for the classification of documents as of August 1, 2016. The content of this group is being reclassified into groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/23](#), [F21K 9/232](#), [F21K 9/233](#), [F21K 9/235](#), [F21K 9/237](#), [F21K 9/238](#), [F21K 9/27](#), [F21K 9/272](#), [F21K 9/275](#), [F21K 9/278](#), [F21K 9/60](#), [F21K 9/61](#), [F21K 9/62](#), [F21K 9/64](#), [F21K 9/65](#), [F21K 9/66](#), [F21K 9/68](#), [F21K 9/69](#), [F21K 9/90](#).

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

F F21V 19/045 · · {the light source being a semiconductor mounted on a holder, e.g. a circuit board}
(Frozen)

WARNING

Group F21V 19/045 is no longer used for the classification of documents as of August 1, 2016. The content of this group is being reclassified into groups [F21K 9/00](#), [F21K 9/20](#), [F21K 9/23](#), [F21K 9/232](#), [F21K 9/233](#), [F21K 9/235](#), [F21K 9/237](#), [F21K 9/238](#), [F21K 9/27](#), [F21K 9/272](#), [F21K 9/275](#), [F21K 9/278](#), [F21K 9/60](#), [F21K 9/61](#), [F21K 9/62](#), [F21K 9/64](#), [F21K 9/65](#), [F21K 9/66](#), [F21K 9/68](#), [F21K 9/69](#), [F21K 9/90](#).

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

- U F21V 23/00** Arrangement of electric circuit elements in or on lighting devices
{characterised by cooling arrangements [F21V 29/508](#)}
- C F21V 23/003** • {the elements being electronics drivers or controllers for operating the light source, e.g. for a LED array}
- WARNING**
Group [F21V 23/003](#) is impacted by reclassification into groups [F21K 9/238](#) and [F21K 9/278](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C F21V 23/004** • • {arranged on a substrate, e.g. a printed circuit board}
- WARNING**
Group [F21V 23/004](#) is impacted by reclassification into groups [F21K 9/238](#) and [F21K 9/278](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C F21V 23/005** • • • {the substrate is supporting also the light source}
- WARNING**
Group [F21V 23/005](#) is impacted by reclassification into groups [F21K 9/238](#) and [F21K 9/278](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C F21V 23/006** • • • {the substrate being distinct from the light source holder}
- WARNING**
Group [F21V 23/006](#) is impacted by reclassification into groups [F21K 9/238](#) and [F21K 9/278](#).
All groups listed in this Warning should be considered in order to perform a complete search.

Project: N/A (F21V)**F21V 25/00**

Safety devices structurally associated with lighting devices (gas- tight or water-tight arrangements [F21V 31/00](#); in general [F16P](#); protective circuit arrangements ~~per se~~ [per se H02H 7/00](#))

Project: RP0313 (F21W)**M F21W**

INDEXING SCHEME ASSOCIATED WITH SUBCLASSES [F21K](#), [F21L](#), [F21S](#) and [F21V](#), RELATING TO USES OR APPLICATIONS OF LIGHTING DEVICES OR SYSTEMS

NOTE

This subclass constitutes an ~~internal scheme for~~ indexing ~~only~~, [scheme](#) associated with subclasses [F21K](#), [F21L](#), [F21S](#) and [F21V](#), relating to uses or applications of lighting devices or systems.

Project: RP0313 (F21Y)

M F21Y

INDEXING SCHEME ASSOCIATED WITH SUBCLASSES F21K, F21L, F21S and F21V, RELATING TO THE FORM OR THE KIND OF THE LIGHT SOURCES OR OF THE COLOUR OF THE LIGHT EMITTED

NOTE

This subclass constitutes an ~~internal scheme for indexing only~~, ~~scheme~~ associated with subclasses ~~F21K~~, ~~F21L~~, ~~F21S~~ and ~~F21V~~, relating to the form ~~or the kind~~ of the light sources, ~~or of the colour of the light emitted~~.

C F21Y 2101/00

Point-like light sourcesWARNING

Group F21Y 2101/00 is impacted by reclassification into groups F21Y 2115/00, F21Y 2115/10, F21Y 2115/15 and F21Y 2115/20.
All groups listed in this Warning should be considered in order to perform a complete search.

D F21Y 2101/02

- Miniature, e.g. light emitting diodes [LEDs]

D F21Y 2101/025

- • Laser diodes

C F21Y 2103/00

ElongatedElongate light sources, e.g. fluorescent tubesWARNING

Group F21Y 2103/00 is impacted by reclassification into groups F21Y 2103/10 and F21Y 2103/20.
All groups listed in this Warning should be considered in order to perform a complete search.

D F21Y 2103/003

- Linear array of LEDs

D F21Y 2103/006

- using electroluminescent light sources, e.g. electroluminescent wires

D F21Y 2103/02

- curved, e.g. ring-shaped

D F21Y 2103/022

- • ring-shaped

D F21Y 2103/025

- • U-shaped

N F21Y 2103/10

- comprising a linear array of point-like light-generating elements

WARNING

Group F21Y 2103/10 is incomplete pending reclassification of documents from group F21Y 2103/00.
Groups F21Y 2103/10 and F21Y 2103/00 should be considered in order to perform a complete search.

N F21Y 2103/20

- of polygonal shape, e.g. square or rectangular

WARNING

Group F21Y 2103/20 is incomplete pending reclassification of documents from group F21Y 2103/00.
Groups F21Y 2103/20 and F21Y 2103/00 should be considered in order to perform a complete search.

N F21Y 2103/30

- curved

N F21Y 2103/33

- • annular

N F21Y 2103/37

- • U-shaped

C F21Y 2105/00

Planar light sourcesWARNING

Group F21Y 2105/00 is impacted by reclassification into groups F21Y 2105/10, F21Y 2105/12, F21Y 2105/14, F21Y 2105/16 and F21Y 2105/18.

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

- D F21Y 2105/001 • 2D-array of LEDs
- D F21Y 2105/003 • {characterised by the geometrical disposition of the LEDs, e.g. spacing thereof to create different densities, arrangement of LEDs of different colours in a specific pattern}
- D F21Y 2105/005 • {the substrate or the support being planar but the LEDs not being in the same plane or not having the same orientation, e.g. plate shaped support with steps on which LEDs are mounted}
- D F21Y 2105/006 • using electroluminescent light sources, e.g. electroluminescent films
- D F21Y 2105/008 • using organic light emitting diodes {OLED}
- Q F21Y 2105/10 • comprising a two-dimensional array of point-like light-generating elements

WARNINGS

1. Group [F21Y 2105/10](#) is incomplete pending reclassification of documents from group [F21Y 2105/00](#).

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

2. Group [F21Y 2105/00](#) is impacted by reclassification into groups [F21Y 2105/14](#), [F21Y 2105/16](#) and [F21Y 2105/18](#).

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

- N F21Y 2105/12 • • characterised by the geometrical disposition of the light-generating elements, e.g. arranging light-generating elements in differing patterns or densities

WARNING

Group [F21Y 2105/12](#) is incomplete pending reclassification of documents from group [F21Y 2105/00](#).

Groups [F21Y 2105/00](#) and [F21Y 2105/12](#) should be considered in order to perform a complete search.

- N F21Y 2105/14 • • characterised by the overall shape of the two-dimensional array

WARNING

Group [F21Y 2105/14](#) is incomplete pending reclassification of documents from groups [F21Y 2105/00](#) and [F21Y 2105/10](#).

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

- N F21Y 2105/16 • • square or rectangular, e.g. for light panels

WARNING

Group [F21Y 2105/16](#) is incomplete pending reclassification of documents from groups [F21Y 2105/00](#) and [F21Y 2105/10](#).

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

- N F21Y 2105/18 • • annular; polygonal other than square or rectangular, e.g. for spotlights or for generating an axially symmetrical light beam

WARNING

Group [F21Y 2105/18](#) is incomplete pending reclassification of documents from groups [F21Y 2105/00](#) and [F21Y 2105/10](#).

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

- Q F21Y 2107/00** ***Light sources with three-dimensionally disposed light-generating elements***
WARNINGS
 1. Group [F21Y 2107/00](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
 2. Group [F21Y 2107/00](#) is impacted by reclassification into groups [F21Y 2107/70](#), [F21Y 2107/80](#) and [F21Y 2107/90](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N F21Y 2107/10** • on concave supports or substrates, e.g. on the inner side of bowl-shaped supports
WARNING
 Group [F21Y 2107/10](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N F21Y 2107/20** • on convex supports or substrates, e.g. on the outer surface of spheres
WARNING
 Group [F21Y 2107/20](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N F21Y 2107/30** • on the outer surface of cylindrical surfaces, e.g. rod-shaped supports having a circular or a polygonal cross section
WARNING
 Group [F21Y 2107/30](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N F21Y 2107/40** • on the sides of polyhedrons, e.g. cubes or pyramids
WARNING
 Group [F21Y 2107/40](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N F21Y 2107/50** • on planar substrates or supports, but arranged in different planes or with differing orientation, e.g. on plate-shaped supports with steps on which light-generating elements are mounted
WARNING
 Group [F21Y 2107/50](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N F21Y 2107/60** • on stacked substrates
WARNING
 Group [F21Y 2107/60](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).

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

N F21Y 2107/70

- on flexible or deformable supports or substrates, e.g. for changing the light source into a desired form

WARNING

Group [F21Y 2107/70](#) is incomplete pending reclassification of documents from groups [F21Y 2107/00](#) and [F21Y 2111/00](#).

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

N F21Y 2107/80

- on articulated supports or substrates

WARNING

Group [F21Y 2107/80](#) is incomplete pending reclassification of documents from groups [F21Y 2107/00](#) and [F21Y 2111/00](#).

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

N F21Y 2107/90

- on two opposite sides of supports or substrates

WARNING

Group [F21Y 2107/90](#) is incomplete pending reclassification of documents from groups [F21Y 2107/00](#) and [F21Y 2111/00](#).

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

N F21Y 2109/00

Light sources with light-generating elements disposed on transparent or translucent supports or substrates

WARNING

Group [F21Y 2109/00](#) is incomplete pending reclassification of documents from group [F21Y 2111/00](#).

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

C F21Y 2111/00

Light sources of [a](#) form not covered by ~~preceding groups~~ [F21Y 2101/00-F21Y 2107/00](#)

WARNING

Group [F21Y 2111/00](#) is impacted by reclassification into groups [F21Y 2107/00](#), [F21Y 2107/10](#), [F21Y 2107/20](#), [F21Y 2107/30](#), [F21Y 2107/40](#), [F21Y 2107/50](#), [F21Y 2107/60](#), [F21Y 2107/70](#), [F21Y 2107/80](#), [F21Y 2107/90](#) and [F21Y 2109/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.

D F21Y 2111/001

- {Non-planar or three-dimensional arrangements of LEDs}

D F21Y 2111/002

- {the LEDs being disposed on a concave support or substrate, e.g. on the inner side of a bowl-shaped support}

D F21Y 2111/004

- {the LEDs being disposed on a convex support or substrate, e.g. on the outer surface of a portion of a sphere}

D F21Y 2111/005

- {the LEDs being disposed on the outer surface of a cylinder, e.g. rod-shaped support having a circular or a polygonal cross-section}

D F21Y 2111/007

- {the LEDs being on the sides of a polyhedron, e.g. a cube or a pyramid}

D F21Y 2111/008

- {Assemblies consisting of stacked substrates supporting the LEDs}

U F21Y 2113/00

Combination of light sources

D F21Y 2113/002

- of different colors

- D F21Y 2113/005 • • the light sources being LEDs or chips of different colors
- D F21Y 2113/007 • • • encapsulated in a single LED light source
- D F21Y 2113/02 • of different form
- N F21Y 2113/10 • of different colours
- N F21Y 2113/13 • • comprising an assembly of point-like light sources
- N F21Y 2113/17 • • • forming a single encapsulated light source
- N F21Y 2113/20 • of different form

N F21Y 2115/00**Light-generating elements of semiconductor light sources**WARNING

Group [F21Y 2115/00](#) is incomplete pending reclassification of documents from group [F21Y 2101/00](#).

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

- N F21Y 2115/10 • Light-emitting diodes [LED]

WARNING

Group [F21Y 2115/10](#) is incomplete pending reclassification of documents from group [F21Y 2101/00](#).

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

- N F21Y 2115/15 • • Organic light-emitting diodes [OLED]

WARNING

Group [F21Y 2115/15](#) is incomplete pending reclassification of documents from group [F21Y 2101/00](#).

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

- N F21Y 2115/20 • Electroluminescent [EL] light sources

WARNING

Group [F21Y 2115/20](#) is incomplete pending reclassification of documents from group [F21Y 2101/00](#).

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

- N F21Y 2115/30 • Semiconductor lasers

Project: N/A (F22)**F22**

STEAM GENERATION (chemical or physical apparatus for generating gases [B01J](#); **chemical generation of gas, e.g. under pressure, Section G**; **chemical generation of gas, e.g. under pressure, Section C**; removal of combustion products or residues, e.g. cleaning of the combustion contaminated surfaces of tubes of boilers, [F23J](#); generating combustion products of high pressure or high velocity [F23R](#); water heaters not for steam generation [F24H](#), [F28](#); cleaning of internal or external surfaces of heat-transfer conduits, e.g. water tubes of boilers, [F28G](#))

NOTE

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

- "steam" covers also other condensable vapours, e.g. mercury, diphenyl, diphenyl oxide.

Project: N/A (F22B)**F22B**

METHODS OF STEAM GENERATION; STEAM BOILERS (steam engine plants where engine aspects predominate [F01K](#); domestic central-heating systems using steam [F24D](#); heat exchange or heat transfer in general [F28](#); generation of vapour in the cores of nuclear reactors [G21](#))

NOTE

This subclass ~~covers~~[covers](#) only methods of, or apparatus for, the generation of steam under pressure for heating or power purposes

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)

F22B 1/006

- {using solar heat (solar heat collectors ~~per se~~[per se](#) [F24J 2/00](#); devices for producing mechanical power from solar energy [F03G 6/00](#))}

U F22B 1/02

- by exploitation of the heat content of hot heat carriers

U F22B 1/06

- • the heat carrier being molten; Use of molten metal, e.g. zinc, as heat transfer medium

U F22B 1/063

- • • {for metal cooled nuclear reactors (heat-exchangers having a liquid metal as heat exchange medium [F28D7/00C](#))}

F22B 1/066

- • • {with double-wall tubes having a third fluid between these walls, e.g. helium for leak detection (heat-exchangers with double-wall tubes [F28D 7/10](#); double-wall pipes ~~per se~~[per se](#) [F16L 9/18](#))}

U F22B 1/16

- • the heat carrier being hot liquid or hot vapour, e.g. waste liquid, waste vapour

F22B 1/165

- • • {using heat pipes (heat pipes ~~per se~~[per se](#) [F28D 15/02](#))}

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 3/00

Other methods of steam generation; Steam boilers not provided for in other groups of this subclass

F22B 3/04

- by drop in pressure of high-pressure hot water within pressure- reducing chambers, e.g. in accumulators (steam accumulators ~~per se~~[per se](#) [F01K 1/00](#))

F22B 31/00

Modifications of boiler construction, or of tube systems, dependent on installation of combustion apparatus; Arrangements of dispositions of combustion apparatus (steam generation characterised by heating method [F22B 1/00](#); combustion apparatus ~~per se~~[per se](#) [F23](#))

F22B 31/0007

- {with combustion in a fluidized bed (fluidized bed apparatus ~~per se~~[per se](#) [B01J 8/00](#); fluidized bed combustors [F23C 10/00](#))}

U F22B 37/00

Component parts or details of steam boilers (venting devices [F16K 24/00](#); steam traps or like apparatus [F16T](#))

U F22B 37/002

- {specially adapted for nuclear steam generators, e.g. maintenance, repairing or inspecting equipment not otherwise provided for}

F22B 37/006

- • {Walking equipment, e.g. walking platforms suspended at the tube sheet (walking mechanism ~~per se~~[per se](#) [B62D 57/02](#))}

U F22B 37/02

- applicable to more than one kind or type of steam boiler

U 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](#))

F22B 37/44

- • • of safety valves (safety valves ~~per se~~[per se](#) [F16K](#))

- F22B 37/47
 - responsive to abnormal temperature, e.g. actuated by fusible plugs (such alarms or devices ~~per se~~ ~~per se~~ [G08B](#))
- F22B 37/76
 - Adaptations or mounting of devices for observing existence or direction of fluid flow (devices ~~per se~~ ~~per se~~ [G01P](#))
- F22B 37/78
 - Adaptations or mounting of level indicators (level indicators ~~per se~~ ~~per se~~ [G01F](#))

Project: N/A (F22D)

- U F22D 1/00** **Feed-water heaters, i.e. economisers or like preheaters**
 - F22D 1/50
 - incorporating thermal de-aeration of feed-water (de-aeration produced in the course of direct heat transfer [F22D 1/28](#); thermal de-aeration of water ~~per se~~ ~~per se~~ [B01D 19/00](#), [C02F 1/20](#); valves for venting [F16K 24/04](#))
- U F22D 5/00** **Controlling water feed or water level; Automatic water feeding or water-level regulators (steam traps [F16T](#); measuring or indicating instruments [G01](#); for indicating water level [G01F](#); level control in general [G05D 9/00](#))**
 - U F22D 5/26
 - Automatic feed-control systems (automatic safety devices [F22B 37/42](#); controlling in general [G05](#))
 - F22D 5/34
 - Applications of valves (valves ~~per se~~ ~~per se~~ [F16K](#))
- U F22D 11/00** **Feed-water supply not provided for in other main groups**
 - F22D 11/02
 - Arrangements of feed-water pumps ([F22D 11/06](#) takes precedence; pumps ~~per se~~ ~~per se~~ [F04](#))

Project: N/A (F23C)

- U 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)**
 - U F23C 5/08
 - Disposition of burners
 - F23C 5/32
 - to obtain rotating flames, i.e. flames moving helically or spirally
- U 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 9/08
 - for reducing temperature in combustion chamber, e.g. for protecting walls of combustion chamber

Project: N/A (F23D)

- U F23D 3/00** **Burner using capillary action**
 - U F23D 3/02
 - Wick burners
 - F23D 3/16
 - using candles (candles ~~per se~~ ~~per se~~ [C11C](#))
- U F23D 11/00** **Burners using a direct spraying action of liquid droplets or vaporised liquid into the combustion space (spraying in general [B05B](#), [B05D](#))**
 - F23D 11/001
 - {spraying nozzle combined with forced draft fan in one unit (nozzles ~~per se~~ ~~per se~~ [F23D 11/38](#))}
 - F23D 11/36
 - Details {, e.g. burner cooling means, noise reduction means}
 - F23D 11/44
 - Preheating devices; Vaporising devices (vaporising devices ~~per se~~ ~~per se~~ [F23K 5/22](#))

- U F23D 14/00** Burners for combustion of a gas, e.g. of a gas stored under pressure as a liquid
- F23D 14/46 · Details {, e.g. noise reduction means}

Project: N/A (F23G)**F23G****CREMATION FURNACES; CONSUMING WASTE PRODUCTS BY COMBUSTION**NOTE

This subclass ~~covers~~covers also the burning of low-grade fuel of solid, liquid, or gaseous nature.

Project: N/A (F23J)**F23J**

REMOVAL OR TREATMENT OF COMBUSTION PRODUCTS OR COMBUSTION RESIDUES {(from fluidised-bed combustion apparatus [F23C 10/24](#)); **FLUES** (precipitating dust from flue gases [B01D](#); composition of fuel [C10](#); combustion apparatus for consuming smoke or fumes, e.g. exhaust gases, [F23G 7/06](#))}

NOTE

This subclass ~~covers~~covers the cleaning of external surfaces of water tubes of boilers

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~~per se [F28G 1/16](#))}

F23J 15/00

Arrangement of devices for treating smoke or fumes (treating smoke or fumes, ~~see~~see the relevant class for the treatment, e.g. [B01D 53/00](#))

Project: N/A (F23L)**U F23L 5/00****Blast-producing apparatus before the fire**

F23L 5/02

· Arrangements of fans or blowers (fans or blowers ~~per se~~per se [F04](#))

Project: N/A (F23N)**U F23N 5/00****Systems for controlling combustion ([F23N 1/00](#), [F23N 3/00](#) take precedence)****U F23N 5/02**

· using devices responsive to thermal changes or to thermal expansion of a medium

U F23N 5/10

· · using thermocouples

F23N 5/107

· · {using mechanical means, e.g. safety valves}

Project: N/A (F23Q)**F23Q 11/00**

Arrangement of catalytic igniters (catalytic igniters ~~per se~~per se [C06C](#))

Project: N/A (F23R)**F23R**

GENERATING COMBUSTION PRODUCTS OF HIGH PRESSURE OR HIGH VELOCITY, e.g. GAS-TURBINE COMBUSTION CHAMBERS (using such products for specific purposes, ~~see~~see the relevant classes for the purposes; chemical aspects of gas production [C06D 5/00](#); gas-turbine plants characterised by the arrangement of the combustion chamber in the plant [F02C 3/14](#); arrangement of afterburners in jet-propulsion plants [F02K 3/10](#); combustion chambers of rocket-engine plants [F02K 9/00](#))

Project: N/A (F24)**F24**

HEATING; RANGES; VENTILATING (protecting plants by heating in gardens, orchards, or forests [A01G 13/06](#); baking ovens and apparatus [A21B](#); cooking devices other than ranges [A47J](#); forging [B21J](#), [B21K](#); specially adapted for vehicles, [see](#) [see](#) the relevant subclasses of [B60](#) - [B64](#); combustion apparatus in general [F23](#); drying [F26B](#); ovens in general [F27](#); electric heating elements and arrangements [H05B](#))

NOTE

In this class, the following terms are used with the meanings indicated:

- "stove" includes apparatus which may have an open fire, e.g. fireplace;
- "range" means an apparatus for cooking having elements that perform different cooking operations or cooking and heating operations.

Project: N/A (F24C)**U F24C 3/00****Stoves and ranges for gaseous fuels**

F24C 3/08

- Arrangement or mounting of burners (burners [per se](#) [per se](#) [F23D](#))

F24C 3/10

- Arrangement or mounting of ignition devices (ignition devices [per se](#) [per se](#) [F23Q](#))

F24C 3/14

- with special adaptation for travelling, e.g. collapsible

U F24C 5/00**Stoves and ranges for liquid fuels**

F24C 5/12

- Arrangement or mounting of burners (burners [per se](#) [per se](#) [F23D](#))

F24C 5/14

- Arrangement or mounting of ignition devices (ignition devices [per se](#) [per se](#) [F23Q](#))

U F24C 7/00**Stoves or ranges heated by electrical energy (electric heating elements or arrangements [H05B](#))**

U F24C 7/06

- Arrangement or mounting of electric heating elements

U F24C 7/062

- {on stoves}

F24C 7/065

- • {with reflectors (reflectors [per se](#) [per se](#) [F24C 15/22](#))}

F24C 9/00

Stoves or ranges heated by a single type of energy supply not covered by groups [F24C 3/00](#) - [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**

U F24C 15/20

- Removing cooking fumes (parts, details or accessories of cooking-vessels for withdrawing or condensing cooking vapours from such vessels [A47J 36/38](#))

F24C 15/2035

- • {Arrangement or mounting of filters ([F24C 15/2021](#) takes precedence; filters [per se](#) [per se](#) [B01D 46/00](#))}

Project: N/A (F24D)**U F24D 3/00****Hot-water central heating systems ([F24D 10/00](#), [F24D 11/00](#) take precedence)**

F24D 3/005

- {combined with solar energy (solar heat collectors [per se](#) [per se](#) [F24J 2/00](#))}

U F24D 5/00**Hot-air central heating systems ([F24D 10/00](#), [F24D 11/00](#) take precedence; air conditioning [F24F](#)); Exhaust gas central heating systems**

F24D 5/005

- {combined with solar energy (solar heat collectors [per se](#) [per se](#) [F24J 2/00](#))}

F24D 11/00 Central heating systems using heat accumulated in storage masses (self-contained storage heating units [F24D 15/02](#); storage masses, [see](#) [see](#) the relevant subclasses)

F24D 2240/00 Characterizing positions, e.g. of sensors, inlets, outlets

Project: N/A (F24F)

F24F AIR-CONDITIONING, AIR-HUMIDIFICATION, VENTILATION, USE OF AIR CURRENTS FOR SCREENING (devices for ventilating greenhouses [A01G 9/246](#); animal husbandry [A01K](#), e.g. controlling humidity in incubators [A01K 41/04](#); disinfecting or sterilising of air [A61L](#); devices for reconditioning breathing air in sealed rooms or for ventilating gas-proof shelters [A62B](#); filtering, washing or drying of gases [B01D](#); mixing gases with vapours or liquids in general [B01F 3/00](#); spraying [B05B](#), [B05D](#); removing dirt or fumes from areas where they are produced [B08B 15/00](#); ventilation, air-conditioning or cooling, specially adapted for vehicles, [see](#) [see](#) the relevant vehicle places, e.g. [B60H](#), [B61D 27/00](#), [B64D 13/00](#); production of ozone [C01B 13/10](#); chimneys or flues [E04F 17/02](#), [E04H 12/28](#), [F23J 11/00](#), [F23L 17/02](#); air ducts or conduits [E04F 17/04](#), [F16L](#); ventilation in doors or windows [E06B 7/02](#); fans, blowers [F04](#); noise-absorbing in pipes or pipe systems [F16L](#); tops for chimneys and ventilating shafts [F23L](#); cooling [F25](#); details of heat-exchange or heat-transfer apparatus, of general application [F28F](#); apparatus for generating ions to be introduced into non-enclosed gases, e.g. the atmosphere [H01T 23/00](#))

NOTES

1. In this subclass:

- air-humidification as auxiliary treatment in air-conditioning, i.e. in units wherein the air is also either cooled or heated, is covered by groups [F24F 1/00](#) or [F24F 3/14](#)
- air-humidification [per se](#) [per se](#), e.g. "room humidifiers", is covered by group [F24F 6/00](#)

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

- "air-conditioning" means the supply of air to rooms or spaces by means which provide for the treatment of the air in at least two of the following ways: heating - cooling - any other kind of treatment, e.g. humidification.

- U F24F 3/00** Air-conditioning systems in which conditioned primary air is supplied from one or more central stations to distributing units in the rooms or spaces where it may receive secondary treatment; Apparatus specially designed for such systems (room units [F24F 1/00](#); construction of heat-exchangers [F28](#) {[F24F 3/044](#) takes precedence; arrangement or assembly of components for the primary treatment of air [F24F 11/08](#)})
- F24F 3/12** - characterised by the treatment of the air otherwise than by heating and cooling ([F24F 3/02](#), [F24F 3/06](#) take precedence, apparatus for the individual treatment, [see](#) [see](#) the appropriate subclasses for the treatments)
- 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 5/0075** - {Systems using thermal walls, e.g. double window (double windows [per se](#) [per se](#) [see](#) [E06B](#))}
- U F24F 6/00** Air-humidification, e.g. for increasing comfort in living spaces by "room humidifiers" {cooling by humidification}

- F24F 6/02 • by evaporation of water in the air {(humidifiers specially adapted for radiators [see see F24D 19/008](#))}
- U F24F 6/12 • by forming water dispersions in the air
- F24F 6/14 • • using nozzles (nozzles [per se per se](#), spraying in general [B05B](#))
- F24F 11/00** **Control or safety systems or apparatus ({extinguishing or preventing fire [A62C 3/14](#)}; control valves [per se per se F16K](#); humidity control [G05D 22/00](#))**

Project: N/A (F24H)

- U F24H 9/00** **Details**
- U F24H 9/12 • Connecting heaters to circulation pipes (pipe joints in general [F16L](#))
- U F24H 9/122 • • {for water heaters}
- U F24H 9/124 • • • {storage heaters}
- F24H 9/126 • • • • {Arrangement of inlet valves used therewith (valves [per se per se F16K](#))}
- 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 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 (F24J)

- F24J** **PRODUCING OR USE OF HEAT NOT OTHERWISE PROVIDED FOR (materials therefor [C09K 5/00](#); engines or other mechanisms for producing mechanical power from heat, [see see](#) the relevant classes, e.g. [F03G](#) for using natural heat)**
- U F24J 2/00 Use of solar heat, e.g. solar heat collectors (distillation or evaporation of water using solar energy [C02F 1/14](#); devices for producing mechanical power from solar energy [F03G 6/00](#); semiconductor devices specially adapted for converting solar energy into electrical energy [H01L 31/00](#); photovoltaic [PV] cells including means directly associated with the PV cell to utilise heat energy [H01L 31/0525](#); PV modules including means associated with the PV module to utilise heat energy [H02S 40/44](#))
- NOTE
Supporting structures also intended for use with photovoltaic modules should further be classified in the relevant groups of subclass [H02S](#).
- U F24J 2/04 • Solar heat collectors having working fluid conveyed through collector
- F24J 2/06 • • having concentrating elements (optical elements or systems [per se per se G02B](#))

Project: N/A (F25B)

- U F25B 9/00** **Compression machines, plant, or systems, in which the refrigerant is air or other gas of low boiling point**
- U F25B 9/002 • {characterised by the refrigerant}
- F25B 9/006 • • {the refrigerant containing more than one component ([F25B 9/004](#) takes precedence; refrigerant materials [per se per se C09K 5/00](#))}
- 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](#) - [F25B 23/00](#) (combinations of two or more modes of operation covered by a single main group, [see see](#) the relevant group)**
- F25B 31/00** **Compressor arrangements (compressors [per se per se F04](#))**

- F25B 31/002 • {lubrication (of compressors ~~per se~~ ~~per se~~ [F04B](#), of machines or engines in general [F01M](#))}
- F25B 31/006 • {cooling of compressor or motor (of compressors ~~per se~~ ~~per se~~ [F04B 39/06](#))}
- F25B 41/00** **Fluid-circulation arrangements, e.g. for transferring liquid from evaporator to boiler (pumps ~~per se~~ ~~per se~~, sealings therefor [F04](#))**
- F25B 41/04 • Disposition of valves (valves ~~per se~~ ~~per se~~ [F16K](#))
- U F25B 41/06 • Flow restrictors, e.g. capillary tubes; Disposition thereof
- F25B 41/062 • • {Expansion valves (regulating valves ~~per se~~ ~~per se~~ [G05D](#))}
- U F25B 49/00** **Arrangement or mounting of control or safety devices (testing refrigerators [G01M](#); control in general [G05](#))**
- U F25B 49/02 • for compression type machines, plant or systems
- F25B 49/025 • • {Motor control arrangements (motors ~~per se~~ ~~per se~~ [H02K](#))}

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~~~~see~~ the appropriate subclasses of classes [B60](#) - [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~~~~see~~ the relevant classes)

NOTES

1. 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.
2. Attention is drawn to Note (2) following the title of subclass [F24F](#).

- U F25D 23/00** **General constructional features ([F25D 21/00](#) takes precedence)**
- U F25D 23/06 • Walls ([F25D 23/08](#) takes precedence; containers with thermal insulation [B65D 81/38](#))
- U F25D 23/062 • • {defining a cabinet}
- F25D 23/064 • • • {formed by moulding, e.g. moulding ~~in situ~~ ~~in situ~~}

Project: N/A (F25J)

- 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)}**
- U F25J 1/0002 • {characterised by the fluid to be liquefied (not used)}
- F25J 1/0027 • • {Oxides of carbon, e.g. CO₂}
- F25J 1/006 • {characterised by the refrigerant fluid used (refrigerants in vapor compression cycles [F25B 9/002](#), refrigerant materials ~~per se~~ ~~per se~~ [C09K 5/00](#))(not used)}

U	F25J 1/02	<ul style="list-style-type: none"> • 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)}
U	F25J 1/0203	<ul style="list-style-type: none"> • • {using a single-component refrigerant [SCR] fluid in a closed vapor compression cycle (F25J 1/0211 takes precedence) (not used)}
	F25J 1/0208	<ul style="list-style-type: none"> • • • {in combination with an internal quasi-closed refrigeration loop, e.g. with deep flash recycle loop (F25J 1/021 takes precedence)}
U	F25J 1/0211	<ul style="list-style-type: none"> • • {using a multi-component refrigerant [MCR] fluid in a closed vapor compression cycle (not used)}
U	F25J 1/0217	<ul style="list-style-type: none"> • • • {as at least a three level refrigeration cascade with at least one MCR cycle}
	F25J 1/0218	<ul style="list-style-type: none"> • • • • {with one or more SCR cycles, e.g. with a C3 pre-cooling cycle}
U	F25J 1/0243	<ul style="list-style-type: none"> • • {Start-up or control of the process; Details of the apparatus used; Details of the refrigerant compression system used (not used)}
U	F25J 1/0257	<ul style="list-style-type: none"> • • • {Construction and layout of liquefaction equipments, e.g. valves, machines (F25J 1/0279 takes precedence)}
	F25J 1/0259	<ul style="list-style-type: none"> • • • • {Modularity and arrangement of parts of the liquefaction unit and in particular of the cold box, e.g. pre-fabrication, assembling and erection, dimensions, horizontal layout "plot"}
U	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)}
U	F25J 3/02	<ul style="list-style-type: none"> • 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})
U	F25J 3/04	<ul style="list-style-type: none"> • • for air {(not used)}
U	F25J 3/04006	<ul style="list-style-type: none"> • • • {Providing pressurised feed air or process streams within or from the air fractionation unit (not used)}
U	F25J 3/04109	<ul style="list-style-type: none"> • • • • {Arrangements of compressors and /or their drivers (using work extraction by mechanical coupling of compression and cold expansion F25J 3/04381)}
	F25J 3/04115	<ul style="list-style-type: none"> • • • • • {characterised by the type of prime driver, e.g. hot gas expander}
U	F25J 3/04151	<ul style="list-style-type: none"> • • • {Purification and (pre-)cooling of the feed air; recuperative heat-exchange with product streams (not used)}
U	F25J 3/04187	<ul style="list-style-type: none"> • • • • {Cooling of the purified feed air by recuperative heat-exchange; Heat-exchange with product streams (arrangements of cold exchangers F25J 5/002)}
	F25J 3/04218	<ul style="list-style-type: none"> • • • • • {Parallel arrangement of the main heat exchange line in cores having different functions, e.g. in low pressure and high pressure cores (F25J 3/04503 takes precedence)}
U	F25J 3/04521	<ul style="list-style-type: none"> • • • {Coupling of the air fractionation unit to an air gas-consuming unit, so-called integrated processes (combined plants, e.g. engine plant combined with an industrial process F01K 23/064; gas-turbine plants supplying working fluid to a chemical process F02C 6/10)(not used)}
U	F25J 3/04527	<ul style="list-style-type: none"> • • • • {Integration with an oxygen consuming unit, e.g. glass facility, waste incineration or oxygen based processes in general}
U	F25J 3/04551	<ul style="list-style-type: none"> • • • • • {for the metal production}
	F25J 3/04557	<ul style="list-style-type: none"> • • • • • • {for pig iron or steel making, e.g. blast furnace, Corex}
U	F25J 3/04563	<ul style="list-style-type: none"> • • • • {Integration with an nitrogen consuming unit, e.g. for purging, inerting, cooling or heating}
	F25J 3/04575	<ul style="list-style-type: none"> • • • • • {for a gas expansion plant, e.g. dilution of the combustion gas in a gas turbine}

- F25J 3/04587 {for the NH₃ synthesis, e.g. for adjusting the H₂/N₂ ratio}
- U F25J 3/04763 . . . {Start-up or control of the process; Details of the apparatus used (not used)}
- U F25J 3/04769 {Operation, control and regulation of the process; Instrumentation within the process}
- U F25J 3/04812 {Different modes, i.e. "runs" of operation ([F25J 3/04472](#) takes precedence)}
- F25J 3/04836 {Variable air feed, i.e. "load" or product demand during specified periods, e.g. during periods with high respectively low power costs ([F25J 3/0483](#) takes precedence)}
- U F25J 5/00 Arrangements of cold exchangers or cold accumulators in separation or liquefaction plants (heat exchangers [F28C](#), [F28D](#), [F28F](#))**
- U F25J 5/002 . {for continuously recuperating cold, i.e. in a so-called recuperative heat exchanger}
- F25J 5/005 . . {in a reboiler-condenser, e.g. within a column}
- U F25J 2210/00 Processes characterised by the type or other details of the feed stream (not used)**
- F25J 2210/02 . Multiple feed streams, e.g. originating from different sources
- U F25J 2220/00 Processes or apparatus involving steps for the removal of impurities (not used)**
- F25J 2220/42 . Separating low boiling, i.e. more volatile components from nitrogen, e.g. He, H₂, Ne

Project: N/A (F26B)

- U F26B 3/00 Drying solid materials or objects by processes involving the application of heat (in specific machines or apparatus [F26B 9/00](#) - [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)
- U 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 3/082 {arrangements of devices for distributing fluidising gas, e.g. grids, nozzles ([F26B 3/0926](#) takes precedence; such devices *per-se-per se* [B01J 8/44](#))}
- U F26B 3/18 . by conduction, i.e. the heat is conveyed from the heat source, e.g. gas flame, to the materials or objects to be dried by direct contact
- F26B 3/20 . . the heat source being a heated surface {, e.g. a moving belt or conveyor} ([F26B 3/22](#) takes 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](#))}
- U F26B 13/00 Machines and apparatus for drying fabrics, fibres, yarns, or other materials in long lengths, with progressive movement**

- F26B 13/24
- Arrangements of devices using drying processes not involving heating (such processes ~~per se~~ ~~per se~~ [F26B 5/00](#))
- U 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; conveyors 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~~ ~~per se~~ [F26B 25/18](#); with vertical movement [F26B 15/22](#))}

Project: N/A (F27)**F27**

FURNACES; KILNS; OVENS; RETORTS (specially adapted for a purpose covered by a single other class and specifically mentioned in that class, ~~see see~~ the class in question, e.g. bakery ovens [A21B](#), glass melting furnaces [C03B](#), coke or gas-making apparatus [C10B](#), [C10J](#), apparatus for cracking hydrocarbons [C10G](#), blast furnaces [C21B](#), converters for making steel [C21C](#), furnaces for heat treatment of metal [C21D](#); furnaces for electrosag or arc remelting of metals [C22B 9/00](#); enamelling ovens [C23D](#); combustion apparatus [F23](#); electric heating [H05B](#))

NOTES

1. This class deals with furnaces, kilns, ovens, retorts, open sintering apparatus, and details or accessories therefor, in general. It includes the arrangement of electrical heating elements in or on furnaces, but not the elements themselves. It is not concerned with the processes carried on within the furnaces.
2. In this class, where appropriate, the term "furnaces" is to be understood as covering kilns, ovens, or retorts.

Project: N/A (F27B)**F27B****FURNACES, KILNS, OVENS, OR RETORTS IN GENERAL; OPEN SINTERING OR LIKE APPARATUS**NOTE

Attention is drawn to the references and notes following the title of class [F27](#) and the note (par. III) following the Contents of Section [H](#)[H](#).

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:

F27B 1/09	covered by	F27B 1/08
F27B 5/05	" "	F27B 5/04
F27B 14/16 , F27B 14/18	" "	F27B 14/0806
F27B 21/08 - F27B 21/14	" "	F27D

Project: N/A (F27D)**F27D**

DETAILS OR ACCESSORIES OF FURNACES, KILNS, OVENS, OR RETORTS, IN SO FAR AS THEY ARE OF KINDS OCCURRING IN MORE THAN ONE KIND OF FURNACE (combustion apparatus [F23](#))

NOTE

Attention is drawn to the references and Notes following the title of class [F27](#) and the Note III following the Contents of Section [HH](#).

U F27D 1/00

Casings; Linings; Walls; Roofs (refractory materials [C04B](#); firebridges for combustion chambers [F23M 3/00](#))

F27D 1/04

- characterised by the form {, e.g. shape} of the bricks or blocks used

F27D 1/06

- • Composite bricks or blocks {, e.g. panels, modules}

F27D 11/00

Arrangement of elements for electric heating in or on furnaces (electric heating ~~per se~~ [per se](#) [H05B](#))

F27D 17/00

Arrangements for using waste heat (heat-exchangers ~~per se~~ [per se](#) [F28](#)); Arrangements for using, or disposing of, waste gases

Project: N/A (F28B)**U F28B 1/00**

Condensers in which the steam or vapour is separate from the cooling medium by walls, e.g. surface condenser

F28B 1/06

- using air or other gas as the cooling medium

NOTE

This group ~~covers~~[covers](#) also air cooled heat exchangers for which the use as condenser is not explicitly specified, but the configuration is similar to air cooled condensers, e.g. dry cooling towers

Project: N/A (F28D)**U F28D 9/00**

Heat-exchange apparatus having stationary plate-like or laminated conduit assemblies for both heat-exchange media, the media being in contact with different sides of a conduit wall {([F28F 3/083](#), [F28F 3/086](#) take precedence)}

F28D 9/02

- the heat-exchange media travelling at an angle to one another ([F28D 9/04](#) takes precedence {not used, ~~see~~[see](#) [F28D 9/00](#) and other subgroups})

F28D 20/00

Heat storage plants or apparatus in general (specially adapted for particular applications, ~~see~~[see](#) the relevant places, e.g. [F24D 15/02](#)); Regenerative heat-exchange apparatus not covered by groups [F28D 17/00](#) or [F28D 19/00](#)

Project: N/A (F28F)**U F28F 1/00**

Tubular elements; Assemblies of tubular elements (specially adapted for movement [F28F 5/00](#))

U F28F 1/02

- Tubular elements of cross-section which is non-circular ([F28F 1/08](#), [F28F 1/10](#) take precedence)

F28F 1/025

- • {with variable shape, e.g. with modified tube ends, with different geometrical features ([F28F 1/06](#), [F28F 1/08](#), [F28F 9/16](#), [F28F 9/18](#) take precedence)}

F28F 5/00

Elements specially adapted for movement (arrangements for moving the elements, ~~see~~[see](#) the appropriate subclass for the apparatus concerned)

U F28F 25/00

Component parts of trickle coolers (arrangements for increasing heat transfer [F28F 13/00](#); controlling arrangements [F28F 27/00](#))

- U F28F 25/02 • for distributing, circulating, and accumulating liquid (spraying or atomising in general [B05B](#), [B05D](#))
- F28F 25/08 • • Splashing boards or grids, e.g. for converting liquid sprays into liquid films; Elements or beds for increasing the area of the contact surface (packing elements ~~per se~~ [per se](#) [B01J 19/30](#), [B01J 19/32](#))

Project: N/A (F41)**F41****WEAPONS**NOTES

1. This class ~~covers~~[covers](#) also means for practice and training which may cover also means for practice and training which may have aspects of simulation, e.g. in apparatus for so-called "military games", although simulators are generally covered by class [G09](#).

2. In this class, the following terms or expressions are used with the meanings indicated:

- "smallarm" means a firearm which is generally held with one or both hands for firing, but this term also includes a light machine-gun which may be supported on a tripod or the like during firing;
- "gun" means any weapon having a barrel and a trigger or firing mechanism for projecting a missile; it may be a piece of ordnance or a smallarm. It may use combustible or explosive propellant charges, air pressure, electromagnetism or other propulsive forces;
- "revolver-type gun" means a gun having a revolving drum magazine, the chambers of which are used successively as firing chamber;
- "revolver" means a revolver-type pistol;
- "semi-automatic firearm" means a firearm from which one shot is fired after actuation of the trigger and which then returns to a condition for firing a subsequent shot upon renewed actuation of the trigger;
- "automatic gun" means a gun which will continue firing so long as the initial firing pressure is maintained on the trigger;
- "sighting" means bringing into visual coincidence a direction of a target;
- "aiming" means bringing a weapon to a direction differing from the sighting direction by corrections in order that the projectile may hit the target;
- "laying" means setting a weapon in the correct position for hitting a mark.

3. Attention is drawn to the definitions of "projectile", "missile" and "rocket" given in Note 2 following the title of class [F42](#).

Project: N/A (F41A)

- U F41A 5/00 **Mechanisms or systems operated by propellant charge energy for automatically opening the lock**
- U F41A 5/02 • recoil-operated
- F41A 5/10 • • having a movable inertia weight {, e.g. for storing energy}
- 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](#))**
- U F41A 9/29 • Feeding of belted ammunition
- F41A 9/34 • • from magazines (magazines for belted ammunition ~~per se~~ [per se](#) [F41A 9/79](#))
- U F41A 9/61 • Magazines
- U F41A 9/64 • • for unbelted ammunition
- U F41A 9/65 • • • Box magazines having a cartridge follower

- F41A 9/66
 - • • Arrangements thereon for charging, i.e. reloading (apparatus or tools for reloading of magazines [F41A 9/83](#))
- U F41A 9/82
 - Reloading {or unloading} of magazines
- F41A 9/83
 - • Apparatus or tools for reloading magazines with unbelted ammunition, e.g. cartridge clips
- U 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 15/12
 - for bolt-action guns
- F41A 15/14
 - • the ejector being mounted on or within the bolt; {Extractors ~~per se~~ [per se](#) [F41A 15/12](#)}

Project: N/A (F41B)

- F41B 15/00 Weapons not otherwise provided for {, e.g. nunchakus, throwing knives}

Project: N/A (F41C)

- U F41C 27/00

Miscellaneous attachments for smallarms; Accessories; Details not otherwise provided for
- F41C 27/04
 - Arrangements for mounting spades or shields (spades ~~per se~~ [per se](#) [A01B 1/02](#) shields ~~per se~~ [per se](#) [F41H 5/06](#))

Project: N/A (F41F)

- F41F **APPARATUS FOR LAUNCHING PROJECTILES OR MISSILES FROM BARRELS, e.g. CANNONS (smallarms [F41C](#)); LAUNCHERS FOR ROCKETS OR TORPEDOES; HARPOON GUNS (functional features or details common to both smallarms and ordnance, mountings therefor [F41A](#); projecting missiles without use of explosive or combustible propellant charge [F41B](#))**

NOTE

This subclass ~~does not cover~~ [does not cover](#) the arrangement of armaments, adaptation of mountings therefor, or arrangements of ammunition handlers on ships or aircraft, if they present a shipbuilding or aircraft-building aspect, which are covered by subclass [B63G](#) or [B64D](#).

Project: N/A (F41G)

- U 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 3/06
 - with rangefinder (rangefinders ~~per se~~ [per se](#) [G01C](#))
- U F41G 3/26
 - Teaching or practice apparatus for gun-aiming or gun-laying {(shooting games [A63F 9/02](#); light- or radiation-emitting guns [F41A 33/02](#); targets therefor [F41J](#); responders, transponders for radar, sonar, lidar [G01S 13/767](#), [G01S 15/74](#), [G01S 17/74](#))}
- U F41G 3/2616
 - • {using a light emitting device}
- F41G 3/2694
 - • • {for simulating a target ([F41G 3/2627](#) takes precedence; moving targets ~~per se~~ [per se](#) [F41J 9/00](#))}

Project: N/A (F41H)

F41H 3/00	Camouflage, i.e. means or methods for concealment or disguise (for vessels B63G 8/34 , B63G 13/02 ; {sound camouflage, i.e. simulating gun fire noise, F41A 33/04 ; dummy or decoy targets F41J ; chaff per se per se F41J 2/00 ; ammunition for dispensing chaff F42B 5/15 , F42B 12/70 ; radar absorbing fabrics H01Q 17/005 })
F41H 3/02	<ul style="list-style-type: none"> • {Flexible, e.g. fabric} covers, e.g. screens, nets {characterised by their material or structure} (making thereof, see see the relevant classes, e.g. D04)
U 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 5/06	<ul style="list-style-type: none"> • Shields (in ships B63G 9/00; in aircraft B64D 7/00 {blasting mats F42D 5/05})
U F41H 5/08	<ul style="list-style-type: none"> • • for personal use, {i.e. hand held shields}
F41H 5/10	<ul style="list-style-type: none"> • • • Spade bayonets, i.e. usable as a spade, bayonet or cover against rifle fire {(not used; see see F41C 27/04)}
F41H 11/00	Defence installations; Defence devices (constructional aspects see 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 })

Project: N/A (F41J)

U F41J 5/00	Target indicating systems; Target-hit or score detecting systems {(for shooting or hurling games A63F 9/0204 ; devices for measuring projectile velocity using optical means G01P 3/685)}
U F41J 5/18	<ul style="list-style-type: none"> • Targets having hit-indicating means actuated or moved mechanically when the target has been hit, e.g. discs or flags (the target as a whole disappearing or moving when hit F41J 7/04)
U F41J 5/20	<ul style="list-style-type: none"> • • indicating which part of the target has been hit, i.e. the score
F41J 5/205	<ul style="list-style-type: none"> • • • {having target sections displaced or broken when hit, e.g. for visual inspection}
U F41J 9/00	Moving targets, i.e. moving when fired at (F41J 2/00 takes precedence)
F41J 9/02	<ul style="list-style-type: none"> • Land-based targets {, e.g. inflatable targets supported by fluid pressure}

Project: N/A (F42B)

U F42B 3/00	Blasting cartridges, i.e. case and explosive (fuse cords, e.g. detonating fuse cords C06C 5/00 ; chemical aspects of detonators, blasting caps or primers C06C 7/00)
F42B 3/087	<ul style="list-style-type: none"> • Flexible or deformable blasting cartridges, e.g. bags or hoses {for slurries} (loaded cartridge bags F42B 5/38)
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 5/26	<ul style="list-style-type: none"> • Cartridge cases (F42B 5/18 takes precedence; {manufacturing of cartridge cases B21K 21/04})
F42B 5/28	<ul style="list-style-type: none"> • • of metal {, i.e. the cartridge-case tube is of metal}
F42B 5/30	<ul style="list-style-type: none"> • • of plastics {, i.e. the cartridge-case tube is of plastics}

- U F42B 12/00** Projectiles, missiles or mines characterised by the warhead, the intended effect, or the material ([F42B 6/00](#), [F42B 10/00](#), [F42B 14/00](#) take precedence; for practice or training [F42B 8/12](#), [F42B 8/28](#); self-propulsion or guidance aspects [F42B 15/00](#))
- U F42B 12/02** • characterised by the warhead or the intended effect
- U F42B 12/04** • • of armour-piercing type
- F42B 12/10** • • • with shaped or hollow charge (shaped or hollow charges ~~per se~~ [per se](#) [F42B 1/02](#); {mines having hollow charges [F42B 23/04](#)})
- F42B 12/16** • • • in combination with an additional projectile or charge, acting successively on the target {(see [see](#) also [F42B 12/625](#))}
- U F42B 15/00** Self-propelled projectiles or missiles, e.g. rockets; Guided missiles ([F42B 10/00](#), [F42B 12/00](#), [F42B 14/00](#) take precedence: for practice or training [F42B 8/12](#); rocket torpedoes [F42B 17/00](#); marine torpedoes [F42B 19/00](#); cosmonautic vehicles [B64G](#); jet-propulsion plants [F02K](#))
- F42B 15/01** • Arrangements thereon for guidance or control ({steering arrangements [F42B 10/60](#); aircraft flight control [B64C](#); guidance systems other than those installed aboard [F41G 7/00](#), [F41G 9/00](#); locating by use of radio or other waves [G01S](#); flight control in general [G05D 1/00](#); computer aspects [G06](#))}
- U F42B 22/00** Marine mines, e.g. launched by surface vessels or submarines ([F42B 12/00](#) takes precedence; for practice or training [F42B 8/28](#); mine laying or sweeping [B63G](#))
- F42B 22/02** • Contact mines {, e.g. antennae-type mines}{contact fuzes [F42C 7/02](#)}
- U F42B 23/00** Land mines; {Land torpedoes}{[F42B 12/00](#) takes precedence; for practice or training [F42B 8/28](#)}
- F42B 23/04** • anti-vehicle {, e.g. anti-aircraft or anti tank (hollow charges ~~per se~~ [per se](#) [F42B 1/02](#); artillery projectiles having hollow charges [F42B 12/10](#))}

Project: N/A (F42C)

- U F42C 15/00** Arming-means in fuzes; Safety means for preventing premature detonation of fuzes or charges
- F42C 15/005** • {Combination-type safety mechanisms, i.e. two or more safeties are moved in a predetermined sequence to each other}
- U F42C 19/00** Details of fuzes (except [F42C 15/00](#))
- U F42C 19/08** • Primers (initiators for blasting cartridges [F42B 3/10](#); ignition means for rocket engine plants [F02K 9/95](#)); Detonators
- F42C 19/0803** • • {characterised by the combination of ~~per se~~ [per se](#) known chemical composition in the priming substance}

Project: N/A (G01)**G01****MEASURING (counting [G06M](#)); TESTING**NOTES

1. This class ~~covers~~ [covers](#), in addition to "true" measuring instruments, other indicating or recording devices of analogous construction, and also signalling or control devices insofar as they are concerned with measurement (as defined in Note 2 below) and are not specially adapted to the particular purpose of signalling or control.

2. In this class, the following term is used with the meaning indicated:

- "measuring" is used to cover considerably more than its primary or basic meaning. In this primary sense, it means finding a numerical expression of the value of a variable in relation to a unit or datum or to another variable

of the same nature, e.g. expressing a length in terms of another length as in measuring a length with a scale; the value may be obtained directly (as just suggested) or by measuring some other variable of which the value can be related to the value of the required variable, as in measuring a change in temperature by measuring a resultant change in the length of a column of mercury. However, since the same device or instrument may, instead of giving an immediate indication, be used to produce a record or to initiate a signal to produce an indication or control effect, or may be used in combination with other devices or instruments to give a conjoint result from measurement of two or more variables of the same or different kinds, it is necessary to interpret "measuring" as including also any operation that would make it possible to obtain such a numerical expression by the additional use of some way of converting a value into figures. Thus the expression in figures may be actually made by a digital presentation or by reading a scale, or an indication of it may be given without the use of figures, e.g. by some perceptible feature (variable) of the entity (e.g. object, substance, beam of light) of which the variable being measured is a property or condition or by an analogue of such a feature (e.g. the corresponding position of a member without any scale, a corresponding voltage generated in some way). In many cases there is no such value indication but only an indication of difference or equality in relation to a standard or datum (of which the value may or may not be known in figures); the standard or datum may be the value of another variable of the same nature but of a different entity (e.g. a standard measure) or of the same entity at a different time.

In its simplest form, measurement may give merely an indication of presence or absence of a certain condition or quality, e.g. movement (in any direction or in a particular direction), or whether a variable exceeds a predetermined value.

3. Attention is drawn to the Notes following the title of Section [GG](#), especially as regards the definition of the term "variable".

4. In many measuring arrangements, a first variable to be measured is transformed into a second, or further, variables. The second, or further, variables may be (a) a condition related to the first variable and produced in a member, or (b) a displacement of a member. Further transformation may be needed.

When classifying such an arrangement, (i) the transformation step, or each transformation step, that is of interest is classified, or (ii) if interest lies only in the system as a whole, the first variable is classified in the appropriate place.

This is particularly important where two or more conversions take place, for instance where a first variable, for example pressure, is transformed into a second variable, for example an optical property of a sensing body, and that second variable is expressed by means of a third variable, for example an electric effect. In such a case, the following classification places should be considered: the place for the transformation of the first variable, that for sensing the condition caused by that variable, subclass [G01D](#) for expression of the measurement, and finally the place for the overall system, if any

5. The measurement of change in the value of a physical property is classified in the same subclass as measurement of that physical property, e.g. measurement of expansion of length is classified in [G01B](#).

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 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](#) - [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.

U 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 3/02
G01B 3/10

- Rulers or tapes with scales or marks for direct reading
- flexible {, e.g. tape measures}

NOTE

{Group [G01B 3/1002](#) takes precedence over groups [G01B 3/1005](#) - [G01B 3/1084](#)}

G01B 3/1082

- • {Details of the tape **per se per se**, e.g. scale structure, indicia on scale, particular material for the tape}

G01B 3/38

- Gauges with an open yoke and opposed faces, i.e. calipers, in which the internal distance between the faces is fixed, although it may be preadjustable

G01B 5/00 Measuring arrangements characterised by the use of mechanical means (instruments of the types covered by group [G01B 3/00](#) ~~per se~~ ~~per se~~ [G01B 3/00](#))

- U G01B 5/24 · for measuring angles or tapers; for testing alignment of axes
- G01B 5/243 · · {for measuring chamfer (~~see~~ [G01B 3/56](#))}

G01B 11/00 Measuring arrangements characterised by the use of optical means (instruments of the types covered by group [G01B 9/00](#) ~~per se~~ ~~per se~~ [G01B 9/00](#))

Project: N/A (G01C)

U G01C 1/00 Measuring angles (in compasses [G01C 17/00](#))

- U G01C 1/08 · Sextants
- G01C 1/10 · · including an artificial horizon ([G01C 1/14](#) takes precedence; artificial horizons ~~per se~~ ~~per se~~ [G01C 15/14](#))

U 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 5/06 · by using barometric means (barometers ~~per se~~ ~~per se~~ [G01L](#))

U G01C 9/00 Measuring inclination, e.g. by clinometers, by levels {(switches operated by inclination or orientation [H01H 35/02](#))}

- G01C 9/10 · by using rolling bodies {, e.g. spheres, cylinders, mercury droplets (tilting mercury container switches [H01H 29/20](#))}

U 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](#) - [G01C 11/34](#)

- U G01C 11/04 · Interpretation of pictures
- U G01C 11/06 · · by comparison of two or more pictures of the same area
- U G01C 11/08 · · · the pictures not being supported in the same relative position as when they were taken
- G01C 11/10 · · · · using computers to control the position of the pictures (computers ~~per se~~ ~~per se~~ [G06](#))
- U G01C 11/12 · · · the pictures being supported in the same relative position as when they were taken
- G01C 11/26 · · · · using computers to control the position of the pictures (computers ~~per se~~ ~~per se~~ [G06](#))

U 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](#))

- 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 21/3423 {Multimodal routing, i.e. combining two or more modes of transportation, where the modes can be any of, e.g. driving, walking, cycling, public transport}
- U 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](#))}
- G01C 21/3602 {Input other than that of destination using image analysis, e.g. detection of road signs, lanes, buildings, real preceding vehicles using a camera (image data processing ~~per se~~ [per se G06T](#))}
- U G01C 21/3605 {Destination input or retrieval}
- G01C 21/3608 {using speech input, e.g. using speech recognition (speech recognition ~~per se~~ [per se G10L 15/00](#))}
- 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](#))}
- G01C 21/3629 {Guidance using speech or audio output, e.g. text-to-speech (text to speech systems ~~per se~~ [per se G10L 13/00](#))}
- 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~~ [per se G06M](#))**

Project: N/A (G01D)**G01D**

MEASURING NOT SPECIALLY ADAPTED FOR A SPECIFIC VARIABLE; ARRANGEMENTS FOR MEASURING TWO OR MORE VARIABLES NOT COVERED IN A SINGLE OTHER SUBCLASS; TARIFF METERING APPARATUS; MEASURING OR TESTING NOT OTHERWISE PROVIDED FOR (means structurally associated with lightning or other over-voltage discharging apparatus for recording the operation thereof [G01R](#); displaying information in general [G09F](#); recording in a way which requires playback through a transducer [G11B](#))

NOTES

1. This subclass ~~covers~~ [covers](#) :

- devices for indicating or recording the results of measurements, not peculiar to variables covered by a single other subclass;
- analogous apparatus but in which the input is not a variable to be measured, e.g. a hand operation;
- details of measuring instruments, which are of general interest;
- measurement transducers not adapted solely for the measurement of a single specified variable and not provided for elsewhere, i.e. means for converting the output of a sensing member to another variable where the form or nature of the sensing member does not constrain the means for converting;
- measuring or testing not otherwise provided for.

2. Attention is drawn to the Notes following the title of class [G01](#).

U	G01D 1/00	Measuring arrangements giving results other than momentary value of variable, of general application (G01D 3/00 takes precedence; in tariff metering apparatus G01D 4/00; transducers not specially adapted for a specific variable G01D 5/00; computing G06)
	G01D 1/18	<ul style="list-style-type: none"> • with arrangements for signalling that a predetermined value of an unspecified parameter has been exceeded (G01D 1/14 takes precedence; for a specified parameter, see see the subclass relevant to this parameter, e.g. level of a liquid exceeded G01F, temperature exceeded G01K)
U	G01D 3/00	Indicating or recording apparatus with provision for the special purposes referred to in the subgroups
U	G01D 3/06	<ul style="list-style-type: none"> • with provision for operation by a null method
	G01D 3/066	<ul style="list-style-type: none"> • {Balancing a force which represents the measuring value, by means of a reference force (force measuring per se per se G01L)}
U	G01D 4/00	Tariff metering apparatus (tariff meters for measuring the time integral of electric power or current G01R 11/56; in taximeters G07B 13/00; coin-feed mechanisms therefor G07F)
U	G01D 4/02	<ul style="list-style-type: none"> • Details
	G01D 4/04	<ul style="list-style-type: none"> • • Resetting-mechanisms, e.g. for indicating members (for mechanical counters G06M 1/28)
	G01D 5/00	<p>Mechanical means for transferring the output of a sensing member; Means for converting the output of a sensing member to another variable where the form or nature of the sensing member does not constrain the means for converting; Transducers not specially adapted for a specific variable (G01D 3/00 takes precedence; specially adapted for apparatus giving results other than momentary value of variable G01D 1/00; sensing members, see see the relevant subclasses, e.g. of G01, H01; for converting a single current or a single voltage into a mechanical displacement G01R 5/00; specially adapted for high-voltage or high-current measuring arrangements G01R 15/04, G01R 15/14; measuring currents or voltages using digital measurement techniques G01R 19/25; transmission systems for measured values, control or similar signals G08C, e.g. electrical signals G08C 19/00)</p> <p>NOTE</p> <p>The subgroups of this main group are distinguished by the means which is of major importance. Thus the mere application of other means for giving a final indication does not affect the classification.</p>
U	G01D 5/12	<ul style="list-style-type: none"> • using electric or magnetic means (G01D 5/06 takes precedence)
U	G01D 5/14	<ul style="list-style-type: none"> • • influencing the magnitude of a current or voltage
U	G01D 5/142	<ul style="list-style-type: none"> • • • {using Hall-effect devices (measuring magnetic variables using Hall-effect or other galvanomagnetic devices G01R 33/06)}
	G01D 5/145	<ul style="list-style-type: none"> • • • • {influenced by the relative movement between the Hall device and magnetic fields (see see G01R 33/06)}
U	G01D 5/20	<ul style="list-style-type: none"> • • • by varying inductance, e.g. by a movable armature
U	G01D 5/22	<ul style="list-style-type: none"> • • • • differentially influencing two coils
U	G01D 5/2208	<ul style="list-style-type: none"> • • • • • {by influencing the self-induction of the coils}
	G01D 5/2216	<ul style="list-style-type: none"> • • • • • • {by a movable ferromagnetic element, e.g. a core}
U	G01D 5/225	<ul style="list-style-type: none"> • • • • • {by influencing the mutual induction between the two coils}
U	G01D 5/2258	<ul style="list-style-type: none"> • • • • • • {by a movable ferromagnetic element, e.g. core}

- G01D 5/2266 {especially adapted circuits therefor (measuring inductance ~~per se~~ ~~per se~~ [G01R 27/2611](#); measuring transformation ratio or coupling factor of windings ~~per se~~ ~~per se~~ [G01R 29/20](#))}

U G01D 11/00 Component parts of measuring arrangements not specially adapted for a specific variable ([G01D 13/00](#), [G01D 15/00](#) take precedence)

- U G01D 11/24 . Housings; {Casings for instruments}
- G01D 11/245 . . {Housings for sensors (for particular sensors ~~see~~ ~~see~~ the relevant subclasses, e.g. [G01J 5/04](#), [G01K 1/14](#), [G01L 19/14](#), [G01P 1/02](#), [G01R 1/04](#), [G10K 11/004](#))}
- G01D 11/30 . Supports specially adapted for an instrument; Supports specially adapted for a set of instruments (in general [F16M](#); specially adapted for aircraft, or vehicles, ~~see~~ ~~see~~ the relevant subclasses)

U G01D 15/00 Component parts of recorders for measuring arrangements not specially adapted for a specific variable

- U G01D 15/24 . Drives for recording elements and surfaces not covered by [G01D 5/00](#)
- G01D 15/26 . . operating by clockwork (clockworks ~~per se~~ ~~per se~~ [G04B](#), [G04C](#))

Project: N/A (G01F)

U G01F 1/00 Measuring the volume flow or mass flow of fluid or fluent solid material wherein the fluid passes through the meter in a continuous flow (measuring a proportion of the volume flow [G01F 5/00](#); measuring speed of flow [G01P 5/00](#); indicating presence or absence of flow [G01P 13/00](#); regulating quantity or ratio {[G05D 7/00](#), [G05D 11/02](#)})

NOTE

[G01F 1/72](#), [G01F 1/74](#) and [G01F 1/76](#) take precedence over [G01F 1/05](#) - [G01F 1/68](#)

- U G01F 1/05 . by using mechanical effects
- U G01F 1/20 . . by detection of dynamic effects of the fluid flow
- U G01F 1/32 . . . by swirl flowmeter, e.g. using Karmann vortices
- G01F 1/3227 {using fluidic oscillators (fluidic oscillators ~~per se~~ ~~per se~~ [F15C 1/00](#))}
- U G01F 1/56 . by using electric or magnetic effects ([G01F 1/66](#) takes precedence)
- U G01F 1/58 . . by electro-magnetic flowmeters
- G01F 1/586 . . . {constructions of coils, magnetic circuits, accessories therefor ([G01F 1/582](#) takes precedence; magnet; inductances; transformers; selection of materials for their magnetic properties ~~per se~~ ~~per se~~ [H01F](#))}

U G01F 11/00 Apparatus requiring external operation and adapted at each repeated and identical operation to measure and separate a predetermined volume of fluid or fluent solid material from a supply or container without regard to weight and to deliver it

- U G01F 11/10 . with measuring chambers moved during operation
- U G01F 11/12 . . of the valve type, i.e. the separating being effected by fluid-tight or powder-tight movements (involving the tilting or inverting of the supply vessel [G01F 11/26](#))
- G01F 11/125 . . . {of the peristaltic pump type (peristaltic pumps ~~per se~~ ~~per se~~ [F04B 43/12](#))}

U G01F 23/00 Indicating or measuring liquid level, or level of fluent solid material, e.g. indicating in terms of volume, indicating by means of an alarm (in wells [E21B 47/04](#); adaptation to, or mounting on, steam boilers [F22B 37/78](#); level regulation [G05D](#); alarm devices [G08B](#); {for accumulators [H01M 10/48](#)})

- U G01F 23/22
 - by measurement of physical variables, other than linear dimensions, pressure or weight, dependent on the level to be measured, e.g. by difference of heat transfer of steam or water (involving use of floats [G01F 23/30](#))
- U G01F 23/28
 - • by measuring the variations of parameters of electric or acoustic waves applied directly to the liquid or fluent solid material
- U G01F 23/284
 - • • Electromagnetic waves
- G01F 23/292
 - • • • Light {, e.g. infra-red or ultra-violet}

Project: N/A (G01G)

- U G01G 1/00** **Weighing apparatus involving the use of a counterweight or other counterbalancing mass**
- U G01G 1/18
 - Balances involving the use of a pivoted beam, i.e. beam balances
- G01G 1/185
 - • {Two draft weighing apparatus, e.g. tandem scales systems}
- U G01G 5/00** **Weighing apparatus wherein the balancing is effected by fluid action**
- G01G 5/04
 - with means for measuring the pressure imposed by the load on a liquid (pressure gauges ~~per se~~ [per se](#) [G01L](#))
- U G01G 11/00** **Apparatus for weighing a continuous stream of material during flow; Conveyor belt weighers**
- G01G 11/14
 - using totalising or integrating devices ({[G01G 11/025](#), [G01G 11/043](#), [G01G 11/046](#) and [G01G 11/065](#) take precedence} totalising or integrating devices ~~per se~~ [per se](#) [G06](#))
- U G01G 13/00** **Weighing apparatus with automatic feed or discharge for weighing-out batches of material (for weighing a continuous stream [G01G 11/00](#); check-weighing [G01G 15/00](#); for fluids [G01G 17/04](#); apportioning by weight materials to be mixed [G01G 19/22](#); combinatorial weighing [G01G 19/387](#))**
- U G01G 13/24
 - Weighing mechanism control arrangements for automatic feed or discharge
- G01G 13/241
 - • {Bulk-final weighing apparatus, e.g. rough weighing balance combined with separate fine weighing balance}
- 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 19/028
 - • {combined with shock-absorbing devices (shock-absorbing arrangements for bearings [G01G 21/02](#); means for damping oscillations [G01G 23/06](#); shock-absorbers ~~per se~~ [per se](#) [F16F](#))}
- U G01G 21/00** **Details of weighing apparatus**
- G01G 21/02
 - Arrangements of bearings (bearings ~~per se~~ [per se](#) [F16C](#))
- G01G 21/10
 - • Floating suspensions; Arrangements of shock absorbers (shock absorbers ~~per se~~ [per se](#) [F16F](#))
- U G01G 23/00** **Auxiliary devices for weighing apparatus**
- U G01G 23/18
 - Indicating devices, e.g. for remote indication; Recording devices; Scales, e.g. graduated
- G01G 23/38
 - • Recording and/or coding devices specially adapted for weighing apparatus (computers ~~per se~~ [per se](#) [G06](#); disc converters in general [G08C](#))

Project: N/A (G01H)**G01H**

MEASUREMENT OF MECHANICAL VIBRATIONS OR ULTRASONIC, SONIC OR INFRASONIC WAVES (generation of mechanical vibrations without measurement [B06B](#), [G10K](#); measuring position, direction or velocity of an object [G01C](#), [G01S](#); measuring quasi-steady pressure of a fluid [G01L 7/00](#); determining unbalance [G01M 1/14](#); determining properties of material by sonic or ultrasonic waves transmitted therethrough [G01N](#); systems using the reflection or reradiation of acoustic waves, e.g. acoustic imaging, [G01S 15/00](#); seismology, seismic prospecting, acoustic prospecting [G01V 1/00](#); acousto-optical devices ~~per se~~ ~~per se~~ [G02F](#); obtaining records by techniques analogous to photography using ultrasonic, sonic or infrasonic waves [G03B 42/06](#); speech analysis or synthesis, speech recognition [G10L](#); information storage based on relative movement between record carrier and transducer [G11B](#); piezo-electric, electrostrictive or magnetostrictive elements in general [H01L](#); manufacture of electromechanical resonators by processes which include measurement of frequency with consequential modification of the resonator [H03H 3/00](#), {[H03H 3/007](#), [H03H 9/00](#)})

NOTES

1. This subclass covers the combination of generation and measurement of mechanical vibrations.
2. Attention is drawn to the Notes following the title of class [G01](#).

U G01H 9/00

Measuring mechanical vibrations or ultrasonic, sonic or infrasonic waves by using radiation-sensitive means, e.g. optical means

G01H 9/004

- {using fibre optic sensors (light guides ~~per se~~ ~~per se~~ [G02B 6/00](#), acousto-optical devices specially adapted for gating or modulating in optical wave guides [G02F 1/125](#))}

U G01H 11/00

Measuring mechanical vibrations or ultrasonic, sonic or infrasonic waves by detecting changes in electric or magnetic properties, {e.g. capacitance or reluctance (structural combination of musical instruments with microphones or other pick-up devices [G10H 3/16](#), [G10H 3/18](#), [G10H 3/20](#))}

G01H 11/02

- by magnetic means, e.g. reluctance

G01H 17/00

Measuring mechanical vibrations or ultrasonic, sonic or infrasonic waves, not provided for in the preceding groups {(see ~~see~~ provisionally also [G01H 1/00](#))}

Project: N/A (G01J)**G01J**

MEASUREMENT OF INTENSITY, VELOCITY, SPECTRAL CONTENT, POLARISATION, PHASE OR PULSE CHARACTERISTICS OF INFRARED, VISIBLE OR ULTRA-VIOLET LIGHT; COLORIMETRY; RADIATION PYROMETRY (light sources [F21](#), [H01J](#), [H01K](#), [H05B](#); investigating properties of materials by optical means [G01N](#))

NOTES

1. This subclass ~~covers~~ ~~covers~~ the detection of the presence or absence of infra-red, visible, or ultra-violet light, not otherwise provided for.
2. Attention is drawn to the Notes following the title of class [G01](#).

U G01J 1/00

Photometry, e.g. photographic exposure meter (spectrophotometry [G01J 3/00](#); specially adapted for radiation pyrometry [G01J 5/00](#) {exposure meters built in cameras [G03B 17/06](#)})

U G01J 1/02

- Details

- G01J 1/0252
- {Constructional arrangements for compensating for fluctuations caused by, e.g. temperature, or using cooling or temperature stabilization of parts of the device; Controlling the atmosphere inside a photometer; Purge systems, cleaning devices (protection against electromagnetic interferences [G01J 2001/0276](#))}
- U G01J 3/00 Spectrometry; Spectrophotometry; Monochromators; Measuring colour**
- U G01J 3/12
- Generating the spectrum; Monochromators
- G01J 3/14
- • using refracting elements, e.g. prisms ([G01J 3/18](#), [G01J 3/26](#) take precedence {prisms ~~per se~~ [per se](#) [G02B 5/04](#)})
- G01J 3/18
- • using diffraction elements, e.g. grating (gratings ~~per se~~ [per se](#) [G02B](#))
- U G01J 5/00 Radiation pyrometry (photometry in general [G01J 1/00](#); spectrometry in general [G01J 3/00](#) {measuring temperature in general, i.e. with a contacting sensor [G01K](#); calorimetry of radiation beams [G01K 17/00](#); direction finders for radiant sources [G01S](#); intrusion detection by radiation [G08B](#)})**
- U G01J 5/02
- Details
- U G01J 5/04
- • Casings {Mountings}
- U G01J 5/041
- • • {Mountings in enclosures or in a particular environment}
- G01J 5/045
- • • • {Sealings; Vacuum enclosures; Encapsulated packages; Wafer bonding structures; Getter arrangements (getter arrangements ~~per se~~ [per se](#) [H01L 23/26](#) and [H01L 21/3221](#))}
- U G01J 5/08
- • Optical features {(optical-mechanical scanning [H04N 5/33](#), [G02B 26/10](#))}
- U G01J 5/0803
- • • {Optical elements not provided otherwise, e.g. optical manifolds, gratings, holograms, cubic beamsplitters, prisms, particular coatings}
- G01J 5/0806
- • • • {using focussing or collimating elements, e.g. lenses or mirrors}
- U G01J 5/10
- using electric radiation detectors
- G01J 5/12
- • using thermoelectric elements, e.g. thermocouples (thermoelectric elements ~~per se~~ [per se](#) [H01L 35/00](#), [H01L 37/00](#))
- G01J 5/34
- • using capacitors {, e.g. pyroelectric elements}

Project: N/A (G01K)**G01K**

MEASURING TEMPERATURE; MEASURING QUANTITY OF HEAT; THERMALLY-SENSITIVE ELEMENTS NOT OTHERWISE PROVIDED FOR (sensing temperature changes for compensating measurements of other variables for compensating readings of instruments for variation in temperature, ~~see~~ [see](#) [G01D](#) or relevant subclasses for variable measured; radiation pyrometry [G01J](#); investigating or analysing materials by use of thermal means [G01N 25/00](#); compound sensitive elements, e.g. bimetallic, [G12B 1/02](#))

NOTES

1. In this subclass, the following term is used with the meaning indicated :
 - "thermometer" includes thermally-sensitive elements not provided for in other subclasses.
2. Attention is drawn to the Notes following the title of class [G01](#).
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".

- U G01K 1/00 Details of thermometers not specially adapted for particular types of thermometer (circuits for reducing thermal inertia [G01K 7/42](#))**
- U G01K 1/02
- Special applications of indicating or recording means, e.g. for remote indications

- G01K 1/024 • {for remote indication (remote indication ~~per se~~ ~~per se~~ [G08C](#))}
- U G01K 5/00** **Measuring temperature based on the expansion or contraction of a material ([G01K 9/00](#) takes precedence; giving other than momentary value of temperature [G01K 3/00](#); of vapour arising from a liquid [G01K 11/02](#); thermally-actuated switches [H01H](#))**
- U G01K 5/48 • the material being a solid
- G01K 5/483 • {using materials with a configuration memory, e.g. Ni-Ti alloys}
- U G01K 7/00** **Measuring temperature based on the use of electric or magnetic elements directly sensitive to heat (giving results other than momentary value of temperature [G01K 3/00](#); measuring electric or magnetic variables [G01R](#)); {Power supply, e.g. by thermoelectric elements}**
- G01K 7/02 • using thermoelectric elements, e.g. thermocouples ({cooling arrangements in electronic devices using the Peltier effect [H01L 23/38](#);} thermo-electric or thermo-magnetic devices ~~per se~~ ~~per se~~ [H01L 35/00](#), [H01L 37/00](#))
- G01K 7/023 • {provided with specially adapted connectors (connectors ~~per se~~ ~~per se~~ [H01R](#))}
- G01K 7/16 • using resistive elements (resistive elements ~~per se~~ ~~per se~~ [H01C](#), [H01L](#))
- G01K 7/34 • using capacitive elements (capacitors ~~per se~~ ~~per se~~ [H01G](#))
- G01K 7/36 • using magnetic elements, e.g. magnets, coils (magnetic elements ~~per se~~ ~~per se~~ [H01F](#))
- U G01K 17/00** **Measuring quantity of heat (measuring temperature by calorimetry [G01K 3/00](#) - [G01K 11/00](#); specially adapted for measuring thermal properties of materials, e.g. specific heat, heat of combustion [G01N](#))**
- G01K 17/04 • Calorimeters using compensation methods {, i.e. where the absorbed or released quantity of heat to be measured is compensated by a measured quantity of heating or cooling}

Project: N/A (G01L)

- U G01L 3/00** **Measuring torque, work, mechanical power, or mechanical efficiency in general**
- G01L 3/24 • Devices for determining the value of power, e.g. by measuring and simultaneously multiplying the values of torque and revolution per unit of time, by multiplying the values of tractive or propulsive force and velocity (measuring velocity ~~per se~~ ~~per se~~ [G01P](#))
- U G01L 5/00** **Apparatus for, or methods of, measuring force, e.g. due to impact, work, mechanical power, or torque, adapted for special purposes (measuring pressure of a fluent medium [G01L 7/00](#) - [G01L 21/00](#); measuring rapid changes of pressure in gas, steam or liquid [G01L 23/00](#))**
- G01L 5/0061 • {Force sensors associated with industrial machines or actuators (for the specific machine or actuator involved ~~see~~~~see~~ relevant class, e.g. [F01](#), [F04](#), [F16](#), [B66](#), [E21](#))}
- G01L 5/0076 • {Force sensors associated with manufacturing machines ([G01L 5/0066](#), [G01L 5/0071](#) and [B23Q 17/09](#) take precedence; for the specific machine or operation involved ~~see~~~~see~~ relevant class, e.g. [B21](#) - [B42](#))}

	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 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 7/02 G01L 7/022	<ul style="list-style-type: none"> • in the form of elastically-deformable gauges • • {constructional details, e.g. mounting of elastically-deformable gauges (G01L 7/041, G01L 7/061, G01L 7/082, G01L 7/102, G01L 7/163, G01L 7/182 take precedence over G01L 7/022)}
U G01L 9/00	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 9/0091	<ul style="list-style-type: none"> • {Transmitting or indicating the displacement of liquid mediums by electrical, electro-mechanical, magnetic or electro-magnetic means (G01L 9/0008 takes precedence; G01L 9/0008 takes precedence; pressure sensitive liquid mediums in general G01L 7/18)}
U G01L 11/00	G01L 11/00 Measuring steady or quasi-steady pressure of a fluid or a fluent solid material by means not provided for in group G01L 7/00 or G01L 9/00
G01L 11/002	<ul style="list-style-type: none"> • {by thermal means, e.g. hypsometer}
U G01L 19/00	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
U G01L 19/0061	<ul style="list-style-type: none"> • {Electrical connection means}
G01L 19/0084	<ul style="list-style-type: none"> • • {to the outside of the housing (other details about the housing see see G01L 19/14)}
G01L 19/06	<ul style="list-style-type: none"> • Means for preventing overload or deleterious influence of the measured medium on the measuring device or vice-versa vice versa
G01L 19/0672	<ul style="list-style-type: none"> • • {Leakage or rupture protection or detection (detection of leakage per se per se se G01M 3/00)}
U G01L 19/14	<ul style="list-style-type: none"> • Housings ({G01L 19/0007, G01L 19/0084, G01L 19/0092, G01L 19/04, G01L 19/06 take precedence})
G01L 19/149	<ul style="list-style-type: none"> • • {of immersion sensor, e.g. where the sensor is immersed in the measuring medium or for in-vivo in vivo measurements, e.g. by using catheter tips (catheter tips per se per se A61M 25/0067; pressure measurements in the body A61B 5/00)}
U G01L 27/00	G01L 27/00 Testing or calibrating of apparatus for measuring fluid pressure

- G01L 27/002 • {Calibrating, i.e. establishing true relation between transducer output value and value to be measured, zeroing, linearising or span error determination (calibration of sensors ~~per se~~ ~~per se~~ [G01D 18/00](#))}
- G01L 27/007 • {Malfunction diagnosis, i.e. diagnosing a sensor defect (malfunction detection of sensor not measuring a specific variable ~~per se~~ ~~per se~~ [G01D 3/08](#))}

Project: N/A (G01M)

- U 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
- U 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 1/225 • • • • {for vehicle wheels (~~in situ~~ ~~in situ~~ [G01M 1/28](#))}
- G01M 1/28 • • • with special adaptations for determining unbalance of the body ~~in situ~~ ~~in situ~~, e.g. of vehicle wheels
- U G01M 1/30 • Compensating unbalance (~~G01M1/38~~ takes precedence; counterweights [F16F 15/28](#))
- G01M 1/32 • • by adding material to the body to be tested, e.g. by correcting-weights (correcting-weights ~~per se~~ ~~per se~~ [F16F 15/32](#))
- U 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](#)})**
- U G01M 3/02 • by using fluid or vacuum
- U G01M 3/04 • • by detecting the presence of fluid at the leakage point
- G01M 3/12 • • • by observing elastic covers or coatings, e.g. soapy water
- G01M 9/00 Aerodynamic testing; Arrangements in or on wind tunnels (~~building aspects Section E~~; ~~building aspects Section E~~; investigating properties of materials in general [G01N](#))**
- G01M 10/00 Hydrodynamic testing; Arrangements in or on ship-testing tanks or water tunnels (~~building aspects Section E~~; ~~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](#)})**
- U G01M 11/00 Testing of optical apparatus; Testing structures by optical methods not otherwise provided for**
- G01M 11/30 • {Testing of optical devices, constituted by fibre optics or optical waveguides (measuring a given physical parameter of optical fibres, ~~see~~ ~~see~~ the relevant subclasses, e.g. [G01B](#), [G01N](#); equipment for monitoring, testing or fault measuring in optical transmission systems [H04B 10/07](#))}

U 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](#).

U 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](#) - [G01M 15/12](#).

G01M 15/10

- • by monitoring exhaust gases {or combustion flame (analyses of gases ~~per se~~ [per se G01N](#))}

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~~[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~~ *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

- 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.
- Attention is drawn to the Notes following the title of class [G01](#).
- 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](#).

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~~ *covers* the stressing of materials not only below but also beyond the elastic limit, e.g. until breaking occurs.

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](#))

G01N 5/00

Analysing materials by weighing, e.g. weighing small particles separated from a gas or liquid ([G01N 9/00](#) takes precedence; {weighing ~~per se~~ *per se* [G01G](#)})

U G01N 11/00

Investigating flow properties of materials, e.g. viscosity, plasticity;
Analysing materials by determining flow properties

G01N 2011/0046

- {~~In-situ~~ *In situ* measurement during mixing process}

U G01N 15/00

Investigating characteristics of particles; Investigating permeability, pore-volume, or surface-area of porous materials (identification of micro-organisms [C12Q](#))

U G01N 15/04

- Investigating sedimentation of particle suspensions

G01N 15/042

- {by centrifuging and investigating centrifugates (centrifuges ~~per se~~ *per se* [B04B](#))}

U G01N 15/10

- Investigating individual particles

U G01N 15/14

- Electro-optical investigation, e.g. flow cytometers

- U G01N 15/1456
 - • • {without spatial resolution of the texture or inner structure of the particle, e.g. processing of pulse signals}
- G01N 15/1463
 - • • • {using image analysis for extracting features of the particle}

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:

- counting objects disposed at random with size distinction [G06M 11/04](#)
- extraction of features from image for pattern recognition [G06K 9/46](#)
- specific image analysis method for the recognition of microscopic objects [G06K 9/00127](#)
- image enhancement in general [G06T 5/00](#)
- image analysis in general [G06T 7/00](#) }

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~~ *does not cover* the investigation of spectral properties of light ~~per se~~ *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~~ *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 21/07
 - • • Centrifugal type cuvettes ([G01N 21/09](#) takes precedence; centrifuges ~~per se~~ *per se* [B04B](#))
- 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 21/47
 - • Scattering, i.e. diffuse reflection ([G01N 21/25](#), [G01N 21/41](#) take precedence {[G01N 21/55](#) takes precedence})
- G01N 21/4795
 - • • {spatially resolved investigating of object in scattering medium (~~in vivo~~ *in vivo* [A61B](#))}
- U G01N 21/59
 - • Transmissivity ([G01N 21/25](#) takes precedence)
- U G01N 21/5907
 - • • {Densitometers}
- G01N 21/5911
 - • • • {of the scanning type (scanning ~~per se~~ *per se* [G02B](#))}
- 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
- G01N 21/636
 - • • {using an arrangement of pump beam and probe beam; using the measurement of optical non-linear properties; (non-linear optics ~~per se~~ *per se* [G02F 1/35](#))}
- 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~~ *in vivo* [A61B 5/00](#); immunoassay [G01N 33/53](#))}

- U G01N 21/645 . . . {Specially adapted constructive features of fluorimeters}
WARNING
 Not complete, see also [G01N 21/6428](#) - [G01N 21/6447](#)
- U G01N 21/6456 . . . {Spatial resolved fluorescence measurements; Imaging}
WARNING
 Not complete, see also [G01N 21/6428](#) - [G01N 21/6447](#)
- G01N 21/6458 . . . {Fluorescence microscopy (fluorescence microscopes ~~per se~~ [per se](#) [G02B 21/0076](#) and [G02B 21/16](#))}
WARNING
 Not complete, see also [G01N 21/6428](#) - [G01N 21/6447](#)
- U G01N 21/66 . . electrically excited, e.g. electroluminescence
 G01N 21/67 . . . using electric arcs or discharges (spark gaps ~~per se~~ [per se](#) [H01T](#))
 G01N 21/69 . . . specially adapted for fluids {, e.g. molten metal}
- U G01N 21/71 . . thermally excited
 G01N 21/714 . . {Sample nebulisers for flame burners or plasma burners (nebulisers ~~per se~~ [per se](#) [B05B](#))}
- U 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](#))
- G01N 2021/754 . . {Reagent flow and intermittent injection of sample or ~~vice-versa~~ [vice versa](#)}
- 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~~ [per se](#) [G02B](#))}
- U G01N 21/84 . Systems specially adapted for particular applications
- 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](#) - [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~~ [per se](#) for flaw detection [G06T 7/0002](#))}
- U G01N 21/89 . . . in moving material, e.g. running paper or textiles ([G01N 21/90](#), [G01N 21/91](#), [G01N 21/94](#) take precedence)
- G01N 21/8901 . . . {Optical details; Scanning details (~~per se~~ [per se](#) [G02B](#))}
- U G01N 21/95 . . . characterised by the material or shape of the object to be examined ([G01N 21/89](#) - [G01N 21/91](#), [G01N 21/94](#) take precedence)
- G01N 21/9501 . . . {Semiconductor wafers (manufacturing processes ~~per se~~ [per se](#) of semiconductor devices implementing a measuring step [H01L 22/10](#))}
- 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~~ [per se](#) of semiconductor devices implementing a measuring step [H01L 22/10](#))}
- G01N 21/95623 . . . {using a spatial filtering method (~~per se~~ [per se](#) [G02B](#))}

- U 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](#) - [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
- G01N 23/04 • • and forming a picture (electron microscope [per se](#) [per se](#) [H01J](#))
- U G01N 23/20 • by using diffraction of the radiation, e.g. for investigating crystal structure; by using reflection of the radiation
- 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](#) [per se](#) [G01T 1/36](#))}
- G01N 23/22 • by measuring secondary emission
- NOTE
Devices [per se](#) [per se](#) are classified in the relevant places, e.g. [H01J 37/00](#), [H01J 49/00](#)
- G01N 23/2204 • • {Specimen supports; Sample conveying means (as parts of specific apparatus, [see see](#) the relevant groups, e.g. [H01J 37/20](#) and [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](#))
- U G01N 24/08 • by using nuclear magnetic resonance ([G01N 24/12](#) takes precedence)
- G01N 24/088 • • {Assessment or manipulation of a chemical or biochemical reaction, e.g. verification whether a chemical reaction occurred or whether a ligand binds to a receptor in drug screening or assessing reaction kinetics}
- WARNING
Not complete, see also [G01R 33/44](#) and its subgroups}
- U G01N 25/00** Investigating or analyzing materials by the use of thermal means ([G01N 3/00](#) - [G01N 23/00](#) take precedence)
- 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](#) [per se](#) [G01K](#))
- U G01N 25/22 • • on combustion or catalytic oxidation, e.g. of components of gas mixtures
- U G01N 25/28 • • • the rise in temperature of the gases resulting from combustion being measured directly
- G01N 25/34 • • • using mechanical temperature-responsive elements, e.g. bimetallic (bimetallic elements [per se](#) [per se](#) [G12B 1/02](#))
- U G01N 25/48 • • on solution, sorption, or a chemical reaction not involving combustion or catalytic oxidation
- G01N 25/4873 • • • {for a flowing, e.g. gas sample}

- U G01N 27/00 Investigating or analysing materials by the use of electric, electro-chemical, or magnetic means (G01N 3/00 - 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
 - G01N 27/028
 - • {Circuits therefor (measuring impedance ~~per se~~ ~~per se~~ G01R 27/02)}
 - U G01N 27/04
 - • by investigating resistance {(for measuring the amount of particles G01N 15/0656)}
 - G01N 27/045
 - • • {Circuits (measuring resistance ~~per se~~ ~~per se~~ G01R 27/00, e.g. 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}
 - U G01N 27/122
 - • • • {Circuits particularly adapted therefor, e.g. linearising circuits}
 - G01N 27/123
 - • • • • {for controlling the temperature (temperature control ~~per se~~ ~~per se~~ G05D 23/00)}
 - 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~~ ~~per se~~ G01R 27/26)}
 - G01N 27/228
 - • • {Circuits therefor (measuring capacitance ~~per se~~ ~~per se~~ G01R 27/26)}
 - U 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)
 - G01N 27/27
 - • Association of two or more measuring systems or cells, each measuring a different parameter, where the measurement results may be either used independently, the systems or cells being physically associated, or combined to produce a value for a further parameter {, e.g. electrochemical electrode arrays (gas sensor arrays G01N 33/0031)}
 - U G01N 27/28
 - • Electrolytic cell components
 - U G01N 27/30
 - • • Electrodes, e.g. test electrodes; Half-cells (G01N 27/414 takes precedence)
 - G01N 27/327
 - • • • Biochemical electrodes {electrical and mechanical details of ~~in-vitro~~ ~~in vitro~~ measurements (chemical and biological details C12Q 1/00, G01N 33/543; ~~in-vivo~~ ~~in vivo~~ A61B 5/00)}
 - G01N 27/3271
 - • • • • {Amperometric enzyme electrodes for analytes in body fluids, e.g. glucose in blood (amperometry ~~per se~~ ~~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 27/3277
 - • • • • • {being a redox reaction, e.g. detection by cyclic voltammetry (voltammetry ~~per se~~ ~~per se~~ G01N 27/42, G01N 27/48)}
 - U G01N 27/403
 - • Cells and electrode assemblies
 - G01N 27/404
 - • • Cells with anode, cathode and cell electrolyte on the same side of a permeable membrane which separates them from the sample fluid {, e.g. Clark-type oxygen sensors}
 - U G01N 27/414
 - • • Ion-sensitive or chemical field-effect transistors, i.e. ISFETS or CHEMFETS
 - U G01N 27/4141
 - • • • {specially adapted for gases}
 - G01N 27/4143
 - • • • • {Air gap between gate and channel, i.e. suspended gate [SG] FETs (work function measurement ~~per se~~ ~~per se~~ G01N 27/002)}

- G01N 27/4148
- • • {Integrated circuits therefor, e.g. fabricated by CMOS processing (CMOS processing ~~per se~~ ~~per se~~ [H01L 21/82](#))}
- U G01N 27/416
- • Systems ([G01N 27/27](#) takes precedence {; for testing batteries [G01R 31/36](#)})
- G01N 27/417
- • • using cells {, i.e. more than one cell} and probes with solid electrolytes
- G01N 27/62
- by investigating the ionisation of gases; by investigating electric discharges, e.g. emission of cathode (particle spectrometers ~~per se~~ ~~per se~~ [H01J 49/00](#))
- U **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](#) - [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](#))}**
- U 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](#)})
- G01N 29/022
- • {Fluid sensors based on micro-sensors, e.g. quartz crystal-microbalance [QCM], surface acoustic wave [SAW] devices, tuning forks, cantilevers, flexural plate wave [FPW] devices (micro-devices ~~per se~~ ~~per se~~ [B81B](#))}
- U G01N 29/04
- Analysing solids (using acoustic emission techniques [G01N 29/14](#))
- U 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 29/0654
- • • {Imaging}
- G01N 29/0663
- • • • {by acoustic holography (acoustical holography ~~per se~~ ~~per se~~ [G03H 3/00](#))}
- 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~~ ~~per se~~ [G01R 23/00](#), [G01R 25/00](#))}
- U G01N 29/22
- Details, {e.g. general constructional or apparatus details}
- G01N 29/223
- • {Supports, positioning or alignment in fixed situation (mounting transducers ~~per se~~ ~~per se~~ [G10K 11/004](#))}
- U G01N 29/26
- • Arrangements for orientation or scanning {by relative movement of the head and the sensor (mechanical steering of sound transducers or their beams [G10K 11/35](#))}
- G01N 29/262
- • • {by electronic orientation or focusing, e.g. with phased arrays (phased arrays ~~per se~~ ~~per se~~ [G10K 11/34](#))}
- G01N 29/28
- • providing acoustic coupling {, e.g. water (impedance matching [G10K 11/02](#))}
- G01N 29/44
- Processing the detected response signal, {e.g. electronic circuits specially adapted therefor (digital signal processing ~~per se~~ ~~per se~~ [G06F 17/00](#))}
- G01N 29/46
- • by spectral analysis, e.g. Fourier analysis {or wavelet analysis (spectral signal processing ~~per se~~ ~~per se~~ [G06F 17/14](#))}

- U 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](#) - [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](#) - [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 30/0005 • {Field flow fractionation}
- U G01N 2030/004 • • {characterised by opposing force}
- G01N 2030/0045 • • • {normal, i.e. diffusion or thermal FFF}
- G01N 2030/0055 • • • {hyperlayer, i.e. different particle populations in hyperlayers elevated above wall}
- G01N 2030/006 • • • • {lift hyperlayer, i.e. hydrodynamic lift forces dominate steric effect}
- U G01N 30/02 • Column chromatography
- U G01N 30/62 • • Detectors specially adapted therefor
- G01N 30/72 • • • Mass spectrometers {(mass spectrometers ~~per se~~ ~~per se~~ [H01J 49/00](#))}
- G01N 30/7206 • • • • {interfaced to gas chromatograph (interfaces in general for introducing or extracting samples to be analysed with specially adapted mass spectrometer, ~~see see~~ [H01J 49/04](#))}
- G01N 30/7233 • • • • {interfaced to liquid or superfluid chromatograph (interfaces in general for introducing or extracting samples to be analysed with specially adapted mass spectrometer, ~~see see~~ [H01J 49/04](#))}
- U G01N 30/86 • • Signal analysis
- G01N 30/8675 • • • {Evaluation, i.e. decoding of the signal into analytical information (for analysis of specific compounds ~~see see~~ also [G01N 30/88](#) and subgroups of [G01N 33/00](#); chemical libraries ~~per se~~ ~~per se~~ [C40B](#))}
- G01N 30/88 • • Integrated analysis systems specially adapted therefor, not covered by a single one of the groups [G01N 30/04](#) - [G01N 30/86](#) (signal analysis systems ~~per se~~ ~~per se~~ [G06F](#), [G06G](#))
- U G01N 2030/8809 • • • {analysis specially adapted for the sample}
- G01N 2030/8868 • • • • {~~elemental analysis~~; ~~elemental analysis~~, e.g. isotope dilution analysis}
- U G01N 33/00** Investigating or analysing materials by specific methods not covered by the preceding groups
- U G01N 33/20 • metals
- G01N 33/203 • • {for the presence of a volatilizable, e.g. gaseous component}
- 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~~ ~~in situ~~ [E02D 1/00](#); geophysics, e.g. prospecting [G01V](#))}
- G01N 33/241 • • {for hydrocarbon content (drilling mud [G01N 33/2823](#); drilling ~~per se~~ ~~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~~ [per se](#) [E21B](#))}
- U G01N 33/48
 - biological material, e.g. blood, urine ([G01N 33/02](#) - [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
- G01N 33/4833
 - • • {of solid biological material, e.g. tissue samples, cell cultures (tissue ~~in vivo~~ [in vivo](#) [A61B 5/00](#); cell suspensions [G01N 33/48735](#))}
- U G01N 33/487
 - • • of liquid biological material
- G01N 33/4875
 - • • • {Details of handling test elements, e.g. dispensing or storage, not specific to a particular test method (test-elements ~~per se~~ [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~~ [in vivo](#) diagnostics [A61B 5/0002](#); medical informatics [G06F 19/30](#); transmission systems for measured values [G08C](#))}
- U 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 33/491
 - • • • • {by separating the blood components ([G01N 15/05](#) takes precedence; test tubes ~~per se~~ [per se](#) [B01L 3/14](#))}
- U 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](#) - [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

- U G01N 33/5005
 - • • {involving human or animal cells (immunoassay [G01N 33/56966](#); immunoassays of protozoa [G01N 33/56905](#); protozoa in screening assays [C12Q 1/025](#))}
- U G01N 33/5008
 - • • • {for testing or evaluating the effect of chemical or biological compounds, e.g. drugs, cosmetics}
- U G01N 33/502
 - • • • • {for testing non-proliferative effects}
- G01N 33/5038
 - • • • • • {involving detection of metabolites ~~per se~~ [per se](#) [per se](#)}
- G01N 33/53
 - • • Immunoassay; Biospecific binding assay (preparations containing antigens or antibodies for therapeutic purposes [A61K 39/00](#); haptens in general, ~~see~~ [see](#) the relevant places in class [C07](#); proteins in general [C07K](#))

- U G01N 33/536 with immune complex formed in liquid phase
- U G01N 33/537 with separation of immune complex from unbound antigen or antibody
- G01N 33/538 by sorbent column, particles or resin strip {, i.e. sorbent materials}
- G01N 33/539 involving precipitating reagent {, e.g. ammonium sulfate}
- G01N 33/541 Double or second antibody {, i.e. precipitating antibody}
- U G01N 33/543 with an insoluble carrier for immobilising immunochemicals
- U G01N 33/54313 {the carrier being characterised by its particulate form}
- U G01N 33/54326 {Magnetic particles}
- G01N 33/5434 {using magnetic particle immunoreagent carriers which constitute new materials *per se per se*}
- U G01N 33/544 the carrier being organic
- U G01N 33/545 Synthetic resin
- G01N 33/546 as water suspendable particles {(not used, *see see* [G01N 33/54313](#))}
- G01N 33/547 with antigen or antibody attached to the carrier via a bridging agent {(not used, *see see* [G01N 33/54353](#))}
- G01N 33/549 with antigen or antibody entrapped within the carrier {(not used, *see see* [G01N 33/5436](#))}
- G01N 33/563 involving antibody fragments {(not used, *see see* [G01N 33/6857](#))}
- G01N 33/564 for pre-existing immune complex or autoimmune disease {, i.e. systemic lupus erythematosus, rheumatoid arthritis, multiple sclerosis, rheumatoid factors or complement components C1-C9}
- U G01N 33/569 for micro-organisms, e.g. protozoa, bacteria, viruses
- U G01N 33/56911 {Bacteria}
- G01N 33/56916 ~~{Enterobacteria;}~~ *Enterobacteria*, e.g. shigella, salmonella, klebsiella, serratia}
- G01N 33/577 involving monoclonal antibodies {binding reaction mechanisms characterised by the use of monoclonal antibodies; monoclonal antibodies *per se per se* are classified with their corresponding antigens; ([G01N 33/53](#) - [G01N 33/576](#) take precedence)}
- G01N 33/58 . . . involving labelled substances ([G01N 33/53](#) takes precedence; for testing *in vivo in vivo* [A61K 49/00](#))
- U G01N 35/00 Automatic analysis not limited to methods or materials provided for in any single one of groups [G01N 1/00](#) - [G01N 33/00](#); Handling materials therefor**
- G01N 35/0099 . . {comprising robots or similar manipulators (robots *per se per se* [B25J](#))}
- 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 see* relevant groups, e.g. under [G01N 15/00](#), [G01N 21/00](#), [G01N 27/00](#), [G01N 30/00](#), [H01J 49/00](#))}
- U G01N 2203/00 Investigating strength properties of solid materials by application of mechanical stress**
- U G01N 2203/003 . . Generation of the force
- U G01N 2203/0032 . . using mechanical means
- G01N 2203/0037 . . . involving a rotating movement, e.g. gearing, cam, eccentric, or centrifuge effects
- G01N 2203/0057 . . using stresses due to heating, e.g. conductive heating, radiative heating

	G01N 2203/0098	• Tests specified by its name, e.g. Charpy, Brinell, Mullen
U	G01N 2203/02	• Details not specific for a particular testing method
U	G01N 2203/0202	• • Control of the test
	G01N 2203/0204	• • • Safety arrangements, e.g. remote control, emergency stop
	G01N 2203/0208	• • • Specific programs of loading, e.g. incremental loading or pre-loading
U	G01N 2203/022	• • Environment of the test
	G01N 2203/0244	• • • Tests performed "in-situ in situ" or after "in-situ in situ" use
	G01N 2203/0246	• • • • Special simulation of "in-situ in situ" conditions, scale models or dummies
U	G01N 2203/04	• • Chucks, fixtures, jaws, holders or anvils
	G01N 2203/0435	• • • modifying the type of the force applied, e.g. the chuck transforms a compressive machine for applying a bending test
U	G01N 2203/06	• • Indicating or recording means; Sensing means
U	G01N 2203/067	• • • Parameter measured for estimating the property
	G01N 2203/0682	• • • • Spatial dimension, e.g. length, area, angle
U	G01N 2496/00	Reference solutions for assays of biological material
	G01N 2496/15	• containing dyes to mimic optical absorption of, e.g. hemoglobin

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 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 - 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 3/42	• Devices characterised by the use of electric or magnetic means (G01P 3/66 takes precedence; measuring electric or magnetic values in general G01R)
U	G01P 3/56	• • for comparing two speeds

- G01P 3/565
- • • {by measuring or by comparing the phase of generated current or voltage (phase comparators ~~per se~~ ~~per se~~ [H03D 13/00](#); phase measurement [G01R 25/00](#))}

U G01P 5/00 **Measuring speed of fluids, e.g. of air stream; Measuring speed of bodies relative to fluids, e.g. of ship, of aircraft (application of speed-measuring devices for measuring volume of fluid [G01F](#))**

U G01P 5/24

- by measuring the direct influence of the streaming fluid on the properties of a detecting acoustical wave

- G01P 5/245
- • {by measuring transit time of acoustical waves (measuring propagation velocity of acoustical waves ~~per se~~ ~~per se~~ [G01H 5/00](#))}

G01P 9/00 **Measuring speed by using gyroscopic effect, e.g. using gas, using electron beam (gyroscopes or turn-sensitive devices ~~per se~~ ~~per se~~ [G01C 19/00](#))**

NOTE

Absolute angular speed sensors are classified under [G01C 9/00](#) and s.gr.

U G01P 15/00 **Measuring acceleration; Measuring deceleration; Measuring shock, i.e. sudden change of acceleration**

- G01P 15/14
- by making use of gyroscopes (gyroscopes ~~per se~~ ~~per se~~ [G01C 19/00](#))

Project: N/A (G01R)

G01R **MEASURING ELECTRIC VARIABLES; MEASURING MAGNETIC VARIABLES (measuring physical variables of any kind by conversion into electric variables, ~~see~~ ~~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~~ ~~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](#) - [G01R 31/00](#).

U G01R 1/00	Details of instruments or arrangements of the types included in groups G01R 5/00 - G01R 13/00 and G01R 31/00 (constructional details particular to {electromechanical} arrangements for measuring the electric consumption G01R 11/02)
G01R 1/20	<ul style="list-style-type: none"> • Modifications of basic electric elements for use in electric measuring instruments; Structural combinations of such elements with such instruments (instrument transformers per se per se H01F 38/20)
G01R 1/203	<ul style="list-style-type: none"> • {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 5/20	<ul style="list-style-type: none"> • Induction instruments, e.g. Ferraris instruments
U G01R 7/00	Instruments capable of converting two or more currents or voltages into a single mechanical displacement (G01R 9/00 takes precedence)
U G01R 7/04	<ul style="list-style-type: none"> • for forming a quotient (for measuring resistance G01R 27/08)
G01R 7/06	<ul style="list-style-type: none"> • moving-iron type
NOTE	
This group covers covers all crossed-coil meters, i.e. logometers having a magnetic rotor	
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 see Note (2) under G01R	
U 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)
U G01R 13/04	<ul style="list-style-type: none"> • for producing permanent records
G01R 13/06	<ul style="list-style-type: none"> • Modifications for recording transient disturbances, e.g. by starting or accelerating a recording medium
G01R 13/38	<ul style="list-style-type: none"> • using the steady or oscillatory displacement of a light beam by an electromechanical measuring system (such measuring systems per se per se G01R 5/00, G01R 7/00, G01R 9/00)
G01R 13/42	<ul style="list-style-type: none"> • Instruments using length of spark discharge, e.g. by measuring maximum separation of electrodes to produce spark
U 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 - G01R 19/32 , group G01R 19/28 takes precedence. Groups G01R 19/18 - G01R 19/257 take precedence over groups G01R 19/02 - G01R 19/17 and G01R 19/30 .	

	G01R 19/0023	<ul style="list-style-type: none"> • {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 19/0038	<ul style="list-style-type: none"> • {Circuits for comparing several input signals and for indicating the result of this comparison, e.g. equal, different, greater, smaller (comparing pulses or pulse trains according to amplitude)}
U	G01R 19/145	<ul style="list-style-type: none"> • 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 19/15	<ul style="list-style-type: none"> • • Indicating the presence of current {(see see provisionally also G01R 19/145)}
	G01R 19/155	<ul style="list-style-type: none"> • • Indicating the presence of voltage {(see see provisionally also G01R 19/145)}
U	G01R 19/165	<ul style="list-style-type: none"> • 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)
	G01R 19/16528	<ul style="list-style-type: none"> • • {using digital techniques or performing arithmetic operations (using digital techniques to measure a voltage or a current, see see G01R 19/25)}
U	G01R 19/16533	<ul style="list-style-type: none"> • • {characterised by the application (contains no documents)}
	G01R 19/16561	<ul style="list-style-type: none"> • • • {in hand-held circuit testers (see see also G01R 19/155)}
U	G01R 19/16566	<ul style="list-style-type: none"> • • {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 19/16585	<ul style="list-style-type: none"> • • • {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 see G01R 29/02 and subgroups)}
U	G01R 19/18	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • 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)}
U	G01R 21/00	Arrangements for measuring electric power or power factor (G01R 7/12 takes precedence)
	G01R 21/02	<ul style="list-style-type: none"> • by thermal methods {, e.g. calorimetric}
	G01R 21/08	<ul style="list-style-type: none"> • by using galvanomagnetic effect devices, e.g. Hall effect devices (such devices per se H01L; {for current measurements only, see see G01R 15/20)}
U	G01R 23/00	Arrangements for measuring frequencies; Arrangements for analysing frequency spectra (frequency discriminators H03D; {high frequency probes G01R 1/06772)}
U	G01R 23/16	<ul style="list-style-type: none"> • Spectrum analysis; Fourier analysis {(computing with Fourier series or Walsh functions G06F 17/14, G06G 7/19; spectral data processing)}
	G01R 23/173	<ul style="list-style-type: none"> • • Wobulating devices similar to swept panoramic receivers (panoramic receivers per se H03J 7/32)
U	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)

	G01R 25/005	<ul style="list-style-type: none"> • {Circuits for comparing several input signals and for indicating the result of this comparison, e.g. equal, different, greater, smaller, or for passing one of the input signals as output signal}
U	G01R 29/00	Arrangements for measuring or indicating electric quantities not covered by groups G01R 19/00 - G01R 27/00
U	G01R 29/02	<ul style="list-style-type: none"> • 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)
U	G01R 29/027	<ul style="list-style-type: none"> • • Indicating that a pulse characteristic is either above or below a predetermined value or within or beyond a predetermined range of values
	G01R 29/0273	<ul style="list-style-type: none"> • • • {the pulse characteristic being duration, i.e. width (indicating that frequency of pulses is above or below a certain limit)}
U	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})
U	G01R 31/02	<ul style="list-style-type: none"> • 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 31/06	<ul style="list-style-type: none"> • • 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	<ul style="list-style-type: none"> • 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)}
U	G01R 31/28	<ul style="list-style-type: none"> • 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})}
U	G01R 31/2801	<ul style="list-style-type: none"> • • {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 31/2818	<ul style="list-style-type: none"> • • • {using test structures on, or modifications of, the card under test, made for the purpose of testing, e.g. additional components or connectors (G01R 31/2805 takes precedence; printed circuits having, e.g. symbols, test patterns or visualisation means H05K 1/0266)}
U	G01R 31/2851	<ul style="list-style-type: none"> • • {Testing of integrated circuits [IC] (G01R 31/317 takes precedence; testing individual devices G01R 31/26; testing printed circuits G01R 31/2801)}

G01R 31/2886	<ul style="list-style-type: none"> • • {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 seper se, G01R 1/04 or G01R 1/06)}
G01R 31/2896	<ul style="list-style-type: none"> • • {Testing of IC packages; Test features related to IC packages (containers per seper se H01L 23/02, encapsulations per seper se H01L 23/28)}
U G01R 31/317	<ul style="list-style-type: none"> • Testing of digital circuits <p>WARNING</p> <p>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</p>
G01R 31/31708	<ul style="list-style-type: none"> • • {Analysis of signal quality (G01R 31/31901 takes precedence; measuring frequencies or analysing frequency spectra per seper se G01R 23/00; measuring non-linear distortion per seper se G01R 23/20)}
G01R 31/31709	<ul style="list-style-type: none"> • • • {Jitter measurements; Jitter generators (measuring jitter, noise figure or signal-to-noise ratio per seper se G01R 29/26; analysis of tester signals G01R 31/31901)}
U G01R 31/31712	<ul style="list-style-type: none"> • • {Input or output aspects}
G01R 31/31717	<ul style="list-style-type: none"> • • • {Interconnect testing (by scan techniques seesee G01R 31/31855)}
G01R 31/36	<ul style="list-style-type: none"> • 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)} <p>NOTE</p> <p>This group coverscovers 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</p>
U G01R 33/00	Arrangements or instruments for measuring magnetic variables
U G01R 33/12	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • {Testing individual magnetic storage devices, e.g. records carriers or digital storage elements (functional testing G06F 11/00, G06F 11/28)}
U G01R 33/20	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Details of apparatus provided for in groups G01R 33/44 - G01R 33/64 <p>WARNING</p> <p>Groups G01R 33/281 - G01R 33/288 are not complete pending reclassification. See also this group</p>
G01R 33/281	<ul style="list-style-type: none"> • • {Means for the use of in-vitroin vitro contrast agents (G01R 33/282 takes precedence; involving use of a contrast agent in MR imaging G01R 33/5601; in-vivoin vivo contrast agents A61K 49/0002)}

- U G01R 33/38
 - • • Systems for generation, homogenisation or stabilisation of the main or gradient magnetic field
- G01R 33/381
 - • • • using electromagnets (electromagnets ~~per se~~ ~~per se~~ [H01F 7/06](#))
- G01R 33/383
 - • • • using permanent magnets (permanent magnets ~~per se~~ ~~per se~~ [H01F 7/02](#))
- U 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 33/46
 - • • NMR spectroscopy
- G01R 33/465
 - • • • applied to biological material, e.g. ~~in-vitro~~ ~~in vitro~~ testing
- U G01R 33/48
 - • • NMR imaging systems
- G01R 33/483
 - • • • with selection of signals or spectra from particular regions of the volume, e.g. ~~in-vivo~~ ~~in vivo~~ spectroscopy
- 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](#))}
- G01R 33/567
 - • • • • gated by physiological signals {, i.e. synchronization of acquired MR data with periodical motion of an object of interest, e.g. monitoring or triggering system for cardiac or respiratory gating}
- G01R 33/64
 - • using cyclotron resonance ([G01R 33/24](#) takes precedence {Omeagatrons ~~per se~~ ~~per se~~ [H01J 49/38](#)})

Project: N/A (G01S)**G01S**

RADIO DIRECTION-FINDING; RADIO NAVIGATION; DETERMINING DISTANCE OR VELOCITY BY USE OF RADIO WAVES; LOCATING OR PRESENCE-DETECTING BY USE OF THE REFLECTION OR RERADIATION OF RADIO WAVES; ANALOGOUS ARRANGEMENTS USING OTHER WAVES ({for special applications, ~~see~~ ~~see~~ the relevant subclasses, e.g. [A61B](#), [G01F](#), [G01N](#), [G02B](#); measuring dimensions or angles of objects [G01B](#); navigation in general [G01C](#); measuring infrasonic, sonic or ultrasonic vibrations in general [G01H](#); measuring infra-red, visible, or ultra-violet radiation in general [G01J](#); transducers ~~per se~~ ~~per se~~ ~~see~~ ~~see~~ the relevant subclasses, e.g. [G01L](#), [H01L](#), [H04R](#); measuring direction or velocity of flowing fluids by reception or emission of radiowaves or other waves and based on propagation effects caused in the fluid itself [G01P](#); measuring electric or magnetic variables in general [G01R](#); detecting masses or objects by methods not involving reflection or radiation of radio, acoustic or other waves [G01V](#); {time-interval measuring [G04F](#)}; aerials [H01Q](#))

NOTES

1. In this subclass, the following term is used with the meaning indicated:
 - "transponder" means an arrangement which reacts to an incoming interrogating or detecting wave by emitting a specific answering or identifying wave.
2. Attention is drawn to the Notes following the title of class [G01](#) and to Note (1) following the title of subclass [G09B](#).

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:

- [G01S 7/26](#) covered by [G01S 7/06](#)

- U 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 3/14 • • 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 3/146 • • • {by comparing linear polarisation components (polarisation details of antenna systems ~~per se~~ [per se](#) [H01Q 21/245](#))}
- U G01S 3/78 • using electromagnetic waves other than radio waves
- U G01S 3/782 • • Systems for determining direction or deviation from predetermined direction
- U G01S 3/785 • • • using adjustment of orientation of directivity characteristics of a detector or detector system to give a desired condition of signal derived from that detector or detector system
- U G01S 3/786 • • • • the desired condition being maintained automatically, {i.e. tracking systems; ([G01S 3/783](#) takes precedence)}
- U G01S 3/7861 • • • • • {Solar tracking systems}
- G01S 3/7862 • • • • • {mounted on a moving platform, e.g. space vehicle}
- U G01S 3/80 • using ultrasonic, sonic or infrasonic waves
- G01S 3/802 • • Systems for determining direction or deviation from predetermined direction (sound-focusing or directing using electrical steering of transducer arrays, e.g. beam steering, in general [G10K 11/34](#))
- U 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)
- U G01S 5/0205 • • {Details}
- G01S 5/0226 • • • {of transmitters or network of transmitters (wireless system synchronisation ~~per se~~ [per se](#) [H04B 7/2662](#))}
- 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 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 7/02 • of systems according to group [G01S 13/00](#)
- G01S 7/021 • • {Auxiliary means for detecting or identifying radar signals or the like, e.g. radar jamming signals (multi-channel PRF-analysers, ~~per se~~ [per se](#) [G01R 23/155](#))}

- 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 see](#) also [G01S 13/22](#), [G01S 13/528](#); for frequency agility of carrier wave [see 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](#)))
- U G01S 7/40
 - • Means for monitoring or calibrating
- G01S 7/4004
 - • • {of parts of a radar system ([see see](#) provisionally also [G01S 7/40](#))}
- U G01S 7/48
 - of systems according to group [G01S 17/00](#)
- U G01S 7/497
 - • Means for monitoring or calibrating
- G01S 2007/4975
 - • • {of sensor obstruction by, e.g. dirt- or ice-coating, e.g. by reflection measurement on front-screen}
- U G01S 7/52
 - of systems according to group [G01S 15/00](#)
- G01S 7/52001
 - • {Auxiliary means for detecting or identifying sonar signals or the like, e.g. sonar jamming signals (multi-channel PRF-analysers [per se per se](#) [G01R 23/155](#))}
- U G01S 7/52017
 - • {particularly adapted to short-range imaging ([G01S 7/53](#) takes precedence)}
- U G01S 7/52023
 - • • {Details of receivers}
- U G01S 7/52036
 - • • • {using analysis of echo signal for target characterisation}
- U G01S 7/52038
 - • • • {involving non-linear properties of the propagation medium or of the reflective target}
- G01S 7/52039
 - • • • • {~~exploiting the non-linear response of a contrast enhancer;~~ [exploiting the non-linear response of a contrast enhancer](#), e.g. a contrast agent (diagnostic techniques involving the use of contrast agents [A61B 8/481](#))}

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~~ [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~~ [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 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 13/42
 - • • Simultaneous measurement of distance and other co-ordinates (indirect measurement [G01S 13/46](#))

- G01S 13/422 . . . {sequential lobing, e.g. conical scan}
- U G01S 13/46 . . . Indirect determination of position data
- U G01S 2013/462 . . . {using multipath signals}
- G01S 2013/464 {using only the non-line-of-sight signal(s), e.g. to enable survey of scene 'behind' the target only the indirect signal is evaluated}
- 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~~[see F42C 13/04](#); miss-distance indicators in general [F41J 5/12](#))}
- 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 13/762 . . . {with special measures concerning the radiation pattern, e.g. S.L.S. (aerials or aerial systems providing at least two radiation patterns, e.g. providing sum and difference patterns, [H01Q 25/00](#))}
- 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~~[per se](#) [G01S 13/28](#); platform motion compensation for AMTI [G01S 13/5242](#))}
- G01S 13/9029 {specially adapted for moving target detection (MTI ~~per se~~[per se](#) [G01S 13/52](#))}
- U G01S 13/9035 {Particular SAR processing techniques not provided for elsewhere, e.g. squint mode, doppler beam-sharpening mode, spotlight mode, bistatic SAR, inverse SAR}
- G01S 2013/9076 {Polarimetric features in SAR (~~see~~[see](#) also [G01S 7/024](#))}

G01S 15/00**Systems using the reflection or reradiation of acoustic waves, e.g. sonar systems****NOTES**1. This group ~~covers~~[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~~[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 15/88 . 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}
- G01S 15/8909
 - • • • {using a static transducer configuration (sound-focusing or directing ~~per se~~ ~~per se~~ [G10K 11/26](#))}
- G01S 15/8934
 - • • • {using a dynamic transducer configuration (mounting transducers, e.g. provided with mechanical moving or orienting device ~~per se~~ ~~per se~~ [G10K 11/004](#))}
- U G01S 15/8965
 - • • • {using acousto-optical or acousto-electronic conversion techniques}
- G01S 15/897
 - • • • • {using application of holographic techniques (holography ~~per se~~ ~~per se~~ [G03H](#))}
- G01S 15/8977
 - • • • {using special techniques for image reconstruction, e.g. FFT, geometrical transformations, spatial deconvolution, time deconvolution (digital image processing ~~per se~~ ~~per se~~ [G06T 1/00](#))}
- U G01S 19/00

Satellite radio beacon positioning systems; Determining position, velocity or attitude using signals transmitted by such systems

NOTE

In this group, or in the patent documents classified in this group, the following abbreviations are often used:

 - PDOP = Position Dilution of Precision
 - RAIM = Receiver Autonomous Integrity Monitoring
- U G01S 19/01
 - Satellite radio beacon positioning systems transmitting time-stamped messages, e.g. GPS [Global Positioning System], GLONASS [Global Orbiting Navigation Satellite System] or GALILEO
- U G01S 19/13
 - • Receivers
- G01S 19/21
 - • • interference related issues; {Issues related to cross-correlation, spoofing or other methods of denial of service (interference-related aspects in spread spectrum receivers ~~per se~~ ~~per se~~ [H04B 1/7097](#))}

Project: N/A (G01T)**G01T**

MEASUREMENT OF NUCLEAR OR X-RADIATION (radiation analysis of materials, mass spectrometry [G01N](#); counters ~~per se~~ ~~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~~ ~~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](#).

- U G01T 1/00

Measuring X-radiation, gamma radiation, corpuscular radiation, or cosmic radiation ([G01T 3/00](#), [G01T 5/00](#) take precedence)
- U 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 1/1603
 - • {with a combination of at least two different types of detector (~~see~~ ~~see~~ provisionally also [G01T 1/16](#))}
- G01T 1/1606
 - • {with other specified detectors not provided for in the other sub-groups of [G01T 1/16](#) (~~see~~ ~~see~~ provisionally also [G01T 1/16](#))}
- G01T 1/161
 - • Application in the field of nuclear medicine, e.g. ~~in vivo~~ ~~in vivo~~ counting {(apparatus for radiation diagnosis [A61B 6/00](#))}

- U 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 1/1641
 - • • • {Static instruments for imaging the distribution of radioactivity in one or two dimensions using one or several scintillating elements; Radio-isotope cameras}
- G01T 1/1648
 - • • • • {Ancillary equipment for scintillation cameras, e.g. reference markers, devices for removing motion artifacts, calibration devices (adapted for flow studies [G01T 1/1647](#))}
- 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* *in situ* measurement, e.g. floor contamination monitor (directional detectors [G01T 1/2907](#))}
- U G01T 1/17
 - • Circuit arrangements not adapted to a particular type of detector {(pulse-selection circuits [H03K](#), [G01R](#))}
- G01T 1/171
 - • • {Compensation of dead-time counting losses (*see see* provisionally also [G01T 1/17](#))}
- G01T 1/172
 - • • with coincidence circuit arrangements ([G01T 1/178](#) takes precedence; {combination of detectors, *see see* [G01T 1/1603](#), [G01T 1/30](#), [G01T 1/361](#)})
- G01T 1/175
 - • • Power supply circuits (power supply circuits *per se* *per se* [H02J](#); converters [H02M](#))
- U G01T 1/20
 - • with scintillation detectors
- U G01T 1/202
 - • • the detector being a crystal
- G01T 1/2023
 - • • • {Selection of materials (*see see* provisionally also [G01T 1/202](#))}
- G01T 1/2026
 - • • • {Well-type detectors (*see see* provisionally also [G01T 1/202](#))}
- U G01T 1/203
 - • • the detector being made of plastics
- G01T 1/2033
 - • • • {Selection of materials (*see see* provisionally also [G01T 1/203](#))}
- G01T 1/2036
 - • • • {Well-type detectors (*see see* provisionally also [G01T 1/203](#))}
- G01T 1/24
 - • with semiconductor detectors (semiconductor devices *per se* *per se* [H01L 31/00](#))
- G01T 1/244
 - • • {Auxiliary details, e.g. casings, cooling, damping or insulation against damage by, e.g. heat, pressure or the like}
- U 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 1/295
 - • • • {using coded aperture devices, e.g. Fresnel zone plates (handling of radiation of particles, e.g. using diaphragms, collimators, diffraction [G21K 1/00](#))}
- G01T 1/2985
 - • • {In depth localisation, e.g. using positron emitters; Tomographic imaging (longitudinal and transverse section imaging; apparatus for radiation diagnosis sequentially in different planes, stereoscopic radiation diagnosis); (using external radiation sources [A61B 6/02](#))}
- G01T 1/36
 - Measuring spectral distribution of X-rays or of nuclear radiation {spectrometry (pulse selection circuits *per se* *per se* [H03K](#); investigation of materials by radiation diffraction [G01N 23/20](#); spectrometer tubes [H01J 49/00](#))}
- G01T 1/362
 - • {with scintillation detectors (*see see* provisionally also [G01T 1/36](#), [G01T 1/20](#))}
- G01T 1/365
 - • {with ionisation detectors, e.g. proportional counter (*see see* provisionally also [G01T 1/36](#))}

- G01T 1/366 • • {with semi-conductor detectors (~~see see~~ provisionally also [G01T 1/36](#))}
- G01T 1/367 • • {with resistance detectors (~~see see~~ provisionally also [G01T 1/36](#))}
- G01T 1/368 • • {with secondary-emission detectors (~~see see~~ provisionally [G01T 1/36](#))}
- U 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](#)})**
- U G01T 3/001 • {Spectrometry}
- G01T 3/003 • • {Recoil spectrometers (light-nuclei recoil ionisation tubes ~~per se~~ ~~per se~~ [H01J 47/1277](#))}
- G01T 3/005 • • {Time-of-flight spectrometers (~~see see~~ provisionally also [G01T 3/00](#))}
- G01T 3/08 • with semiconductor detectors (semiconductor detectors ~~per se~~ ~~per se~~ [H01L 31/00](#))
- 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 see~~ the appropriate groups of the chamber, e.g. [G01T 5/04](#) - [G01T 5/08](#); ~~see see~~ provisionally also [G01T 5/00](#) and other sub-groups)}
- G01T 5/004 • {Non-electrical readout of multi-wire or parallel-plate chambers (non-electrical readout in such chambers ~~per se~~ ~~per se~~ [H01J 47/22](#))}
- G01T 5/12 • Circuit arrangements with multi-wire or parallel-plate chambers, e.g. spark chambers (tubes ~~per se~~ ~~per se~~ [H01J 47/00](#))
- G01T 5/122 • • {for readout of each individual wires; (readout in such chambers ~~per se~~ ~~per se~~ [H01J 47/16](#)); for processing the output signals}
- U G01T 7/00** **Details of radiation-measuring instruments**
- G01T 7/08 • Means for conveying samples received ({, i.e. sample changers [G01N 35/00](#))}
- 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~~ ~~per se~~ [H01J 47/00](#))}

Project: N/A (G01V)

- U G01V 1/00** **Seismology; Seismic or acoustic prospecting or detecting**
- NOTE**
Groups [G01V 1/44](#) - [G01V 1/52](#) take precedence over groups [G01V 1/001](#) - [G01V 1/393](#) [G01V 1/42](#)
- 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)
- U G01V 1/28 • Processing seismic data, e.g. analysis, for interpretation, for correction ([G01V 1/48](#) takes precedence)
- U G01V 1/30 • • Analysis ([G01V 1/50](#) takes precedence)

- G01V 1/308
- • • {Time lapse or 4D effects, e.g. production related effects to the formation (fluid flow ~~per-se~~ ~~per se~~ [E21B 47/00](#))}
- U G01V 1/40
- specially adapted for well-logging
- G01V 1/42
- • using generators in one well and receivers elsewhere or ~~vice-versa~~ [vice versa](#) ([G01V 1/52](#) takes precedence)
- 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
- U G01V 5/04
- specially adapted for well-logging
- 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](#))}
- 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](#) - [G01V 7/12](#) take precedence; measuring resonant frequency of mechanical vibrations [G01H 13/00](#); measuring frequency ~~per-se~~ ~~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~~ [covers](#) the use of {millimetre waves,} infra-red, visible or ultra-violet light.
- U **G01V 9/00**
- Prospecting or detecting by methods not provided for in groups [G01V 1/00](#) - [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~~ ~~per se~~ [G01N](#))}

Project: N/A (G01W)

- G01W
- METEOROLOGY (influencing weather conditions [A01G 15/00](#); dispersing fog [E01H 13/00](#); instruments for measuring single variable in general, ~~see~~ ~~see~~ the appropriate subclass of [G01](#), e.g. [G01K](#), [G01L](#); obtaining meteorological information by radar [G01S 13/95](#))**
- U **G01W 1/00**
- Meteorology**
- U G01W 1/02
- Instruments for indicating weather conditions by measuring two or more variables, e.g. humidity, pressure, temperature, cloud cover, wind speed ([G01W 1/10](#) takes precedence)
- G01W 1/06
- • giving a combined indication of weather conditions (catathermometers for measuring "cooling value" related either to weather conditions or to comfort of other human environment [G01W 1/17](#); computers ~~per-se~~ ~~per se~~ [G06](#))
- G01W 1/10
- Devices for predicting weather conditions (computers ~~per-se~~ ~~per se~~ [G06](#); display devices [G09](#))

Project: N/A (G02)**G02**

OPTICS (making optical elements or apparatus [B24B](#), [B29D 11/00](#), [C03](#), or other appropriate subclasses or classes; materials ~~per se~~ *per se*, *see see* the relevant places, e.g. [C03B](#), [C03C](#))

NOTE

In this class, the following expression is used with the meaning indicated:

- "optical" applies not only to visible light but also to ultra-violet or infra-red radiations.

Project: N/A (G02B)**G02B**

OPTICAL ELEMENTS, SYSTEMS, OR APPARATUS ([G02F](#) takes precedence; measuring-instruments, *see 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

U G02B 5/00

Optical elements other than lenses (light guides [G02B 6/00](#); optical logic elements [G02F 3/00](#))

U G02B 5/02

- Diffusing elements; Afocal elements

U G02B 5/0205

- {characterised by the diffusing properties}

G02B 5/0263

- • {with positional variation of the diffusing properties, e.g. gradient or patterned diffuser}

U G02B 5/0273

- {characterized by the use}

G02B 5/0294

- • {adapted to provide an additional optical effect, e.g. anti-reflection or filter}

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 5/1833

- {comprising birefringent materials (birefringent elements ~~per se~~ *per se* [G02B 5/3083](#))}

- U 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~~ [per se](#) [G02B 5/18](#); holographic elements ~~per se~~ [per se](#) [G02B 5/32](#); generating the spectrum using diffraction elements [G01J 3/18](#))}
- U G02B 6/00** **Light guides**
- U G02B 6/24
- Coupling light guides (for electric waveguides [H01P 1/00](#))
- U G02B 6/26
- Optical coupling means ([G02B 6/36](#), [G02B 6/42](#) take precedence)
- U G02B 6/28
- having data bus means, i.e. plural waveguides interconnected and providing an inherently bidirectional system by mixing and splitting signals
- G02B 6/293
- with wavelength selective means ({[G02B 6/02052](#), [G02B 6/02057](#) take precedence } ; for optical elements in use, ~~see~~ [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 6/35
- having switching means (optical switching in general [G02B 26/08](#); by changing the optical properties of the medium [G02F 1/00](#))
- U G02B 6/354
- {Switching arrangements, i.e. number of input/output ports and interconnection types}
- U G02B 6/3544
- {2D constellations, i.e. with switching elements and switched beams located in a plane}
- U G02B 6/3548
- {1xN switch, i.e. one input and a selectable single output of N possible outputs}
- G02B 6/3552
- {1x1 switch; {1x1 switch, e.g. on/off switch}
- U G02B 6/3564
- {Mechanical details of the actuation mechanism associated with the moving element or mounting mechanism details}
- G02B 6/3584
- ~~constructional details of an associated actuator having a MEMS construction;~~ [constructional details of an associated actuator having a MEMS construction](#), i.e. constructed using semiconductor technology such as etching (MEMS ~~per se~~ [per se](#) [B81B](#), [B81C](#))}
- U G02B 6/3586
- {Control or adjustment details, e.g. calibrating (testing optical equipment [G01M 11/00](#))}
- WARNING**
- The scope of this group has been changed: for rotating, tilting or pivoting the waveguides, or with the waveguides describing a curved path see [G02B 6/3504](#)
- G02B 6/359
- {of the position of the moving element itself during switching, [i.e. without monitoring the switched beams](#); ~~i.e. without monitoring the switched beams~~}
- U 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)
- U G02B 6/3628
- {for mounting fibres to supporting carriers ([G02B 6/3608](#), [G02B 6/3616](#) take precedence)}
- G02B 6/3648
- {Supporting carriers of a micro-bench type, i.e. with micro-machined additional mechanical structures (micro-structured devices ~~per se~~ [per se](#) [B81B](#))}
- G02B 6/3684
- {characterised by the manufacturing process of surface profiling of the supporting carrier (manufacturing micro-systems ~~per se~~ [per se](#) [B81C 1/00015](#))}
- U G02B 6/38
- having fibre to fibre mating means

- 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 6/3812 {having polarisation-maintaining light guides (light guides having polarisation effects ~~per se~~ *per se* G02B 6/105)}
 - G02B 6/3816 {for use under water, high pressure connectors (provisionally ~~see see~~ G02B 6/4428)}
 - U G02B 6/3818 {of a low-reflection-loss type (G02B 6/3813 takes precedence)}
 - G02B 6/382 {with index-matching medium between light guides (provisionally ~~see see~~ G02B 6/4212)}
 - G02B 6/3823 {containing surplus lengths, internal fibre loops (provisionally ~~see see~~ also G02B 6/444)}
 - U G02B 6/3833 {Details of mounting fibres in ferrules; Assembly methods; Manufacture}
 - U G02B 6/3847 {with means preventing fibre end damage, e.g. recessed fibre surfaces}
 - G02B 6/3849 {using mechanical protective elements, e.g. caps, hoods, sealing membranes (G02B 6/3816 takes precedence; provisionally ~~see see~~ H01R 13/44)}
 - 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 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 6/42 . . . 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}
 - U G02B 6/4204 . . . {the coupling comprising intermediate optical elements, e.g. lenses, holograms (encapsulated active devices H01S 5/02208, H01L 33/52)}
 - G02B 6/4207 . . . {with optical elements reducing the sensitivity to optical feedback (anti-reflection devices specially adapted for lasers, ~~see see~~ H01S 3/0064)}
 - G02B 6/4208 . . . {using non-reciprocal elements or birefringent plates, i.e. quasi-isolators (optical isolators ~~per se~~ *per se* G02F 1/093, G02F 1/0955)}
 - G02B 6/4216 . . . {incorporating polarisation-maintaining fibres (polarisation-maintaining fibres ~~per se~~ *per se* G02B 6/105)}
 - G02B 6/4248 . . . {Feed-through connections for the hermetical passage of fibres through a package wall} (~~see see~~ provisionally also G02B 6/4428)
 - U G02B 7/00 Mountings, adjusting means, or light-tight connections, for optical elements**
 - U G02B 7/18 . . . for prisms; for mirrors

- U 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 7/192
- • with means for minimising internal mirror stresses {not in use}
- G02B 7/195
- • • Fluid-cooled mirrors {(not in use, see G02B 7/181)}
- G02B 7/198
- • with means for adjusting the mirror relative to its support {(not in use, see G02B 7/1822 and subgroups)}
- G02B 7/28
- Systems for automatic generation of focusing signals (measuring distance ~~per se~~ ~~per se~~ G01C, G01S; using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. G03B, G03F, {H04N})
- 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~~ ~~per se~~ G06T)}
- U 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
- U G02B 13/001
- {Miniaturised objectives for electronic devices, e.g. portable telephones, webcams, PDAs, small digital cameras (G02B 23/243 takes precedence)}
- U G02B 13/0015
- {characterised by the lens design}
- G02B 13/002
- • {having at least one aspherical surface (aspherical lenses ~~per se~~ ~~per se~~ G02B 3/02)}
- NOTE
- When classifying in this group, a lens is deemed to be a simple lens or a compound lens
- G02B 13/0085
- {employing wafer level optics (lens arrays ~~per se~~ ~~per se~~ G02B 3/0006)}
- G02B 13/009
- {having zoom function (zoom lenses ~~per se~~ ~~per se~~ G02B 15/00)}
- U 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)**
- U G02B 17/02
- Catoptric systems, e.g. image erecting and reversing system
- G02B 17/06
- • using mirrors only {, i.e. having only one curved mirror (used in non-imaging applications G02B 19/00)}
- 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 19/0085
- {for use with both a detector and a source {, e.g. in a transceiver, G02B 19/009, G02B 19/0095 take precedence}}

- U 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](#))**
- G02B 21/0096 • {with photometer devices (photometers ~~per se~~ [per se](#) [G01J](#))}
 - 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~~ [per se](#) [G06T](#))}
- U 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 23/16 • Housings; Caps; Mountings; Supports, e.g. with counterweight (cases or receptacles [A45C](#) {; for submarine periscopes [G02B 23/08](#))}
 - 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~~[covers](#) housings, mountings, supports or the like for underwater equipment other than periscopes
- U 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](#) - [H05B 43/00](#); mechanically operable parts of lighting devices for the control of light [F21V](#))**
- 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~~[see](#) the relevant places, e.g. [G03B 27/32](#), {[G03F 7/20](#)} , [G03G 15/04](#), [G09G 3/00](#), [H04N](#))
 - G02B 26/103 • • • {having movable or deformable optical fibres, light guides or waveguides as scanning elements (light guides ~~per se~~ [per se](#) [G02B 6/00](#))}
- U 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 27/01 • Head-up displays
- NOTE**
Details of head-up displays covered by [G02B 27/01](#) but not provided for in this group are also to be classified under [G02B 27/01](#) and subgroups
- U G02B 27/0101 • • {characterised by optical features ([G02B 27/0172](#) takes precedence)}
 - G02B 2027/0138 • • • {comprising image capture systems, e.g. camera}
 - U G02B 27/0179 • • {Display position adjusting means not related to the information to be displayed}
 - G02B 2027/0187 • • • {slaved to motion of at least a part of the body of the user, e.g. head, [eye](#)}

- G02B 27/02
 - Viewing or reading apparatus (stereoscopic systems ~~per se~~ ~~per se~~ [G02B 27/22](#); of the projection type [G03B](#); slide-changing apparatus [G03B](#))
- U 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](#)}}
- U G02B 27/0938
 - {Using specific optical elements}
- G02B 27/0944
 - • {Diffractive optical elements, e.g. gratings, holograms (gratings ~~per se~~ ~~per se~~ [G02B 5/18](#); holograms used as optical elements ~~per se~~ ~~per se~~ [G02B 5/32](#))}
- U G02B 27/095
 - • • {Refractive optical elements}
- G02B 27/0955
 - • • • {Lenses (lenses ~~per se~~ ~~per se~~ [G02B 3/00](#))}
- G02B 27/0961
 - • • • • {Lens arrays (lens arrays ~~per se~~ ~~per se~~ [G02B 3/0006](#))}
- G02B 27/0966
 - • • • • {Cylindrical lenses (cylindrical lenses ~~per se~~ ~~per se~~ [G02B 3/06](#))}
- G02B 27/0972
 - • • • {Prisms (prisms ~~per se~~ ~~per se~~ [G02B 5/04](#))}
- G02B 27/0994
 - • • {Fibers, light pipes (optical fibers ~~per se~~ ~~per se~~ [G02B 6/02](#))}
- G02B 27/18
 - for optical projection, e.g. combination of mirror and condenser and objective {{not in use, ~~see~~~~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](#)}}
- U 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 27/24
 - • involving reflecting prisms and mirrors only {{not used, ~~see~~~~see~~ [G02B 27/22](#) 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](#))
- U 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](#))}
- G02B 27/648
 - • • {for automatically maintaining a reference alignment, e.g. in self-levelling surveying instruments (surveying instruments ~~per se~~ ~~per se~~ [G01C](#))}
- U **G02B 2207/00**

Coding scheme for general features or characteristics of optical elements and systems of subclass [G02B](#), but not including elements and systems which would be classified in [G02B 6/00](#) and subgroups
- G02B 2207/107
 - Porous materials, e.g. for reducing the refractive index

Project: N/A (G02C)

- U **G02C 7/00**

Optical parts (characterised by the material [G02B 1/00](#))
- U G02C 7/10
 - Filter, e.g. for facilitating adaptation of the eyes to the dark; Sunglasses
- G02C 7/101
 - • {having an electro-optical light valve (electro-optical elements ~~per se~~ ~~per se~~ [G02F](#))}
- G02C 9/00**

Attaching auxiliary optical parts (auxiliary optical parts ~~per se~~ ~~per se~~ [G02C 7/08](#) - [G02C 7/16](#))

- U G02C 13/00** **Assembling (producing spectacle frames from plastics or from substances in a plastic state [B29D 12/02](#)); Repairing; Cleaning (disinfection or sterilisation of contact lenses [A61L 12/00](#))**
- U G02C 13/003** - {Measuring during assembly or fitting of spectacles}
- G02C 13/005** - {Measuring geometric parameters required to locate opthalmic lenses in spectacles frames (apparatus for testing or instruments for examining the eyes ~~per se~~ [per se](#) [A61B 3/00](#); machines or devices and accessories for grinding the edges of lenses using spectacles as a template [B24B 9/144](#))}

Project: N/A (G02F)**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](#) - [H05B 43/00](#); {photochromic filters [G02B 5/23](#); optical logic elements [G02F 3/00](#))}

NOTE

This group ~~covers~~ [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
- G02F 1/0063** - {Optical properties, e.g. absorption, reflection, non-linear effects, birefringence (non linear optics in general [G02F 1/35](#))}
- 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~~ [per se](#) [G02B 5/30](#); static storage ~~per se~~ [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](#) - [G11B 11/00](#))}
- 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](#))}

- U G02F 1/13
 - • based on liquid crystals, e.g. single liquid crystal display cells (liquid crystal materials [C09K 19/00](#))
- U 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](#))
- U G02F 1/1333
 - • • • Constructional arrangements; {Manufacturing methods}{[G02F 1/135](#), [G02F 1/136](#) take precedence)
- G02F 1/13338
 - • • • {Input devices, e.g. touch-panels (specially adapted as input devices to computers [G06F 3/033](#); touch-panels ~~per se~~ [per se](#) [G06K 11/06](#), keyboard switches ~~per se~~ [per se](#) [H01H 13/70](#))}
- U G02F 1/1335
 - • • • • Structural association of optical devices, e.g. polarisers, reflectors or illuminating devices, with the cell
- G02F 1/133528
 - • • • • {Polarisers (polarisers ~~per se~~ [per se](#) [G02B 5/30](#))}
- U G02F 1/1337
 - • • • • Surface-induced orientation of the liquid crystal molecules, e.g. by alignment layers
- G02F 2001/133776
 - • • • • {having structures, i.e. unevenness locally influencing the alignment}
- U G02F 1/35
 - Non-linear optics (optical bistable devices [G02F 3/02](#); lasers using stimulated Brillouin or Raman effect [H01S 3/30](#))
- G02F 1/3523
 - • {Non-linear absorption changing by light, e.g. bleaching (laser Q-switching using bleachable media [H01S 3/113](#))}
- 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 7/00**

Optical analogue/digital converters

NOTE

This group ~~covers~~[covers](#) only converters based in substantial manner on elements which are provided for in group [G02F 1/00](#).

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~~ [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~~ [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 1/00

Film strip handling

U G03B 1/60

- Measuring or indicating length of the used or unused film; Counting number of exposures (measuring length in general [G01B](#))

G03B 1/66

- • Counting number of exposures (counting mechanisms ~~per se~~ [per se](#) [G06M](#))

- U G03B 7/00** **Control of exposure by setting shutters, diaphragms or filters, separately or conjointly (control of exposure in television cameras by means of circuitry influencing the optical part of the camera [H04N 5/238](#))**
- WARNING
Group [G03B 7/00](#) is impacted by reclassification into groups [G03B 7/01](#) and [G03B 7/30](#).
Groups [G03B 7/00](#), [G03B 7/01](#) and [G03B 7/30](#) should be considered in order to perform a complete search.
- G03B 7/22 • in accordance with temperature or height, e.g. in aircraft
- U G03B 9/00** **Exposure-making shutters; Diaphragms**
- U G03B 9/02 • Diaphragms
- G03B 9/06 • • Two or more co-operating pivoted blades, e.g. iris type (shutters functioning as diaphragms by limiting extent of opening movement [G03B 9/08](#))
- G03B 11/00** **Filters or other obturators specially adapted for photographic purposes (filters ~~per se~~ ~~per se~~ [G02B](#) {[G02B 5/20](#)})**
- G03B 13/00** **Viewfinders; Focusing aids for cameras; Means for focusing for cameras; Autofocus systems for cameras (hoods, caps [G03B 11/04](#); reflex camera arrangements [G03B 19/12](#), [G03B 19/14](#); rangefinders ~~per se~~ ~~per se~~ [G01C 3/00](#); automatic focusing in general [G02B 7/09](#); systems for automatic generation of focusing signals [G02B 7/28](#))**
- U G03B 15/00** **Special procedures for taking photographs; Apparatus therefor**
- U G03B 15/02 • Illuminating scene
- U G03B 15/03 • • Combinations of cameras with lighting apparatus; Flash units
- G03B 15/05 • • • Combinations of cameras with electronic flash apparatus; Electronic flash units (discharge lamps ~~per se~~ ~~per se~~ [H01J](#); circuit arrangements [H05B 41/00](#))
- U G03B 17/00** **Details of cameras or camera bodies; Accessories therefor (lens hoods or caps [G03B 11/04](#))**
- U G03B 17/26 • Holders for containing light sensitive material and adapted to be inserted within the camera (holders for X-ray films [G03B 42/04](#))
- G03B 17/265 • • {specially adapted for motion picture film, e.g. cassettes (cassettes for projection purposes [G03B 21/323](#))}
- G03B 17/36 • Counting number of exposures (of film strips [G03B 1/66](#); counting mechanisms ~~per se~~ ~~per se~~ [G06M](#))
- U 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](#) - [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](#) - [G03B 21/008](#) should be considered in order to perform a complete search.

U G03B 21/14

• Details

WARNING

Groups [G03B 21/142](#) - [G03B 21/147](#) are incomplete pending reclassification of documents from group [G03B 21/14](#).

Until reclassification is complete, groups [G03B 21/14](#) and [G03B 21/142](#) - [G03B 21/147](#) should be considered in order to perform a complete search.

G03B 21/20

• • Lamp houses (condensers ~~per se~~ [per se](#) [G02B](#))

U G03B 21/32

• • Details specially adapted for motion-picture projection (with film moving continuously through the gate [G03B 41/02](#))

U G03B 21/43

• • • Driving mechanisms

G03B 21/44

• • • Mechanisms transmitting motion to film-strip feed; Mechanical linking of shutter and intermittent feed (film-strip ~~per se~~ [per se](#) [G03B 1/00](#))

G03B 23/00

Devices for changing pictures in viewing apparatus or projectors (film-strip handling [G03B 1/00](#); direct viewers ~~per se~~ [per se](#) [G02B](#))

NOTE

For the purposes of this group the term "picture" denotes any flat representation, whether transparent or not, e.g. produced by photography, writing or printing

U G03B 27/00

Photographic printing apparatus (film-strip handling [G03B 1/00](#))

U G03B 27/02

• Exposure apparatus for contact printing

U G03B 27/14

• • Details

G03B 27/30

• • • adapted to be combined with processing apparatus (processing apparatus ~~per se~~ [per se](#) [G03D](#))

U G03B 27/32

• Projection printing apparatus, e.g. enlarger, copying camera

G03B 27/50

• • with slit or like diaphragm moving over original for progressive exposure ([G03B 27/34](#) takes precedence; {projection optics ~~per se~~ [per se](#) [G03B 27/525](#)})

G03B 27/72

• Controlling or varying light intensity, spectral composition, or exposure time in photographic printing apparatus (exposure meters ~~per se~~ [per se](#) [G01J](#); control of light intensity in general [G05D 25/00](#))

U G03B 42/00

Obtaining records using waves other than optical waves; Visualisation of such records by using optical means (investigating or analysing materials using electromagnetic or sonic waves [G01N](#); using radar, sonar or analogous techniques [G01S](#); {holography [G03H](#)})

U G03B 42/02

• using X-rays (measurement of X-radiation [G01T](#); X-ray apparatus, circuits therefor [H05G 1/00](#))

U G03B 42/021

• • {Apparatus for direct X-ray cinematography (circuit arrangements for obtaining a series of X-ray photographs or for X-ray cinematography [H05G 1/60](#))}

G03B 42/023

• • • {Apparatus for indirect X-ray cinematography, i.e. by taking pictures on ordinary film from the images on the fluorescent screen (by transforming the picture information intermediately into electrical signals [G03B 27/725](#))}

U G03B 42/04

• • Holders for X-ray films

- G03B 42/042
- • • {for dental applications ([see see](#) also [A61B 6/14](#)); (individual packages for X-ray film [G03C 3/003](#))}

U G03B 2205/00 Adjustment of optical system relative to image or object surface other than for focusing

- G03B 2205/0092
- Other types of adjustments, not provided for in groups [G03B 2205/0007](#) - [G03B 2205/0084](#), e.g. for collapsing

Project: N/A (G03C)

G03C

PHOTOSENSITIVE MATERIALS FOR PHOTOGRAPHIC PURPOSES (for photomechanical purposes [G03F](#)); PHOTOGRAPHIC PROCESSES, e.g. CINE, X-RAY, COLOUR, STEREO-PHOTOGRAPHIC PROCESSES; AUXILIARY PROCESSES IN PHOTOGRAPHY (photographic processes characterised by the use or manipulation of apparatus classifiable [per se](#) [per se](#) in subclass [G03B](#), [see see](#) [G03B](#); photomechanical production of textured or patterned surfaces [G03F](#); electrophotography, magnetography [G03G](#))

NOTE

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

- "photosensitive compositions" covers photosensitive substances, e.g. silverhalides, and, if applicable, binders or additives;
- "photosensitive materials" covers the photosensitive compositions, e.g. emulsions, the bases carrying them, and, if applicable, auxiliary layers.

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:

- [G03C 9/08](#) covered by [G03F 7/0037](#)

U G03C 1/00 Photosensitive materials (photosensitive materials for multicolour processes [G03C 7/00](#); for diffusion transfer processes [G03C 8/00](#); photosensitive glass [G03C 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](#))

- U G03C 1/06
- • with non-macromolecular additives ([G03C 1/047](#) takes precedence; {combination of dyes [G03C 1/29](#)})

- G03C 1/32
- • • Matting agents ({[see see](#) also [G03C 1/95](#))}

U G03C 2200/00 Details (not used)

- G03C 2200/59
- R-~~SO₂SM~~SO₂SM compound

Project: N/A (G03D)

U G03D 5/00 Liquid processing apparatus in which no immersion is effected; Washing apparatus in which no immersion is effected ([G11B 9/00](#), [G11B 11/00](#) take precedence; application of liquids in general [B05](#))

- G03D 5/04
- using liquid sprays (liquid sprayers [per se](#) [per se](#) [B05B](#))

U G03D 9/00 Diffusion development apparatus

- G03D 9/006
- {using heat (~~[G11B 9/02](#) takes priority~~ [G11B 9/02](#) takes precedence)}

Project: N/A (G03F)**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](#) [see](#) the relevant places, e.g. [B44C](#), [H01L](#), e.g. [H01L 21/00](#), [H05K](#))

- U G03F 7/70
 - {Exposure apparatus for microlithography}
 - U G03F 7/70008
 - • {Production of exposure light, i.e. light sources}
 - G03F 7/70016
 - • • {by discharge lamps (discharge lamps [per se](#) [per se](#) [H01J 61/00](#))}
 - G03F 7/70025
 - • • {by lasers (lasers [per se](#) [per se](#) [H01S 3/00](#))}
 - G03F 7/70033
 - • • {by plasma EUV sources (plasma EUV sources [per se](#) [per se](#) [H05G 2/00](#))}
 - U G03F 7/70216
 - • {Systems for imaging mask onto workpiece}
 - G03F 7/70283
 - • • {Masks or their effects on the imaging process, e.g. Fourier masks, greyscale masks, holographic masks, phase shift masks, phasemasks, lenticular masks, multiple masks, tilted masks, tandem masks (masks [per se](#) [per se](#) [G03F 1/14](#))}
 - G03F 7/70308
 - • • {Optical correction elements, filters and phase plates for manipulating, e.g. intensity, wavelength, polarization, phase, image shift (filters [per se](#) [per se](#) [G02B 5/20](#))}
- NOTE
- Wavelength or polarisation control is further classified in groups [G03F 7/70566](#), [G03F 7/70575](#)
- 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](#) [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 7/70616
 - • • {Wafer pattern monitoring, i.e. measuring printed patterns or the aerial image at the wafer plane (optical metrology tools [per se](#) [per se](#) [G01B 11/02](#) and [G01B 9/04](#))}
 - G03F 7/7065
 - • • • {Defect inspection (defect inspection apparatus [per se](#) [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](#) [per se](#) [G01B 9/02](#); encoders [per se](#) [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 7/70816
 - • • • {Bearings (fluid bearings [per se](#) [per se](#) [F16C 32/06](#))}

- G03F 7/70991
- • {Connection with other apparatus, e.g. multiple exposure stations, particular arrangement of exposure apparatus and pre-exposure and/or post-exposure apparatus, shared apparatus, e.g. having shared radiation source, shared mask or workpiece stage, shared base-plate, utilities, e.g. cable, pipe or wireless arrangements for data, power, fluids, vacuum (apparatus for processing a workpiece in a plurality of work-stations including at least one lithography chamber [H01L 21/67225](#))}
- U 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](#))**
- U 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](#))}
- U G03F 9/7003
- {Alignment type or strategy, e.g. leveling, global alignment}
- G03F 9/7038
- • {Alignment for proximity or contact printer (proximity or contact printers ~~per se~~ [per se](#) [G03F 7/7035](#))}
- G03F 9/7042
- • {Alignment for lithographic apparatus using patterning methods other than those involving the exposure to radiation, e.g. by stamping or imprinting (non-exposure lithographic processes ~~per se~~ [per se](#) [G03F 7/0002](#))}
- U 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](#))}
- G03F 9/7084
- • {Position of mark on substrate; i.e. position in (x, y, z) of mark, e.g. buried or resist covered mark, mark on rearside, at the substrate edge, in the circuit area, latent image mark, marks in plural levels}

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~~[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~~[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](#).

Project: MP0224 (G03G)

- U 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 5/06 • • • characterised by the photoconductive material being organic
- NOTE
In groups [G03G 5/06](#) - [G03G 5/0698](#), in the absence of an indication to the contrary, an invention is classified in the last appropriate place
- U G03G 5/0622 • • • • {Heterocyclic compounds}
- U G03G 5/0644 • • • • • {containing two or more hetero rings}
- M G03G 5/0646 • • • • • {in the same **being**ring system}

Project: N/A (G03G)

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** [per se](#) in group [G03G 15/00](#) and therefor takes precedence

- G03G 13/02 • Sensitising, i.e. laying-down a uniform charge (devices for corona discharge **per se** [per se](#) [H01T 19/00](#))

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** [per se](#) [G06K 15/14](#)})**

- U G03G 15/01 • For producing multicoloured copies {(colour correction in photography [G03C](#); colour correction in printing plate production)}
- U G03G 15/0105 • • {Details of unit}
- U G03G 15/0131 • • • {for transferring a pattern to a second base}
- G03G 15/0136 • • • • {transfer member separable from recording member or **vice versa** [vice versa](#), mode switching}

WARNING

Group [G03G 15/0136](#) is not complete, pending reorganisation. See also [G03G 15/0131](#)

- U G03G 15/06 • for developing
- U G03G 15/08 • • using a solid developer, e.g. powder developer
- G03G 15/095 • • • Removing excess solid developer {, e.g. fog preventing}
- G03G 15/75 • {Details relating to xerographic drum, band or plate, e.g. replacing, testing (electrographic recording members **per se** [per se](#) [G03G 5/00](#))}
- U **G03G 21/00** **Arrangements not provided for by groups [G03G 13/00](#) - [G03G 19/00](#), e.g. cleaning, elimination of residual charge**
- U G03G 21/20 • Humidity or temperature control {also ozone evacuation; Internal apparatus environment control}

G03G 21/206

- {Conducting air through the machine, e.g. for cooling, filtering, removing gases like ozone}

Project: MP0230 (G03G)**U** G03G 2221/00**Processes not provided for by group [G03G 2215/00](#), e.g. cleaning or residual charge elimination****M** G03G 2221/0005

- Cleaning of residual toner

NOTE

Indexing codes of group G03G 2221/0005 and subgroups can be followed by additional symbols preceded by a "+" sign and relating to additional characteristics. The additional symbols have the meaning as indicated below:

- ~~+A~~ performed by the developing device (so-called cleanerless)
- ~~+B~~ performed by a separate dedicated cleaning device
- ~~+B1~~ using magnetic brush
- ~~+B2~~ using mechanical means (also powders)
- ~~+B2C~~ with magnetic support
- ~~+B2D~~ with electrostatic support (also AC-voltage)
- ~~+B3~~ using magnetic means (not m. brush as in +B1;
- ~~+B2C~~ takes precedence)
- ~~+B3C~~ with electrostatic support (also AC-voltage)
- ~~+B4~~ using electrostatic means only
- ~~+B4C~~ with AC
- ~~+B4D~~ only DC
- ~~+B5~~ including suction or air pressure
- ~~+C~~ Precleaning treatment to enhance cleaning action
- ~~+C1~~ discharging the toner with electrodes (corona or the like)
- ~~+C1D~~ with AC
- ~~+C1E~~ with DC only
- ~~+C2~~ discharging with lamps (normally to neutralise
- ~~the photoconductor so the residual toner can~~
- ~~more easily be removed)~~
- ~~+C3~~ Mechanical means for redistributing the residual toner (also
- ~~magnetic brush)~~
- ~~+C3C~~ simultaneously acting as the main charger of the photosensitive
- ~~member~~
- ~~+C3D~~ with magnetic support
- ~~+C3E~~ with electrostatic support
- ~~+C3E1~~ including AC
- ~~+C3P~~ plural sequential mechanical means
- ~~+C4~~ magnetic means
- ~~+C4D~~ with electrostatic support (also AC-voltage)
- ~~+C5~~ electrostatic means (not charging as in +C1)
- ~~+C5D~~ with AC
- ~~+C5E~~ with DC only

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~~[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**
- U G03H 1/02
 - Details {of features involved during the holographic process; Replication of holograms without interference recording}
 - G03H 2001/0204
 - {Object characteristics (corresponding details, ~~see~~[see](#) subgroups of [G03H 2210/00](#))}
 - U G03H 2001/0208
 - {Individual components other than the hologram}
 - G03H 2001/0212
 - • {Light sources or light beam properties ([G03H 1/06](#), [G03H 1/24](#) take precedence; corresponding details, ~~see~~[see](#) subgroups of [G03H 2222/00](#))}
 - G03H 2001/0216
 - • {Optical components ([G03H 2001/0224](#), [G03H 1/0256](#) take precedence; corresponding details, ~~see~~[see](#) subgroups of [G03H 2223/00](#))}
 - G03H 2001/022
 - • {Writing means other than actinic light wave (corresponding details, ~~see~~[see](#) subgroups of [G03H 2224/00](#))}
 - G03H 2001/0224
 - • {Active addressable light modulator, i.e. Spatial Light Modulator [SLM] (corresponding details, ~~see~~[see](#) subgroups of [G03H 2225/00](#))}
 - G03H 2001/0228
 - • {Electro-optic or electronic components relating to digital holography ([G03H 2001/0224](#) takes precedence; corresponding details, ~~see~~[see](#) subgroups of [G03H 2226/00](#))}
 - G03H 2001/0232
 - • {Mechanical components or mechanical aspects not otherwise provided for (corresponding details, ~~see~~[see](#) subgroups of [G03H 2227/00](#))}
 - G03H 2001/026
 - {Recording materials or recording processes ([G03H 2226/11](#) takes precedence; corresponding details, ~~see~~[see](#) subgroups of [G03H 2260/00](#))}
 - U G03H 1/04
 - Processes or apparatus for producing holograms ([G03H 1/26](#) takes precedence)
 - U G03H 1/0402
 - {Recording geometries or arrangements ([G03H 1/0443](#), [G03H 1/0476](#), [G03H 1/16](#) take precedence)}
 - G03H 2001/0434
 - • {~~In situ~~ [In situ](#) recording when the hologram is recorded within the device used for reconstruction}
 - G03H 2001/0439
 - • {for recording Holographic Optical Element [HOE] (HOE ~~per se~~ [per se](#) [G02B 5/32](#))}

- U G03H 1/0476
 - {Holographic printer ([G03H 1/268](#) takes precedence)}
- G03H 2001/0478
 - • {Serial printer, i.e. point oriented processing}
- U G03H 1/18
 - • Particular processing of hologram record carriers, e.g. for obtaining blazed holograms {(photographic processing in general [G03C](#), [G03D](#))}
- G03H 2001/186
 - • {Swelling or shrinking the holographic record or compensation thereof, e.g. for controlling the reconstructed wavelength ([G03H 2001/0033](#), [G03H 2250/44](#) take precedence)}
- G03H 2001/187
 - • {Trimming process, i.e. macroscopically patterning the hologram (shape of hologram [G03H 1/0236](#))}
- G03H 1/20
 - • Copying holograms by holographic {, i.e. optical} means
- U G03H 1/22
 - Processes or apparatus for obtaining an optical image from holograms ([G03H 1/26](#) - [G03H 1/34](#) take precedence)
- G03H 1/24
 - • using white light {, e.g. rainbow holograms}
- U G03H 1/26
 - Processes or apparatus specially adapted to produce multiple {sub-} holograms or to obtain images from them, e.g. multicolour technique
- U G03H 1/2645
 - • {Multiplexing processes, e.g. aperture, shift, or wavefront multiplexing}
- G03H 2001/2655
 - • {Time multiplexing, i.e. consecutive records wherein the period between records is pertinent ~~per se~~ [per se](#)}
- U G03H 2210/00** **Object characteristics (not used, see subgroups)**
- U G03H 2210/20
 - 2D object
- G03H 2210/22
 - • 2D SLM object wherein the object beam is formed of the light modulated by the SLM (SLM ~~per se~~ [per se](#) [G03H 2001/0224](#))
- U G03H 2222/00** **Light sources or light beam properties (not used, see subgroups)**
- U G03H 2222/10
 - Spectral composition
- G03H 2222/12
 - • Single or narrow bandwidth source, e.g. laser, light emitting diode [LED]
- U G03H 2223/00** **Optical components (not used, see subgroups)**
- G03H 2223/19
 - Micro-optic array, e.g. lens array
- G03H 2223/21
 - Anamorphic optical element, e.g. cylindrical (astigmatic beam [G03H 2222/55](#))
- G03H 2223/26
 - Means providing optical delay, e.g. for path length matching
- U G03H 2240/00** **Hologram nature or properties (not used, see subgroups)**
- U G03H 2240/20
 - Details of physical variations exhibited in the hologram
- U G03H 2240/21
 - • Optical density variations
- G03H 2240/22
 - • • Chromatic variations, e.g. photochromic or electrochromic
- U G03H 2240/50
 - Parameters or numerical values associated with holography, e.g. peel strength
- G03H 2240/52
 - • Exposure parameters, e.g. time, intensity

Project: N/A (G04B)**G04B**

MECHANICALLY-DRIVEN CLOCKS OR WATCHES; MECHANICAL PARTS OF CLOCKS OR WATCHES IN GENERAL; TIME PIECES USING THE POSITION OF THE SUN, MOON OR STARS (spring- or weight-driven mechanisms in general [F03G](#); electromechanical clocks or watches [G04C](#); electromechanical clocks with attached or built-in means operating any device at pre-selected times or after predetermined time intervals [G04C 23/00](#); clocks or watches with stop devices [G04F 7/08](#))

NOTE

This subclass ~~covers~~ [covers](#) mechanically-driven clocks or clockwork calendars, and the mechanical part of such clocks or calendars.

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 <i>vice versa</i> 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)}
G04B 3/008	<ul style="list-style-type: none"> • {Winding up several mainsprings or driving weights simultaneously (driving mechanisms with several weights G04B 1/06; driving mechanisms with several mainsprings G04B 1/12; driving mechanisms with a mainspring and a secondary spring G04B 1/225; driving mechanisms with mainsprings and driving weights G04B 1/24; winding up the striking mechanisms with the clockwork and vice-versa <i>vice versa</i> G04B 21/14)}
G04B 3/12	<ul style="list-style-type: none"> • by mechanical means, e.g. pneumatic motor (winding up with electric or electromechanical means G04C {liquid or gas driving mechanisms G04B 1/26; automatic winding up by wind power G04B 5/203)}
U G04B 5/00	Automatic winding up {(normal winding up by hand or mechanically G04B 3/00 ; automatic winding in combination with hand winding G04B 7/00 ; electrical winding of mechanical clockworks G04C 1/00 ; advertising by making use of vibrations or shocks of land vehicles G09F 21/045)}
G04B 5/007	<ul style="list-style-type: none"> • {Clockworks, which wind up by driving the function, e.g. perpetua-mobilia <i>perpetua mobilia</i> (see see also F03G 7/10)}
U G04B 5/02	<ul style="list-style-type: none"> • by self-winding caused by the movement of the watch {(bearings, suspensions for oscillating weights G04B 5/18; mechanisms for transformation of an oscillating movement into a rotating movement in only one direction G04B 11/00)}
G04B 5/18	<ul style="list-style-type: none"> • • Supports, suspensions or guide arrangements, for oscillating weights {(transmission of the movement of the winding up weight to the mainspring G04B 5/04, G04B 5/10; support of the driving weight by protecting means which prevent overwinding, e.g. by interposing of a glide clutch G04B 5/24; bearings in general G04B 33/00)}
U G04B 5/20	<ul style="list-style-type: none"> • by movements of other objects, e.g. by opening a hand-bag, by opening a case, by opening a door; Winding up by wind power
G04B 5/206	<ul style="list-style-type: none"> • • {by rotating axles, e.g. tachometers (direct drive of the clockwork, e.g. without winding up of a spring or the like by a rotating axle G04B 7/00; combination with measuring instruments in general G04B 47/06)}
U G04B 18/00	Mechanisms for setting frequency {(for stabilising frequency G04B 17/00)}
G04B 18/08	<ul style="list-style-type: none"> • Component parts or constructional details {(not used; see <i>see</i> group G04B 17/32)}
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)
U G04B 19/04	<ul style="list-style-type: none"> • Hands; discs with a single mark or the like {(moving indicating arrangements which have scales or numbers with stationary hands or reading means G04B 19/20; optical projection of the position of the hands G04B 19/34)}
G04B 19/042	<ul style="list-style-type: none"> • • {Construction and manufacture of the hands; arrangements for increasing reading accuracy (hands with illumination G04B 19/305; specially shaped hands, e.g. figures or pictures G04B 45/0061; clockwork in the hands G04B 45/043; invisible drive of the hands G04B 45/046)}

- G04B 19/048
 - {having the possibility of indicating on more than one scale, e.g. hands with variable length which work on different scales (simultaneous indicating on several dials [G04B 19/025](#); indicating by discs used as hands [G04B 19/046](#); used as moving scales [G04B 19/202](#); different indications on several scales or dials; e.g. for different local apparent times [G04B 19/23](#))}
- U G04B 19/20
 - Indicating by numbered bands, drums, discs, or sheets {(indicating means without numbers or hands in general [G04B 19/04](#); illuminated [G04B 19/30](#); with optical projection [G04B 19/34](#); gearwork and linking in general [G04B 13/00](#); electrically driven [G04C 19/04](#); counter mechanisms [G06M](#))}
- G04B 19/202
 - {by means of turning discs (disc-shaped indicating devices with a reference mark or a window [G04B 19/046](#); discs driven by clockwork and producing optical special effects [G04B 45/0007](#); with inscriptions or drawings driven by a clockwork [G04B 45/0023](#); with figures or parts of figures driven by clockwork [G04B 45/0038](#))}
- G04B 19/26
 - Clocks or watches with indicators for tides, for the phases of the moon, or the like {(planetaria [G09B 27/00](#) - [G09B 27/06](#); arrangements for table reference; e.g. menstrual tables [G06C 3/00](#))}
- G04B 19/30
 - Illumination of dials or hands {(dials in general [G04B 19/06](#); moving indicating means with numbers or hands, in general [G04B 19/20](#); arrangements for indicating different local apparent times by means of a globe illuminated from inside [G04B 19/22](#); continuous indication of the time by non-electric light sources [G04B 25/00](#), e.g. by electric lamps [G04C 17/02](#); e.g. by electric lamps [G04C 17/02](#); illumination by electric lamps which function at fixed times or periodically [G04C 19/02](#); illuminated panels [G09F 13/00](#))}
- U **G04B 27/00**
Mechanical devices for setting the time indicating means
- U G04B 27/02
 - by making use of the winding means {(winding by hand or mechanically [G04B 3/00](#))}
- G04B 27/023
 - {changing of the winding position to the setting position and ~~vice versa~~ [vice versa](#) is done with an independant part of the winding or setting mechanism ([G04B 27/045](#) and [G04B 27/065](#) take precedence; by part of the case [G04B 27/086](#))}
- U G04B 27/04
 - with clutch wheel {(support and displacement of the winding stem through the case, means for preventing the stem from going too far, fixation [G04B 37/06](#))}
- G04B 27/045
 - {Changing the winding position to the setting position and ~~vice versa~~ [vice versa](#) is done with an independant part of the winding or setting mechanism}
- U G04B 27/06
 - with rocking bar {(support and displacement of the winding stem through the case, means preventing the stem from going too far, fixation [G04B 37/06](#))}
- G04B 27/065
 - {Changing the winding position to the setting position and ~~vice versa~~ [vice versa](#) is done with an independant part of the winding or setting mechanism}
- U **G04B 37/00**
Cases {(Cases with a special shape [G04B 45/0069](#); ornamentation of the case [G04B 47/04](#); cartridges [A45C 11/00](#) - [A45C 11/38](#))}
- U G04B 37/14
 - Suspending devices, supports or stands for time-pieces insofar as they form part of the case {(wrist watch straps, fastening means therefor [A44C 5/00](#))}
- U G04B 37/1406
 - {Means for fixing the clockwork pieces on other objects (possibly on walls)}
- G04B 37/1433
 - {Fixation on items of clothing; e.g. with clips (button watches [G04B 37/12](#); brooches, or the like [A44C 1/00](#); other similar fixation means, in general [A45F 5/02](#))}
- G04B 37/16
 - Fastening the case to the bracelet {(not used; ~~see~~ [see](#) provisionally [G04B 37/00](#))}

- G04B 37/18
 - for pocket or wrist watches ([G04B 37/02](#) - [G04B 37/16](#) takes precedence {not used; [see see](#) provisionally [G04B 37/00](#)})
- G04B 37/20
 - • with hinged covers or backs {(not used; [see see](#) provisionally [G04B 37/00](#))}
- U 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](#))}
- G04B 45/0076
 - {Decoration of the case and of parts thereof, e.g. as a method of manufacture thereof (specially shaped [G04B 45/0061](#), [G04B 45/0069](#); decoration with inscriptions and pictures [G04B 45/0084](#); construction of the hands [G04B 19/042](#); decoration by adding extra pieces to the clockwork [G04B 47/04](#); colouring by treatment of the surface, e.g. by oxidation [C25D](#))}
- U G04B 47/00**

Time-pieces combined with other articles which do not interfere with the running or the time-keeping of the time-piece ({clockwork cases for special purposes [G04B 37/12](#); clocks with magnifying glass built in the face [G04B 39/00](#); time-pieces in which parts or cases produce special effects, e.g. aesthetic effects, [G04B 45/00](#), particularly with inscriptions or pictures moved by hand [G04B 45/003](#), with specially shaped cases or parts [G04B 45/0069](#); combination of} writing or drawing implements with devices for indicating time [B43K 29/087](#); combined with cameras, projectors, or photographic painting apparatus [G03B 29/00](#))
- G04B 47/04
 - with attached ornaments or amusement apparatus {(decorated cases [see see](#) [G04B 45/00](#))}

Project: N/A (G04C)**G04C**

ELECTROMECHANICAL CLOCKS OR WATCHES (mechanical parts of clocks or watches in general [G04B](#); electronic time-pieces with no moving parts, electronic circuitry for producing timing pulses [G04G](#))

NOTE

This subclass [covers covers](#) electric features of mechanically-driven clocks or watches, such as electric winding of such clocks or the provision of electric contacts thereon.

- 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](#))}
- U G04C 3/14
 - incorporating a stepping motor ([G04C 3/02](#) - [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](#))}
- G04C 3/143
 - • {Means to reduce power consumption by reducing pulse width or amplitude and related problems, e.g. detection of unwanted or missing step}
- U G04C 9/00**

Electrically-actuated devices for setting the time-indicating means (of slave clocks [G04C 13/03](#); mechanical setting devices [G04B 27/00](#); radio-controlled time-pieces [G04R](#))
- G04C 9/04
 - by blocking the driving means {([see see](#) provisionally [G04C 9/00](#))}
- G04C 9/06
 - by decoupling the driving means (combined with blocking means [G04C 9/04](#) {[see see](#) provisionally [G04C 9/00](#)})
- G04C 9/08
 - by electric drive, {(i.e. for mechanical clocks; [see see](#) provisionally [G04C 9/00](#))}

- U G04C 17/00** indicating the time optically by electric means ([G04C 19/00](#) takes precedence; by mechanical means [G04B 19/00](#), [G04B 19/20](#))
- G04C 17/0091 · {Combined electro-optical and electro-mechanical displays ([see see](#) provisionally also [G04G 9/0082](#))}

Project: N/A (G04D)

- U G04D 3/00** Watchmakers' or watch-repairers' machines or tools for working materials {(metal working in general class [B23](#))}
- U G04D 3/0002 · {for mechanical working other than with a lathe (lathes for watchmakers [G04D 3/02](#))}
- U G04D 3/0005 · · {for parts of driving means}
- G04D 3/0007 · · · {for springs (springs in general [B21F](#); mainspring construction [G04B 1/14](#); springs for the regulating mechanism [see see G04D 3/0041](#))}

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 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 5/02 · Metronomes {(periodic signalisation by acoustic signals in general [G04B 21/005](#))}
- G04F 5/027 · · {using electro-mechanical driving, e.g. of optical scanned recordings (electro-phonetic musical instruments in which tones are generated by electromechanical means, e.g. by using pick-up means for reading recorded waves [G10H 3/00](#))}
- U G04F 7/00** Apparatus for measuring unknown time intervals by mechanical means
- U G04F 7/04 · using a mechanical oscillator
- WARNING
- The subgroups of [G04F 7/04](#) are not complete pending reclassification; see also this group
- U G04F 7/08 · · Watches or clocks with stop devices, e.g. chronograph
- U G04F 7/0866 · · · {Special arrangements}
- G04F 7/0876 · · · {Split-time function, e.g. rattrapante}

- G04F 7/089 ~~{indicating measured time by other than hands;~~ *{indicating measured time by other than hands,* e.g. numbered bands, drums, discs or sheet (current time indication other than by hand [G04B 19/20](#))}
- G04F 7/10 . Means used apart from the time-piece for starting or stopping same ~~{{see see~~ provisionally too : [G04F 8/08](#))}

Project: N/A (G04G)**G04G****ELECTRONIC TIME-PIECES**NOTES

1. This subclass ~~covers~~*covers*:
 - electronic time-pieces with no moving parts;
 - electronic circuitry for producing timing pulses irrespective of the nature of the time indicating means utilised.
2. This subclass ~~does not cover~~ *does not cover* electronic time-pieces with moving parts, which are covered by subclass [G04C](#).

Project: N/A (G05)**G05**

CONTROLLING; REGULATING (specially adapted to a particular field of use, ~~see see~~ the relevant place for that field, e.g. [A62C 37/00](#), [B03B 13/00](#), [B23Q](#))

NOTES

1. This class ~~covers~~*covers* methods, systems, and apparatus for controlling, in general.
2. In this class, the following terms or expressions are used with the meanings indicated:
 - "controlling" means influencing a variable in any way, e.g. changing its direction or its value (including changing it to or from zero), maintaining it constant, limiting its range of variation;
 - "regulation" means maintaining a variable automatically at a desired value or within a desired range of values. The desired value or range may be fixed, or manually varied, or may vary with time according to a predetermined "programme" or according to variation of another variable. Regulation is a form of control;
 - "automatic control" is often used in the art as a synonym for "regulation".
3. Attention is drawn to the Notes following the title of section ~~G~~*G*, especially as regards the definition of the term "variable".

Project: N/A (G05B)**G05B**

CONTROL OR REGULATING SYSTEMS IN GENERAL; FUNCTIONAL ELEMENTS OF SUCH SYSTEMS; MONITORING OR TESTING ARRANGEMENTS FOR SUCH SYSTEMS OR ELEMENTS (fluid-pressure actuators or systems acting by means of fluids in general [F15B](#); valves ~~per se~~ *per se* [F16K](#); characterised by mechanical features only [G05G](#); sensitive elements, ~~see see~~ the appropriate subclass, e.g. [G12B](#), subclass of [G01](#), [H01](#); correcting units, ~~see see~~ the appropriate subclass, e.g. [H02K](#))

NOTES

1. This subclass ~~covers~~*covers* features of control systems or elements for regulating specific variables, which are clearly more generally applicable.
2. This subclass ~~does not cover~~ *does not cover* applications of such systems or elements, which are covered by subclass [G05D](#) or [G05F](#).
3. In this subclass, the following terms or expressions are used with the meanings indicated :

- "automatic controller" means a system, circuit, or device in which a signal from the detecting element is compared with a signal representing the desired value and which operates in such a way as to reduce the deviation. The automatic controller generally does not include the sensitive element, i.e. that element which measures the value of the condition to be corrected, or the correcting element, i.e. that element which adjusts the condition to be corrected;
- "electric" includes "electromechanical", "electrohydraulic" or "electropneumatic".

4. In this subclass, details or specific control systems are classified in the group relevant to that system, if not otherwise provided for.

U	G05B 11/00	Automatic controllers (G05B 13/00 takes precedence)
U	G05B 11/44	• pneumatic only
U	G05B 11/48	• • with auxiliary power
	G05B 11/50	• • • in which the output signal represents a continuous function of the deviation from the desired value, i.e. continuous controllers
	G05B 15/00	Systems controlled by a computer (G05B 13/00, G05B 19/00 take precedence; automatic controllers with particular characteristics G05B 11/00; computers per se per se G06)
	G05B 19/00	Programme-control systems (specific applications see see the relevant places, e.g. A47L 15/46; clocks with attached or built-in means operating any device at a preselected time interval G04C 23/00; marking or sensing record carriers with digital information G06K; information storage G11; time or time-programme switches which automatically terminate their operation after the programme is completed H01H 43/00)
U	G05B 19/02	• electric
U	G05B 19/04	• • Programme control other than numerical control, i.e. in sequence controllers or logic controllers (G05B 19/418 takes precedence; numerical control G05B 19/18)
U	G05B 19/07	• • • where the programme is defined in the fixed connection of electrical elements, e.g. potentiometers, counters, transistors
	G05B 19/075	• • • {for delivering a step function, a slope or a continuous function (G05B 19/06 takes precedence; function generators per se per se H03K , G06G)}
U	G05B 23/00	Testing or monitoring of control systems or parts thereof (monitoring of programme-control systems G05B 19/048, G05B 19/406)
	G05B 23/02	• Electric testing or monitoring <u>WARNING</u> As from June 1st, 2011 documents of this group are being continuously reclassified to its subgroups]
U	G05B 23/0205	• {by means of a monitoring system capable of detecting and responding to faults} <u>WARNING</u> Not complete pending the completion of a reclassification; see also G05B 23/02

U	G05B 23/0218	<ul style="list-style-type: none"> • • • {characterised by the fault detection method dealing with either existing or incipient faults} <p><u>WARNING</u> Not complete pending the completion of a reclassification; see also G05B 23/02</p>
U	G05B 23/0224	<ul style="list-style-type: none"> • • • • {Process history based detection method, e.g. whereby history implies the availability of large amounts of data} <p><u>WARNING</u> Not complete pending the completion of a reclassification; see also G05B 23/02</p>
	G05B 23/0227	<ul style="list-style-type: none"> • • • • • {Qualitative history assessment, whereby the type of data acted upon, e.g. waveforms, images or patterns, is not relevant, e.g. rule based assessment; if-then decisions} <p><u>WARNING</u> Not complete pending the completion of a reclassification; see also G05B 23/02</p>
U	G05B 23/0243	<ul style="list-style-type: none"> • • • • {model based detection method, e.g. first-principles knowledge model} <p><u>WARNING</u> Not complete pending the completion of a reclassification; see also G05B 23/02</p>
U	G05B 23/0245	<ul style="list-style-type: none"> • • • • • {based on a qualitative model, e.g. rule based; if-then decisions} <p><u>WARNING</u> Not complete pending the completion of a reclassification; see also G05B 23/02</p>
	G05B 23/0251	<ul style="list-style-type: none"> • • • • • • {Abstraction hierarchy, e.g. "complex systems", i.e. system is divided in subsystems, subsystems are monitored and results are combined to decide on status of whole system} <p><u>WARNING</u> Not complete pending the completion of a reclassification; see also G05B 23/02</p>
U	G05B 2219/00	Program-control systems
U	G05B 2219/10	<ul style="list-style-type: none"> • Plc systems
U	G05B 2219/11	<ul style="list-style-type: none"> • • Plc I-O input output
	G05B 2219/1174	<ul style="list-style-type: none"> • • • Input activates directly output and vice-versavice versa
U	G05B 2219/20	<ul style="list-style-type: none"> • Pc systems
U	G05B 2219/21	<ul style="list-style-type: none"> • • Pc I-O input output
	G05B 2219/21139	<ul style="list-style-type: none"> • • • Input activates directly output and vice-versavice versa
U	G05B 2219/30	<ul style="list-style-type: none"> • Nc systems
U	G05B 2219/35	<ul style="list-style-type: none"> • • Nc in input of data, input till input file format
	G05B 2219/35543	<ul style="list-style-type: none"> • • • Cartesian to polar and vice-versavice versa
U	G05B 2219/36	<ul style="list-style-type: none"> • • Nc in input of data, input key till input tape
	G05B 2219/36236	<ul style="list-style-type: none"> • • • Convert character, ascii, text code to internal code and vice-versavice versa
	G05B 2219/36544	<ul style="list-style-type: none"> • • • Inhibiting manual control while under automatic, other control vice-versavice versa
U	G05B 2219/41	<ul style="list-style-type: none"> • Servomotor, servo controller till figures

- G05B 2219/41263 • • • Switch control mode of spindle drive as function of contouring, spindle orientation
- G05B 2219/41297 • • • For cancelling magnetic field leakage generated by, e.g. voice coil motor
- U G05B 2219/50 • • Machine tool, machine tool null till machine tool work handling
- G05B 2219/50134 • • • Tool pushes reference plane, or ~~vice versa~~ *vice versa*, reverse motion until again zero

Project: N/A (G05D)**G05D**

SYSTEMS FOR CONTROLLING OR REGULATING NON-ELECTRIC VARIABLES (for continuous casting of metals [B22D 11/16](#) ; valves ~~per se~~ *per se* [F16K](#); sensing non-electric variables, ~~see~~ *see* the relevant subclasses of [G01](#); for regulating electric or magnetic variables [G05F](#))

NOTES

1. This subclass ~~does not cover~~ *does not cover* features of general applicability to regulating systems, e.g. anti-hunting arrangements, which are covered by subclass [G05B](#).
2. In this subclass, the following term is used with the meaning indicated:
 - "systems" includes self-contained devices such as speed governors, pressure regulators.
3. Control systems specially adapted for particular apparatus, machines or processes are classified in the subclasses for the apparatus, machines or processes, provided that there is specific provision for control or regulation relevant to the special adaptation, either at a detailed level, (e.g. [A21B 1/40](#) : "for regulating temperature in bakers' ovens") or at a general level, (e.g. [B23K 9/095](#) : "for automatic control of welding parameters in arc welding"). Otherwise, classification is made in the most appropriate place in this subclass.

The following are lists of places where there is specific provision of the kind referred to above. Where such provision is at a detailed level, the places have been grouped according to the main groups of this subclass. Where the provision is at a general level (e.g. of a kind appropriate to more than one of the main groups specified in the lists, or to main groups [G05D 27/00](#) or [G05D 29/00](#)), the places are listed under the title "General References".

Places related to [G05D 1/00](#)

A01B 69/00	Agricultural machines or implements
A63H 17/36	Toy vehicles
B60V 1/11	Air-cushion vehicles
B62D 1/00	Steering controls of motor vehicles or trailers, i.e. means for initiating a change of direction
B62D 6/00	Arrangements for automatically controlling the steering depending on driving conditions
B62D 55/116	Chassis of endless-tracked vehicles
B63H 25/00	Marine steering; control of waterborne vessels
B64C 13/00 - B64C 15/00	Controlling aircraft
B64D 25/10	Controlling attitude or direction of aircraft ejector seats
B64G 1/24	Cosmonautic vehicles
F41G 7/00	Self-propelled missiles
F42B 15/01	Guided missiles
F42B 19/01	Marine torpedoes

Places related to [G05D 3/00](#)
[A43D 119/00](#) Footwear manufacture
[B21K 31/00](#) Tool carriers in forging or pressing
[B23B 39/26](#) Pattern-controlled boring or drilling tools
[B23D 1/30](#) , [B23D 3/06](#) , [B23D 5/04](#)
Planing or slotting machines controlled by copying device
[B23H 7/18](#) Electrode to workpiece spacing in electric dischargte and electrochemical machining
[B23K 26/02](#) Workpiece in laser welding or cutting
[B23K 37/04](#) Workpiece in welding
[B23K 37/06](#) Molten metal in welding
[B23Q 5/20](#) Spindles in machine tools
[B23Q 15/00](#) , [B23Q 16/00](#) Tool or work position in machine tools
[B23Q 35/00](#) Tools controlled by pattern or master model
[B24B 17/00](#) Grinding controlled by patterns, drawings, magnetic tape or the like
[B24B 47/22](#) Starting position in grinding
[B30B 15/24](#) Actuating members in presses
[B62D 55/116](#) Chassis of tracked vehicles
[B65H 23/18](#) Web-advancing mechanisms
[E02F 3/43](#) Dippers or buckets in dredgers
[F15B 9/00](#) Fluid-pressure servomotors with follow-up action
[F24J 2/38](#) Tracking of solar haet collectors
[G03F 9/00](#) Photomechanical production of patterned or textured surfaces
[G11B 5/588](#) Rotating heads in information storage systems
[G21C 7/12](#) Movement of control elements in nuclear reactors

Places related to [G05D 5/00](#)
[A24B 7/14](#) Tobacco cutting
[B05C 11/02](#) Thickness of coating of fluent material on surface
[B21B 37/16](#) Thickness, width, diameter or other transverse dimensions of the products of metal-rolling mills
[C03B 18/04](#) Dimension of glass ribbon
[D21F 7/06](#) Thickness of layer in paper making

Places related to [G05D 7/00](#)
[A45D 20/26](#) Air in hair drying helmets
[A61M 5/168](#) Flow of media to the human body
[B03C 3/36](#) Gases or vapour in electrostatic separators

[B05C 11/10](#) Fluent material in coating devices
[B67D 1/12](#) Dispensing beverages on draught
[B67D 7/28](#) Transferring liquids
[C10K 1/28](#) Gas purifiers
[E21B 21/08](#) Flushing boreholes
[E21B 43/12](#) Obtaining liquids from wells
[F01D 17/00](#) Flow in non-positive-displacement machines or systems
[F01M 1/16](#) Lubrication arrangements
[F01P 7/00](#) Coolant flow in cooling devices
[F02C 9/16](#) ,
[F02C 9/50](#) Gas-turbine working fluid
[F16L 55/027](#) Throttle passages in pipes
[F24F 11/00](#) Air-flow or supply of heating or cooling fluids in air treatment arrangements
[F26B 21/12](#) Air or gas flow in dryers
[G01G 11/08](#) Continuous flow weighing apparatus
[G21D 3/14](#) Coolant in nuclear power plant

Places related to [G05D 9/00](#)
[B01D 21/34](#) Liquid level in sedimentation arrangements
[B41L 27/04](#) Ink level in printing, manifolding or duplicating arrangements
[F22D 5/00](#) Feed water for boilers
[H01J 1/10](#) , [H01J 13/14](#) Liquid pool electrodes in electric discharge tubes or lamps

Places related to [G05D 11/00](#)
[B01D 21/32](#) Density in sedimentation arrangements
[B01F 15/04](#) Mixers
[B24C 7/00](#) Abrasive blasts
[B28C 7/00](#) Mixtures of clays or cements
[B65G 53/66](#) Bulk material conveyors
[F02K 3/075](#) Flow ratio in jet-propulsion plants

Places related to [G05D 13/00](#)
[B21C 1/12](#) Drum speed in metal drawing
[B23Q 15/00](#) Cutting velocity of tool or work
[B30B 15/20](#) Ram speed in presses
[B60K 31/00](#) Setting or limiting speed of vehicles
[B60L 15/00](#) Electrically-propelled vehicles
[B64D 31/08](#) Cruising speed of aircraft
[D01D 1/09](#) Feed rate in manufacture of artificial filaments, threads, fibres, bristles or ribbons
[D01G 15/36](#) Carding machines
[D02H 13/14](#) Warping, beaming or leasing machines
[D03D 51/16](#) Cyclically varying speed of looms

G01N 30/32	Speed of fluid carrier in chemical analysis
G11B 15/46	Filamentary or web record carriers or heads for such carriers in information storage systems
G11B 19/28	Non-filamentary, non-web record carriers, or heads for such carriers in information storage systems
Places related to G05D 15/00	
B25D 9/26	Portable percussive tools
B30B 15/22	Ram pressure in presses
B65H 59/00	Tension in filamentary material
{ B65H 23/00 , B65H 59/00 }	Tension in webs, tapes, filamentary material
B66D 1/50	Rope, cable or chain tension
D03D 49/04	Tension in looms
D05B 47/04	Tension in sewing machines
D21F 3/06	Pressure in paper-making machines
F26B 13/12	Drying fabrics
F26B 21/10	Pressure in dryers
G11B 15/43	Record carrier tension in information storage arrangements
Places related to G05D 16/00	
B60C 23/00	Tyre pressure
B63C 11/08	Air within diving suit
B64D 13/00	Aircraft air-pressure
B65G 53/66	Bulk material conveyors
D01D 1/09	Manufacture of artificial filaments, threads, fibres, bristles or ribbons
E21B 21/08	Flushing boreholes
F01M 1/16	Lubrication arrangements
G01N 30/32	Pressure of fluid carrier in chemical analysis
H01J 7/14	Pressure in electric discharge tubes or lamps
H01K 1/52	Pressure in electric incandescent lamps
Places related to G05D 19/00	
B25D 9/26	Portable percussion tools
B65G 27/32	Jigging conveyors
Places related to G05D 21/00	
B01D 21/32	Density in sedimentation arrangements
B01D 53/30	Treating gases or vapours
G01N 30/34	Composition of fluid carrier in chemical analysis
Places related to G05D 22/00	
A01G 25/16	Watering gardens, fields, sports grounds or the like

[A01K 41/04](#) Poultry incubators
[A24B 9/00](#) Tobacco products
[F24F 11/00](#) Air conditioning
[F26B 21/08](#) Dryers

Places related to [G05D 23/00](#)

[A21B 1/40](#) Bakers' ovens
[A45D 6/20](#) Hair curlers
[B21C 31/00](#) Metal extruding
[B60C 23/00](#) Tyre temperature
[B64G 1/50](#) Cosmonautic vehicles
[C03B 18/18](#) ,
[C03B 18/22](#) Float baths in glass making
[D01D 1/09](#) Manufacture of artificial
 filaments,
 threads, fibres, bristles or ribbons
[D04B 35/30](#) Knitting machines
[D06F 75/26](#) Hand irons
[D21F 5/06](#) Paper-making machines
[F01M 5/00](#) Lubricant in lubrication
 arrangements
[F16N 7/08](#) Arrangements for supplying oil or
 unspecified
 lubricant from a reservoir
[F22G 5/00](#) Steam superheat
[F26B 21/10](#) Dryers
[G01N 30/30](#) Temperature of fluid carrier in
 chemical
 analysis
[H01M 10/60](#) Electric storage cells
[H05B 6/06](#) ,
[H05B 6/50](#) ,
[H05B 6/68](#) Dielectric, induction or microwave
 heating
[H05G 1/36](#) Anode of X-ray tube

Places related to [G05D 25/00](#)

[B41B 21/08](#) Photographic composing machines
[H01S 3/10](#) ,
[H05B 33/08](#) ,
[H05B 35/00](#) to
[H05B 43/00](#) Lasers and other light sources

General references

[A01J 5/007](#) Milking machines
[B23K 9/095](#) Welding parameters
[B23Q 35/00](#) Copying
[B24B 17/00](#) ,
[B24B 49/00](#) Grinding or polishing
[B24C 7/00](#) Abrasive blasts
[B67D 1/12](#) Dispensing beverages on draught
[G03G 21/20](#) Electrographic, electrophotographic

or
 magnetographic processes

[H02P 5/00](#) ~~to~~

~~to~~ [H02P 9/00](#) Dynamo-electric motors or generators

- U G05D 1/00** Control of position, course or altitude of land, water, air, or space vehicles, e.g. automatic pilot (steering applicable only to other than landborne vehicles, e.g. three-dimensional steering applicable to both aircraft and submarines [B60K](#) ; construction or disposition of steering means on land vehicles [B62](#) , on waterborne vessels [B63](#) ; manual or automatic control of aircraft, e.g. using automatic pilot or radiated signal [B64C](#) ; radio navigation systems or analogous systems using other waves [G01S](#))
- U G05D 1/0055 • {with safety arrangements}
- G05D 1/0061 • • {for transition from automatic pilot to manual pilot and ~~vice versa~~[vice versa](#)}
- U G05D 1/02 • Control of position or course in two dimensions
- G05D 1/021 • • {specially adapted to land vehicles}

NOTES

1. This group ~~covers~~[covers](#) control of position or course in two dimensions specially adapted for land vehicles, i.e. control systems to define a trajectory for a land vehicle, and to take suitable actions to make the vehicle follow said trajectory.

2. Relationships with other classification places.

Subclass [G01C](#) covers navigation in general, i.e. determining the position and course of land vehicles, ships, aircraft, and space vehicles.

Subclass [G01S](#) covers radio, sonar or lidar navigation systems, i.e. navigation by use of radio, acoustic or optical waves, or analogue arrangements using other electromagnetic waves.

Subclass [G08G](#) covers navigation systems for traffic control purposes, i.e. systems in which the navigation is not performed autonomously by or in the vehicle, but where the vehicles are guided by instructions transmitted to them.

Aspects of navigation systems that are important ~~per se~~[per se](#) should also be classified in the relevant groups of [G01C](#) (see for example list under "Informative References" below).

Aspects of radio, sonar or lidar navigation systems that are important ~~per se~~[per se](#) should also be classified in the relevant groups of [G01S](#) (see for example list under "Informative References" below).

Aspects of navigation systems for traffic purposes that are important ~~per se~~[per se](#) should also be classified in the relevant groups of [G08G](#) (see for example list under "Informative References" below).

3. Informative References.

Attention is drawn to the following places, which could be of interest for search:

- navigation, i.e. determining the position and course of land vehicles, ships, aircraft, and space vehicles [G01C 21/00](#)
- measuring distance traversed on the ground by vehicles, e.g. using odometers [G01C 22/00](#)
- position-fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#)
- determining distance or velocity using waves and not using reflection or reradiation of waves [G01S 11/00](#)
- radar systems specially designed for traffic control [G01S 13/91](#)
- radar systems specially designed for for anti-collision purposes [G01S 13/93](#)
- sonar systems specially designed for for anti-collision purposes [G01S 15/93](#)
- lidar systems specially designed for for anti-collision purposes [G01S 17/93](#)
- traffic control systems for road vehicles [G08G 1/00](#)
- monitoring the location of fleet of vehicles in traffic control systems [G08G 1/127](#)

- anti-collision traffic control systems [G08G 1/16](#)
- U G05D 1/0231
 - . . {using optical position detecting means (position-fixing by using electromagnetic waves other than radio waves, e.g. optical position detecting means [G01S 5/16](#))}
- G05D 1/0234
 - . . . {using optical markers or beacons (optical beacons ~~per se~~ [per se](#) [G01S 1/70](#))}
- G05D 1/0236
 - {in combination with a laser (lasers ~~per se~~ [per se](#) [H01S](#))}
- U G05D 1/0238
 - . . . {using obstacle or wall sensors ([G05D 1/0246](#) and [G05D 1/0289](#) take precedence; lidar systems designed for anti-collision purposes [G01S 17/93](#))}
- G05D 1/024
 - {in combination with a laser (lasers ~~per se~~ [per se](#) [H01S](#))}
- U G05D 1/0246
 - . . . {using a video camera in combination with image processing means (image data processing in general [G06T](#) ; video signal coding and transmission [H04N](#))}
- G05D 1/0248
 - {in combination with a laser (lasers ~~per se~~ [per se](#) [H01S](#))}
- U G05D 1/10
 - Simultaneous control of position or course in three dimensions ([G05D 1/12](#) takes precedence)
- U G05D 1/101
 - . {specially adapted for aircraft}
- G05D 1/105
 - . . {specially adapted for unpowered flight, e.g. glider, parachuting, forced landing (parachutes ~~per se~~ [per se](#) [B64D 17/00](#))}
- U **G05D 7/00**

Control of flow (level control [G05D 9/00](#) ; ratio control [G05D 11/00](#) ; of media to the human body [A61M 5/168](#) ; weighing apparatus [G01G](#))
- U G05D 7/06
 - characterised by the use of electric means {([G05D 7/005](#) takes precedence)}
- U G05D 7/0617
 - . {specially adapted for fluid materials}
- U G05D 7/0629
 - . . {characterised by the type of regulator means}
- G05D 7/0694
 - . . . {by action on throttling means or flow sources of very small size, e.g. microfluidics (microvalves [F16K 99/0001](#) ; micro-structural devices ~~per se~~ [per se](#) [B81B](#))}
- G05D 16/00**

Control of fluid pressure (control of pressure in electric discharge tubes or lamps [H01J](#), e.g. [H01J 7/14](#) ; control of pressure in electric incandescent lamps [H01K 1/52](#))
- U G05D 16/04
 - without auxiliary power
- U G05D 16/06
 - . the sensing element being a flexible membrane, yielding to pressure, e.g. diaphragm, bellows, capsule
- U G05D 16/063
 - . . {the sensing element being a membrane}
- G05D 16/0636
 - . . . {characterised by the loading device of the membrane, e.g. spring}

Project: N/A (G05F)**G05F**

SYSTEMS FOR REGULATING ELECTRIC OR MAGNETIC VARIABLES (regulating the timing or recurrence frequency of pulses in radar or radio navigation systems [G01S](#); closed-loop systems for regulating non-electric variables by electric means [G05D](#); regulating power supply of digital computers [G06F 1/26](#); regulating electric power distribution networks [H02J](#); regulating the charging of batteries [H02J 7/00](#); regulation of the output of static converters, e.g. switching regulators [H02M](#); regulation of the output of electric generators [H02N](#), [H02P 9/00](#), [H03L](#); controlling transformers, reactors or choke coils [H02P 13/00](#); regulating frequency response, gain, maximum output, amplitude or bandwidth of amplifiers [H03G](#); regulating tuning of resonant circuits [H03J](#); regulating characteristics of transmission lines [H04B](#); electric control of X-ray apparatus [H05G 1/30](#))

NOTES

1. This subclass ~~covers~~[covers](#):
 - systems only;
 - use of hydraulic, pneumatic, mechanical, and electrical motors for varying electric characteristics of devices which restore the quantity regulated;
 - the combination of static converters and current or voltage regulators, if the invention resides in the combination.
2. This subclass ~~does not cover~~[does not cover](#) elements ~~per se~~[per se](#), which are covered by the relevant subclasses.

WARNING

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

[G05F 3/28](#) covered by [G05F 3/26](#)

[G05F 5/02](#) " " [G05F 5/00](#)

[G05F 5/04](#) " " [G05F 5/00](#)

[G05F 5/06](#) " " [G05F 5/00](#)

[G05F 5/08](#) " " [G05F 5/00](#)

Project: N/A (G05G)**U G05G 5/00**

Means for preventing, limiting or returning the movements of parts of a control mechanism, e.g. locking controlling member ([G05G 17/00](#) takes precedence)

G05G 5/04

- Stops for limiting movement of members, e.g. adjustable stop ([G05G 5/03](#), [G05G 5/05](#), [G05G 5/28](#) take precedence)

U G05G 7/00

Manually-actuated control mechanisms provided with one single controlling member co-operating with one single controlled member; Details thereof (controlling members [G05G 1/00](#))

G05G 7/16

- Special provisions for reducing the effect of slight relative movement between supports of the mechanism, e.g. resulting from resilient mounting of a controlled mechanism

Project: N/A (G06C)**G06C**

DIGITAL COMPUTERS IN WHICH ALL THE COMPUTATION IS EFFECTED MECHANICALLY (score computers for card games [A63F 1/18](#); construction of keys, printing mechanisms or other parts of general application to the typewriting or printing art [B41](#); keys or printing mechanisms for special applications, ~~see~~ see the relevant subclasses, e.g. [G05G](#), [G06K](#); cash registers [G07G 1/00](#))

NOTE

Details of mechanisms covered in main groups [G06C 9/00](#), [G06C 11/00](#) or [G06C 15/00](#), which are applicable to mechanical counters driven only through the lowest denomination, are classified in [G06M](#)

U G06C 7/00**Input mechanisms (pin carriage [G06C 13/02](#))**

U G06C 7/02

• Keyboards

G06C 7/04

• • Interlocking devices, e.g. between keys (interlocking devices covered by this subclass, ~~per se~~ ~~per se~~ [G06C 25/00](#))

Project: N/A (G06E)**G06E**

OPTICAL COMPUTING DEVICES; {COMPUTING DEVICES USING OTHER RADIATIONS WITH SIMILAR PROPERTIES} (optical logic elements ~~per se~~ ~~per se~~ [G02F 3/00](#); digital storage using optical elements [G11C 13/04](#))

NOTES

1. This subclass ~~covers~~ ~~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.

U G06E 3/00**Devices not provided for in group [G06E 1/00](#), e.g. for processing analogue or hybrid data**WARNING

Not complete. For hybrid devices see also [G06J](#)

G06E 3/001

• {Analogue devices in which mathematical operations are carried out with the aid of optical or electro-optical elements (optical elements ~~per se~~ ~~per se~~ [G02B](#); devices consisting of a plurality of solid state components, including light sensitive semiconductor components, formed in or on a common substrate [H01L 27/14](#); electro-, magneto- or acousto-optics, non-linear optics [G02F 1/00](#); graph reading [G06K 11/00](#))}

Project: N/A (G06F)**U G06F 1/00**

Details of data-processing equipment not covered by groups [G06F 3/00](#) - [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](#))}

U G06F 1/04

• Generating or distributing clock signals or signals derived directly therefrom

G06F 1/10

• • Distribution of clock signals {, e.g. skew}

U G06F 1/16

• Constructional details or arrangements (instrument details [G12B](#))

U 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](#) - [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](#)~~; *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](#)*)}
- U G06F 1/18
 - • Packaging or power distribution {(for electrical apparatus in general [H05K](#), [H02J](#))}
- U G06F 1/183
 - • • {Internal mounting support structures, e.g. for printed circuit boards (in general [H05K 7/1422](#)), internal connecting means (for buses [G06F 13/409](#))}
- G06F 1/188
 - • • • {Mounting of power supply units (power supply for computers, ~~per se~~ *per se* [G06F 1/26](#))}
- U **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](#) - [G06F 3/16](#), e.g. facsimile, microfilm (facsimile ~~per se~~ *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~~ *per se* [G11C 19/08](#), CCD memories ~~per se~~ *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 3/02
 - • Input arrangements using manually operated switches, e.g. using keyboards or dials (keyboard switches ~~per se~~ *per se* [H01H 13/70](#); electronic switches characterised by the way in which the control signals are generated [H03K 17/94](#))
- 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~~ *per se* [H03M 1/00](#); sampling ~~per se~~ *per se* [H03K 17/00](#); sample- and- hold arrangements ~~per se~~ *per se* [G11C 27/02](#))
- 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~~ *per se* [G11B](#); error detection, error correction, monitoring ~~per se~~ *per se* regarding storage systems [G06F 11/00](#); accessing or addressing within memory systems or architectures [G06F 12/00](#); information retrieval [G06F 17/30](#))}

Project: MP0195 (G06F)

- U G06F 3/0601
 - • {Dedicated interfaces to storage systems}
- U G06F 3/0602
 - • • {specifically adapted to achieve a particular effect}

- U G06F 3/0604 . . . {Improving or facilitating administration, e.g. storage management}
- M G06F 3/0607 {by facilitating the process of upgrading existing storage systems, *e.g. for improving compatibility between host and storage device*}

Project: N/A (G06F)

- G06F 3/16 . Sound input; Sound output (conversion of speech into digital information or *vice versa* *vice versa* [G10L](#))
- 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](#))**
- U G06F 5/06 . for changing the speed of data flow, i.e. speed regularising {or timing, e.g. delay lines, FIFO buffers; over- or underrun control therefor; ([G06F 7/78](#) takes precedence)}
- G06F 5/08 . . having a sequence of storage locations, the intermediate ones not being accessible for either enqueue or dequeue operations, e.g. using a shift register {([G06F 5/065](#) takes precedence; shift registers *per se* *per se* [G11C 19/00](#))}
- 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](#))**
- U G06F 7/22 . Arrangements for sorting or merging computer data on continuous record carriers, e.g. tape, drum, disc
- U G06F 7/24 . . Sorting, i.e. extracting data from one or more carriers, rearranging the data in numerical or other ordered sequence, and rerecording the sorted data on the original carrier or on a different carrier or set of carriers {sorting methods in general}([G06F 7/36](#) takes precedence)
- G06F 7/26 . . . the sorted data being recorded on the original record carrier within the same space in which the data had been recorded prior to their sorting, without using intermediate storage {(contains no documents, *see see* [G06F 7/24](#))}
- 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 7/499 . . . Denomination or exception handling, e.g. rounding, overflow
- NOTE**
{ documents published before 12-2005 are not systematically classified in the sugroups of [G06F 7/499](#) : *See See* the relevant subgroup of [G06F 7/48](#) and the ICOs [G06F 7/499](#) + }
- U G06F 7/52 . . . Multiplying; Dividing ([G06F 7/483](#) - [G06F 7/491](#), [G06F 7/544](#) take precedence)
- U G06F 7/535 Dividing only
- G06F 7/537 Reduction of the number of iteration steps or stages, e.g. using the Sweeny-Robertson-Tocher [SRT] algorithm {(not used, *see see* [G06F 7/535](#) or [G06F 7/5375](#))}
- 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 see* the relevant places, e.g. [G06F 17/10](#), [H03H 17/00](#))}

- U 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 7/607
- {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 see](#) the relevant places, e.g. [G06F 7/49](#), [G06F 7/5013](#), [G06F 7/509](#), [H03M 1/00](#), [H03M 7/20](#))}
- G06F 7/68
- • using pulse rate multipliers or dividers {pulse rate multipliers or dividers [per se 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 per se](#) [H03K 23/00](#) - [H03K 29/00](#))}
- G06F 7/70
- • using stochastic pulse trains, i.e. randomly occurring pulses the average pulse rates of which represent numbers {(conversion of analogue signals into stochastic pulse trains and [vice-versa vice versa](#) [H03M 1/04](#))}
- 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 vice versa](#) [H03M 9/00](#))
- U 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
- U G06F 9/22
- • Micro-control or micro-programme arrangements
- G06F 9/226
- • • {Micro instruction function, e.g. input/output micro-instruction; diagnostic micro-instruction; micro-instruction format}
- U 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 9/34
- • • Addressing or accessing the instruction operand or the result; {Formation of operand address; Addressing modes (address translation [G06F 12/00](#))}
- G06F 9/355
- • • • Indexed addressing {, i.e. using more than one address operand}
- U G06F 9/44
- • Arrangements for executing specific programmes
- U 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 9/44521
- • • • {Dynamic linking or loading; Link editing at or after load time, [e.g. Java class loading](#); [e.g. Java-class loading](#)}
- U G06F 9/46
- • Multiprogramming arrangements
- U G06F 9/50
- • • Allocation of resources, e.g. of the central processing unit [CPU]
- U G06F 9/5061
- • • • {Partitioning or combining of resources}
- G06F 9/5066
- • • • • {Algorithms for mapping a plurality of inter-dependent sub-tasks onto a plurality of physical CPUs (mapping at compile time, [see see](#) [G06F 8/451](#))}

- U 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](#) - [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 11/0715
 - • • {in a system implementing multitasking (multitasking ~~per se~~ [per se](#) [G06F 9/46](#))}
 - U G06F 11/0721
 - • • {within a central processing unit [CPU]}
 - G06F 11/0724
 - • • • {in a multiprocessor or a multi-core unit (multiprocessors ~~per se~~ [per se](#) [G06F 15/80](#))}
 - U G06F 11/08
 - • Error detection or correction by redundancy in data representation, e.g. by using checking codes
 - U G06F 11/10
 - • Adding special bits or symbols to the coded information, e.g. parity check, casting out 9's or 11's
 - U G06F 11/1008
 - • • {in individual solid state devices ([G06F 11/1004](#) takes precedence)}
 - U G06F 11/1012
 - • • • {using codes or arrangements adapted for a specific type of error ([G06F 11/1048](#) takes precedence)}
 - G06F 11/104
 - • • • • {using arithmetic codes, i.e. codes which are preserved during operation, e.g. modulo 9 or 11 check}

Project: RP0311 (G06F)

- M G06F 12/00** Accessing, addressing or allocating within memory systems or architectures (~~{digital input from, or digital output to record carriers, e.g. to disc storage units, [G06F 3/06](#); information storage in general G11}~~)
- U 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](#))
 - U G06F 12/08
 - • in hierarchically structured memory systems, e.g. virtual memory systems
 - M G06F 12/0802
 - • • {Addressing of a memory level in which the access to the desired data or data block requires associative addressing means, e.g. ~~cache~~ [caches](#)}
 - M G06F 12/0804
 - • • • {with main memory updating ([G06F 12/0806](#) takes precedence; ~~see provisionally also G06F 12/12~~)}
 - M G06F 12/0806
 - • • • {Multiuser, multiprocessor; ~~or~~ multiprocessing cache systems}
 - M G06F 12/0808
 - • • • • {with cache invalidating means ([G06F 12/0815](#) and subgroups ~~take~~ [takes](#) precedence)}
 - M G06F 12/0811
 - • • • • {with multilevel cache hierarchies}
 - M G06F 12/0813
 - • • • • {with a network or matrix configuration}
 - M G06F 12/0815
 - • • • • {Cache consistency protocols}
 - M G06F 12/0817
 - • • • • • {using directory methods}
 - M G06F 12/0831
 - • • • • • {using a bus scheme (~~,~~ e.g. with bus monitoring or watching means)}
 - M G06F 12/0837
 - • • • • • {with software control (~~,~~ e.g. non-cacheable data)}

- M G06F 12/084 {with a shared cache}
- M G06F 12/0842 {for multiprocessing or multitasking}
- M G06F 12/0844 {Multiple simultaneous or quasi-simultaneous cache accessing}
- M G06F 12/0846 {Cache with multiple tag or data arrays being simultaneously accessible}
- C G06F 12/0851 {Cache with interleaved addressing}

WARNING

Group G06F 12/0851 is impacted by reclassification into group G06F 12/0886.

Groups G06F 12/0851 and G06F 12/0886 should be considered in order to perform a complete search.

- M G06F 12/0853 {Cache with multiport tag or data arrays}
- M G06F 12/0855 {Overlapped cache accessing, e.g. pipeline (G06F 12/0846 takes precedence)}
- M G06F 12/0862 {with prefetch}
- M G06F 12/0864 {using pseudo-associative means, e.g. set-associative, or hashing}
- M G06F 12/0866 {for peripheral storage systems, e.g. disk cache}
- M G06F 12/0868 {Data transfer between cache memory and other subsystems, e.g. storage devices or host systems}
- M G06F 12/0871 {Allocation and/or management of cache space}
- M G06F 12/0873 {Mapping of cache memory to specific storage devices or parts of a storage device} thereof
- M G06F 12/0875 {with dedicated cache, e.g. instruction or stack}
- M G06F 12/0877 {Cache access modes}
- M G06F 12/0879 {Burst mode}
- M G06F 12/0882 {Page mode}
- M G06F 12/0884 {Parallel mode, e.g. in parallel with main memory or CPU}
- E G06F 12/0886 {Variable-length word access (G06F 12/0851 takes precedence)}

WARNING

Group G06F 12/0886 is incomplete pending reclassification of documents from group G06F 12/0851.

Groups G06F 12/0851 and G06F 12/0886 should be considered in order to perform a complete search.

- M G06F 12/0888 {using selective caching, e.g. bypass}
- M G06F 12/0891 {using clearing, invalidating or resetting means}
- M G06F 12/0893 {Organization and technology of caches} Caches characterised by their organisation or structure
- M G06F 12/0895 {of parts of caches, e.g. directory or tag array}
- M G06F 12/0897 {with a plurality of two or more cache hierarchy levels (G06F 12/0811 takes precedence with multilevel cache hierarchies G06F 12/0811)}
- U G06F 12/10 Address translation
- M G06F 12/1009 {using page tables, e.g. page table structures}
- M G06F 12/1018 {involving hashing techniques, e.g. inverted page tables}
- M G06F 12/1027 {using associative or pseudo-associative address translation means, e.g. translation look-aside buffer [TLB]}

- E G06F 12/1036 {for multiple virtual address spaces, e.g. segmentation ([G06F 12/1045](#) takes precedence)}
- WARNING**
Group G06F 12/1036 is incomplete pending reclassification of documents from group G06F 12/109. Groups G06F 12/109 and G06F 12/1036 should be considered in order to perform a complete search.
- M G06F 12/1045 {associated with a data cache}
- M G06F 12/1072 {Decentralised address translation, e.g. in distributed shared memory systems}
- M G06F 12/1081 {for peripheral access to main memory, e.g. *direct memory access [DMA]*}
- C G06F 12/109 {for multiple virtual address spaces, e.g. segmentation} ([G06F 12/1036](#) takes precedence)
- WARNING**
Group G06F 12/109 is impacted by reclassification into group G06F 12/1036. Groups G06F 12/109 and G06F 12/1036 should be considered in order to perform a complete search.
- U G06F 12/12 . . . Replacement control
- M G06F 12/121 {using a replacement *algorithm*} *algorithms*
- M G06F 12/122 {of the least frequently used *[LFU]* type, e.g. with individual count value}
- M G06F 12/123 {with an age *list* *lists*, e.g. queue, *most recently used [MRU-LRU] list* or *least recently used [LRU] list*}
- M G06F 12/126 {with special data handling, e.g. priority of data or instructions, *pinning, handling errors*} or *pinning*
- M G06F 12/127 {using an additional replacement *algorithm*} *algorithms*
- M G06F 12/128 {adapted to multidimensional cache systems, e.g. set-associative, multicache, multiset or multilevel}

Project: N/A (G06F)

- G06F 12/16 . Protection against loss of memory contents {(contains no material, *see see* [G06F 11/00](#))}
- U **G06F 15/00** **Digital computers in general (details [G06F 1/00](#) - [G06F 13/00](#)); Data processing equipment in general (neural networks for image data processing [G06T](#))**
- 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 see* [G06N 99/005](#)})
- U **G06F 17/00** **Digital computing or data processing equipment or methods, specially adapted for specific functions**
- U 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 17/15 . Correlation function computation {including computation of convolution operations (arithmetic circuits for sum of products *per se per se*, e.g. multiply-accumulators [G06F 7/5443](#); digital filters, e.g. FIR, IIR, adaptive filters [H03H 17/00](#))}

- 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 17/30067
- {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](#) - [G06F 17/30238](#) are not complete pending reclassification. See also this group
- U G06F 17/30182
- {File system types}
- G06F 17/3023
- {Versioning file systems, temporal file systems, e.g. file system supporting different historic versions of, e.g. files}
- 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](#)).
- G06F 19/10
- Bioinformatics, i.e. methods or systems for genetic or protein-related data processing in computational molecular biology (~~in-silico~~ *in silico* methods of screening virtual chemical libraries [C40B 30/02](#); ~~in-silico~~ *in silico* or mathematical methods of creating virtual chemical libraries [C40B 50/02](#))
- U 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~~ *per se* [G06F 17/30](#); data security aspects [G06F 21/00](#))}
- 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 19/345
- {Medical expert systems, neural networks or other automated diagnosis (computer systems utilising knowledge based models [G06N 5/00](#); neural networks ~~per se~~ *per se* [G06N 3/02](#))}
- U G06F 19/3456
- {Computer-assisted prescription or delivery of medication, e.g. prescription filling or compliance checking}
- G06F 19/3468
- {Computer-assisted delivery of medication via infusion or injection (infusion devices ~~per se~~ *per se* [A61M 5/14](#))}

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~~-*in silico* methods of screening virtual chemical libraries [C40B 30/02](#); ~~in-silico~~-*in silico* or mathematical methods of creating virtual chemical libraries [C40B 50/02](#); computer-aided design ~~per-se~~-*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](#).

U G06F 2200/00

Indexing scheme relating to [G06F 1/04](#) - [G06F 1/32](#)

U G06F 2200/16

- Indexing scheme relating to [G06F 1/16](#) - [G06F 1/18](#)

U G06F 2200/161

- • Indexing scheme relating to constructional details of the monitor

G06F 2200/1613

- • • Supporting arrangements, e.g. for filters or documents associated to a laptop display

U G06F 2207/00

Indexing scheme relating to methods or arrangements for processing data by operating upon the order or content of the data handled

U G06F 2207/58

- Indexing scheme relating to groups [G06F 7/58](#) - [G06F 7/588](#)

G06F 2207/582

- • Parallel finite field implementation, i.e. at least partially parallel implementation of finite field arithmetic, generating several new bits or trits per step, e.g. using a GF multiplier

U G06F 2211/00

Indexing scheme relating to details of data-processing equipment not covered by groups [G06F 3/00](#) - [G06F 13/00](#)

U G06F 2211/10

- Indexing scheme relating to [G06F 11/10](#)

U G06F 2211/1002

- • Indexing scheme relating to [G06F 11/1076](#)

G06F 2211/1064

- • • Parity-single bit-RAID3, i.e. RAID 3 implementations

G06F 2211/902

- Spectral purity improvement for digital function generators by adding a dither signal, e.g. noise

Project: N/A (G06G)

U G06G 1/00

Hand manipulated computing devices (planimeters [G01B 5/26](#))

U G06G 1/0005

- {characterised by a specific application}

G06G 1/0015

- • {for computing periodic phenomena, e.g. fertility periods}

U G06G 7/00

Devices in which the computing operation is performed by varying electric or magnetic quantities

U G06G 7/48

- Analogue computers for specific processes, systems or devices, e.g. simulators

G06G 7/62

- • for electric systems or apparatus {([G06G 7/78](#) takes precedence)}

NOTE

This group ~~covers~~*covers* only computers specially adapted for electronic systems or devices

Project: N/A (G06K)

G06K

RECOGNITION OF DATA; PRESENTATION OF DATA; RECORD CARRIERS; HANDLING RECORD CARRIERSNOTES

1. This subclass ~~covers~~*covers*:-

- marking, sensing, and conveying of record carriers;

- recognising characters or other data;
- presenting visually or otherwise the data recognised or the result of a computation.

2. This subclass ~~does not cover~~ does not cover printing ~~per se~~ per se.

U	G06K 1/00	Methods or arrangements for marking the record carrier in digital fashion (interpreting G06K 3/02)
U	G06K 1/02	• by punching (punching in general B26F)
U	G06K 1/06	• • Manually-controlled device
	G06K 1/10	• • • Tape punches (specially adapted for a particular purpose, see <u>see</u> the relevant subclass, e.g. for telegraphy H04L)
U	G06K 7/00	Methods or arrangements for sensing record carriers, {e.g. for reading patterns}(G06K 9/00 takes precedence)
U	G06K 7/10	• by electromagnetic radiation, e.g. optical sensing; by corpuscular radiation
	G06K 7/10009	• • {sensing by radiation using wavelengths larger than 0.1 mm, e.g. radio-waves or microwaves}
		<u>NOTE</u> This group covers <u>covers</u> 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
U	G06K 7/10019	• • • {resolving collision on the communication channels between simultaneously or concurrently interrogated record carriers. (collision between the communication channels used by wireless communication devices, where the solution is not particularly adapted for RFIDs or the like, H04W 74/08)}
U	G06K 7/10079	• • • • {the collision being resolved in the spatial domain, e.g. temporary shields for blindfolding the interrogator in specific directions}
U	G06K 7/10089	• • • • • {the interrogation device using at least one directional antenna or directional interrogation field to resolve the collision (direction or location finding, such as triangulation techniques, G01S 13/00)}
	G06K 7/10099	• • • • • • {the directional field being used for pinpointing the location of the record carrier, e.g. for finding or locating an RFID tag amongst a plurality of RFID tags, each RFID tag being associated with an object, e.g. for physically locating the RFID tagged object in a warehouse}
	G06K 7/10108	• • • • {interrogating only those RFIDs that fulfill a predetermined requirement, e.g. selecting all RFIDs having the same speed and moving in a cloud like fashion, e.g. on the same train; interrogating only RFIDs having a certain predetermined temperature, e.g. in the same fridge, another possibility being the active ignoring of a group of tags that fulfill a predetermined requirement, equivalent to the Boolean NOT operation}
	G06K 7/10297	• • • {arrangements for handling protocols designed for non-contact record carriers such as RFIDs NFCs, e.g. ISO/IEC 14443 and 18092 (Protocols for data communication in general, see <u>see</u> H04L 29/06)}
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 see B65G 47/46](#), sorting of objects carrying identity markings, [see 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 7/10831
 - • • {Arrangement of optical elements, e.g. lenses, mirrors, prisms (optical elements [per se](#) [per se](#) [G02B](#))}

- U **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

1. In this group, the following term is used with the meaning indicated:
 - "recognising" includes several functions such as extracting features, clustering, classifying or matching.
2. 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](#) - [G06K 9/00852](#). The CPC subgroups in the range [G06K 9/00006](#) - [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](#)

- U G06K 9/00221
 - {Acquiring or recognising human faces, facial parts, facial sketches, facial expressions}
- U G06K 9/00228
 - • {Detection; Localisation; Normalisation}
- G06K 9/00241
 - • • {using holistic features (extraction or representation of holistic features [per se](#) [per se](#) [G06K 9/00275](#))}
- G06K 9/00248
 - • • {using facial parts and geometric relationships (extraction or representation of facial parts [per se](#) [per se](#) [G06K 9/00281](#))}
- U 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 9/00523
 - • {Feature extraction (arrangements for measuring frequencies and for spectral analysis [G01R 23/16](#); algorithms for spectral analysis, digital electric mathematical transforms [per se](#) [per se](#) [G06F 17/14](#))}
- G06K 9/00536
 - • {Classification; Matching (digital electric correlation [G06F 17/15](#); electronic classification and matching [per se](#) [per se](#) [G06K 9/62](#))}

- U 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](#))}
- U 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~~ [per se](#) [G06K 9/6218](#); classification techniques ~~per se~~ [per se](#) [G06K 9/6267](#))}
- 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](#) - [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](#))}
- U 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 9/6217
 - {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 9/6228
 - • • {Selecting the most significant subset of features ([G06K 9/6232](#) takes precedence)}
- G06K 9/6229
 - • • {by using evolutionary computational techniques, e.g. genetic algorithms (genetic algorithms ~~per se~~ [per se](#) [G06N 3/126](#))}
- G06K 9/6296
 - {Graphical models, e.g. Bayesian networks (probabilistic networks ~~per se~~ [per se](#) [G06N 7/005](#))}
- U 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~~ [per se](#) [G02B 26/00](#), [G02F](#))}

- U 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 11/06
- Devices for converting the position of a manually operated writing or tracing member into an electrical signal {(not used, [see see G06F 3/03](#))}
- U 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](#))**
- U G06K 13/02
- the record carrier having longitudinal dimension comparable with transverse dimension, e.g. punched card
- U G06K 13/08
- • Feeding or discharging cards
- U G06K 13/085
- • • {using an arrangement for locking the inserted card}
- G06K 13/0862
- • • • {the locking arrangement being of the rotate-slide and lock type, such as, e.g. common in mobile phones}
- U 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 15/12
- • by photographic printing {, e.g. by laser printers}
- G06K 15/18
- • {Conditioning data for presenting it to the physical printing elements (for data conditioning specific to a type of printer [see see](#) subgroups [G06K 15/028](#) - [G06K 15/14](#); print job translation or parsing [G06F 3/1244](#))}
- 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 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 19/04
- characterised by the shape
- U G06K 19/041
- • {Constructional details ([G06K 19/06](#) takes precedence)}
- G06K 19/042
- • • {the record carrier having a form factor of a credit card and including a small sized disc, e.g. a CD or DVD (disc shaped data carriers in general, [see see G11B 20/00](#) and [G11B 23/00](#))}
- G06K 19/045
- • • • {the record carrier being of the non-contact type, e.g. RFID, and being specially adapted for attachment to a disc, e.g. a CD or DVD}
- U G06K 19/06
- characterised by the kind of the digital marking, e.g. shape, nature, code
- U G06K 19/06009
- • {with optically detectable marking ([G06K 19/063](#), [G06K 19/08](#) take precedence)}

- U G06K 19/06046 . . . {Constructional details}
- G06K 19/06065 {the marking being at least partially represented by holographic means (holographic marking in general, [see see G06K 19/16](#))}
- G06K 19/0614 {the marking being selective to wavelength, e.g. color barcode or barcodes only visible under UV or IR (methods or arrangements for sensing record carriers using a selected wavelength, [see see G06K 7/12](#))}
- 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 19/0672 . . . {with resonating marks}
- G06K 19/0675 {the resonating marks being of the surface acoustic wave [SAW] kind (SAW devices [per se](#) [per se](#) [H03H 9/64](#))}
- U G06K 19/07 . . . with integrated circuit chips
- U G06K 19/0701 {at least one of the integrated circuit chips comprising an arrangement for power management}
- G06K 19/0707 {the arrangement being capable of collecting energy from external energy sources, e.g. thermocouples, vibration, electromagnetic radiation ([G06K 19/0702](#) takes precedence)}
- 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 see G06K 9/00](#); biometric access-control systems in general, [see 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 see G07F 7/10](#))}
- U G06K 19/077 Constructional details, e.g. mounting of circuits in the carrier
- U G06K 19/0772 {Physical layout of the record carrier}
- G06K 19/07722 {the record carrier being multilayered, e.g. laminated sheets (flat articles in general, [see see B32B 37/00](#))}
- G06K 19/07732 {the record carrier having a housing or construction similar to well-known portable memory devices, such as SD cards, USB or memory sticks (housings for electrical equipment in general, [see see H05K 5/02](#))}
- 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 19/07764 {the adhering arrangement making the record carrier attachable to a tire (tire temperature or pressure control arrangements, [see see B60C 23/00](#))}

Project: N/A (G06M)**G06M**

COUNTING MECHANISMS; COUNTING OF OBJECTS NOT OTHERWISE PROVIDED FOR (counting by measuring volume or weight of articles to be counted [G01F](#), [G01G](#); computers [G06C](#) - [G06J](#); counting electric pulses [H03K](#); counting characters, words or messages in switching networks for transmission of digital information [H04L 12/08](#))

NOTE

This subclass [covers covers](#):

- stepping or continuously-moving mechanical counters operated through one or more inputs applied to the lowest order mechanically or electrically;
- counting systems involving applications of either mechanical, electrical, or electronic counters.

Project: N/A (G06Q)

- U 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 20/08
- G06Q 20/20
- G06Q 20/202
- Payment architectures
 - • Point-of-sale [POS] network systems {(POS ~~per se~~ [per se](#) [G07F](#) or [G07G](#))}
 - • • {Interconnection or interaction of plural electronic cash registers [ECR] or to host computer, e.g. network details, transfer of information from host to ECR or from ECR to ECR}
- NOTE
- Features of the apparatus ~~per se~~ [per se](#) should be classified in [G07G 1/14](#)
- U G06Q 20/38
- G06Q 20/387
- Payment protocols; Details thereof
 - • {Payment using discounts or coupons (relating to marketing [G06Q 30/02](#))}
- NOTE
- This group ~~covers~~ [covers](#) only the usage of discounts or coupons interacting with the payment of the protocol

Project: N/A (G06T)

G06T

IMAGE DATA PROCESSING OR GENERATION, IN GENERAL (specially adapted for particular applications, ~~see~~ [see](#) the relevant subclasses, e.g. [G06K](#), [G09G](#), [H04N](#))

NOTES

1. This subclass ~~covers~~ [covers](#):
 - arrangements for geometrically modelling objects, whether the final model is used for display of an image of the object or for some other purpose, such as manufacture of a corresponding object;
 - arrangements for analysing the geometric attributes of an image of an object.
2. This subclass ~~does not cover~~ [does not cover](#):
 - reading or recognising printed or written characters or recognising patterns, e.g. fingerprints, which is covered by subclass [G06K](#);
 - modification of image data to allow display using multiple viewpoints, which is covered by subclass [G09G](#);
 - circuits for generating functions for visual indicators, which are covered by subclass [G09G](#);
 - scanning of documents or the like in pictorial communication, which is covered by subclass [H04N](#).

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:
[G06T 1/40](#) covered by [G06T 1/20](#)

- U 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](#))**
- G06T 9/001
- {Model-based coding, e.g. wire frame (~~see~~ [see](#) provisionally also [G06T 9/00](#))}

- G06T 9/004 • {Predictors, e.g. intraframe, interframe coding ([see see](#) provisionally also [G06T 9/00](#))}
- G06T 9/005 • {Statistical coding, e.g. Huffman, run length coding ([see see](#) provisionally also [G06T 9/00](#))}
- G06T 9/007 • {Transform coding, e.g. discrete cosine transform ([see see](#) provisionally also [G06T 9/00](#))}
- G06T 9/008 • {Vector quantisation ([see see](#) provisionally also [G06T 9/00](#))}
- G06T 9/40 • Tree coding, e.g. quadtree, octree ([see see](#) provisionally also [G06T 9/00](#))

U G06T 2207/00**Indexing scheme for image analysis or image enhancement**

- U G06T 2207/30 • Subject of image; Context of image processing
- U G06T 2207/30004 • • Biomedical image processing
- G06T 2207/30024 • • • Cell structures [in-vitro](#)[in vitro](#); Tissue sections [in-vitro](#)[in vitro](#)

Project: N/A (G07B)**G07B 1/00**

Machines for printing and issuing tickets (printing mechanisms [per se](#) [per se](#) [B41](#); output mechanisms of digital computers [G06C 11/00](#))

U 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](#) [per se](#) [G07F 17/24](#); {car rental systems [per se](#) [per se](#) [G07B 15/00](#)})

- G07B 15/06 • Arrangements for road pricing or congestion charging of vehicles or vehicle users, e.g. automatic toll systems

NOTE

This group [covers](#)[covers](#) the identification or tracking of vehicles or vehicle users for the purpose of road pricing or congestion charging, which means that vehicles or vehicle users are not necessarily channelled through fixed control points, e.g. toll booths or overhead gantries, but may be detected at a number of places when they travel in normal fashion in a pre-defined locality, e.g. a defined area in a city centre or an expressway, and where the information so generated is then used to determine a charge to be paid

U G07B 17/00**Franking apparatus (printing aspects [B41](#))**

- U G07B 17/00016 • {Relations between apparatus, e.g. franking machine at customer or apparatus at post office, in a franking system}
- G07B 17/0008 • • {Communication details outside or between apparatus (coin-freed apparatus for franking [per se](#) [per se](#) [G07F 17/26](#))}

- 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~~ [per se](#) [G07F 17/26](#))}
- U G07B 17/00193
- • {Constructional details of apparatus in a franking system}
- G07B 2017/0025
- • • {Storage of, e.g. ribbon}
- G07B 17/00733
- {Cryptography or similar special procedures in a franking system}

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:

- secret or secure communication [H04L 9/00](#)
- mechanisms actuated by objects other than coins to free or to actuate vending, hiring, coin or paper currency dispensing or refunding apparatus for cashless transactions only [G07F 7/10](#)
- access-control involving the use of a pass in combination with an identity-check of the pass-holder by means of personal physical data, e.g. characteristic facial curves, hand geometry, voice spectrum, fingerprints [G07C 9/00](#)
- methods or arrangements for reading or recognising printed or written characters or for recognising patterns [G06K 9/00](#)
- random or pseudo-random generators [G06F 7/58](#)
- circuits generating pulses having a predetermined statistical distribution [H03K 3/84](#)
- multiple service credit cards with protecting memory zones [G07F 7/10](#)
- security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#)
- record carriers with conductive marks and special arrangements for circuits, e.g. for protecting identification code in memory [G06K 19/073](#)
- error detection and error correction [G06F 11/00](#)
- coding, decoding or code conversion, for error detection or error correction [H03M 13/00](#) }

Project: N/A (G07C)

- G07C**
- TIME OR ATTENDANCE REGISTERS; REGISTERING OR INDICATING THE WORKING OF MACHINES; GENERATING RANDOM NUMBERS; VOTING OR LOTTERY APPARATUS; ARRANGEMENTS, SYSTEMS OR APPARATUS FOR CHECKING NOT PROVIDED FOR ELSEWHERE (identification of persons [A61B 5/117](#); indicating or recording apparatus for measuring in general, analogous apparatus but in which the input is not a variable to be measured, e.g. a hand operation, [G01D](#); clocks, clock mechanisms [G04B](#), [G04C](#); time-interval measuring [G04F](#); counting mechanisms ~~per se~~ [per se](#) [G06M](#))**
- G07C 3/00**
- Registering or indicating the condition or the working of machines or other apparatus, other than vehicles (engine indicators [G01L](#); testing apparatus incident to its manufacture [G01M](#); signalling arrangements ~~per se~~ [per se](#), indicating undesired or abnormal working conditions [G08B](#))**
- U G07C 3/08
- Registering or indicating the production of the machine either with or without registering working or idle time
- G07C 3/10
- • using counting means (counting mechanisms ~~per se~~ [per se](#) [G06M](#))
- U **G07C 5/00**
- Registering or indicating the working of vehicles (for measuring distance travelled or combinations of speed and distance [G01C](#); engine indicators [G01L](#); devices for measuring speed or acceleration [G01P](#))**

- G07C 5/004 • {Indicating the operating range of the engine (economical driving [B60R 16/0236](#), [F02B 77/084](#); measuring liquid fuel of an engine [G01F 9/00](#))}

G07C 9/00**Individual entry or exit registers**NOTES

1. This group ~~covers~~[covers](#):
 - controlling and registering access of persons to restricted areas or devices
2. This group ~~does not cover~~[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

- G07C 9/00007 • {Access-control involving the use of a pass (for electromagnetical or electronical keys and locks, ~~see~~[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 9/00071 • • • {by means of personal physical data, e.g. characteristic facial curves, hand geometry, voice spectrum, fingerprints (measuring or recording devices for testing the shape, pattern, size or movement of the body or parts thereof ~~per se~~[per se](#) [A61B 5/103](#))}

- U G07C 9/00174 • {Electronically operated locks; Circuits therefor; Nonmechanical keys therefor, e.g. passive or active electrical keys or other data carriers without mechanical keys (mechanical locks with electric permutation [E05B 49/00](#); arrangements for sensing or reading record carriers [G06K 7/00](#), [G06K 9/00](#); electronic switching [H03K 17/00](#))}

- U G07C 9/00658 • • {operated by passive electrical keys}

- G07C 2009/00746 • • • {by knocking on a surface for inputting the code, e.g. detecting a series of taps on a surface}

- G07C 9/02 • Turnstiles with registering means (turnstiles ~~per se~~[per se](#) [E04H](#); coin-freed aspects [G07F](#))

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](#) - [G07D 7/20](#) take precedence over groups [G07D 7/02](#) - [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 7/20 · 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~~[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~~[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 5/00 Coin-actuated mechanisms; Interlocks

G07F 5/18 · specially adapted for controlling several coin-freed apparatus from one place (interlocks ~~per se~~[per se](#) [G07F 5/26](#))

G07F 5/24 · with change-giving (coin-changing mechanisms ~~per se~~[per se](#) [G07D](#))

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 7/0806
- • {Details of the card (record carriers ~~per se~~ [per se](#) [G06K](#))}
- G07F 7/10
- • together with a coded signal {, e.g. in the form of personal identification information, like personal identification number [PIN] or biometric data}
- G07F 7/1016
- • • {Devices or methods for securing the PIN and other transaction-data, e.g. by encryption (arrangements for secret communication, ~~see~~ [see](#) [H04L 9/00](#))}
- U **G07F 13/00** **Coin-freeed apparatus for controlling dispensing or fluids, semiliquids or granular material from reservoirs**
- G07F 13/10
- with associated dispensing of containers, e.g. cups or other articles (dispensing discrete articles ~~per se~~ [per se](#) [G07F 11/00](#))
- U **G07F 17/00** **Coin-freeed apparatus for hiring articles; Coin-freeed facilities or services**
- U G07F 17/0042
- {for hiring of objects}
- G07F 17/0057
- • {for the hiring or rent of vehicles, e.g. cars, bicycles or wheelchairs (car rental [G07B 15/00](#))}
- 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~~ [per se](#) [H03K 17/00](#); traffic control systems [G08G 1/00](#))}
- G07F 17/42
- for ticket printing or like apparatus {, e.g. apparatus for dispensing of printed paper tickets or payment cards}

Project: N/A (G07G)

- U **G07G 1/00** **Cash registers (alarm indicators [G07G 3/00](#))**
- U G07G 1/0036
- {Checkout procedures}
- U G07G 1/0045
- • {with a code reader for reading of an identifying code of the article to be registered, e.g. barcode reader or radio-frequency identity [RFID] reader}
- G07G 1/0081
- • • {the reader being a portable scanner or data reader (~~G07G 1/009 taking precedence~~ [G07G 1/009 takes precedence](#))}

Project: N/A (G08)

G08 **SIGNALLING (indicating or display devices ~~per se~~ [per se](#) [G09F](#); transmission of pictures [H04N](#))**

Project: N/A (G08B)

G08B **SIGNALLING OR CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS (signalling arrangements on vehicles [B60Q](#), [B62D 41/00](#); railway signalling systems or devices [B61L](#); on cycles [B62J 3/00](#), [B62J 6/00](#); safes or strong-rooms with alarm devices [E05G](#); signalling or alarm devices in mines [E21F 17/18](#); lamps or shutters therefor [F21](#); sensitive measuring elements, see the appropriate subclasses of [G01](#); traffic control systems [G08G](#); visual indicating means [G09](#); sound-producing devices [G10](#); radio or near-field calling systems [H04B 5/00](#), [H04B 7/00](#); selecting arrangements [H04Q 7/00](#), [H04Q 9/00](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#))**

NOTES

1. This subclass ~~covers~~ [covers](#) also means for identifying or incapacitating burglars or the like.
2. This subclass ~~does not cover~~ [does not cover](#).

- the mere provision of an audible or visible signalling device on measuring or switching apparatus;
 - alarm systems for indicating that a specific variable has exceeded, or fallen below, a predetermined value, which are covered by the relevant subclasses of class [G01](#) for the measurement of that variable.
 - alarms for specific processes or types of machines or apparatus, which are covered by the relevant subclasses for the processes, machines, or apparatus.
3. In this subclass, the following term is used with the meaning indicated:
- "systems" may cover also devices peculiar thereto.
- U G08B 5/00** **Visible signalling systems, e.g. personal calling systems, remote indication of seats occupied** ({locks with visible signalling devices [E05B 39/00](#); electro-, magneto- or acousto-optic display devices [G02F](#)}; display of time signals [G04B 19/00](#), [G04C 17/00](#), [G04C 19/00](#), [G04G 9/00](#); for display of alphanumeric information [G09F](#); flags, banners [G09F](#); {display tubes [H01J 17/49](#), [H01K 7/04](#); electro-luminescent devices [H05B 33/00](#)})
- G08B 5/40 • using smoke, fire or coloured gases (sky-writing [G09F 21/16](#) {missiles, e.g. of tracer, illuminating, signal or smoke producing type [F42B](#); chemical compositions therefor [C06B](#); smoke producers for aircraft [B64D 1/16](#) - [B64D 1/20](#); for personal calling arrangements [see see](#) provisionally [G08B 3/1008](#), [G08B 3/1016](#)})
- 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](#)[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](#))}
- U G08B 7/00** **Signalling systems according to more than one of groups** [G08B 3/00](#) - [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](#) - [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](#))}
- U G08B 9/00** **Order telegraph apparatus, i.e. means for transmitting one of a finite number of different orders at the discretion of the user, e.g. bridge to engine room orders in ships (signalling devices in mines** [E21F 17/18](#))
- U G08B 9/08 • mechanical
- G08B 9/10 • • using ratchet {(see see provisionally [G08B 9/08](#))}
- G08B 9/12 • • using rotary shaft {(see see provisionally [G08B 9/08](#))}
- U G08B 9/14 • hydraulic; pneumatic
- G08B 9/16 • • using ratchet {(see see provisionally [G08B 9/14](#))}
- G08B 9/18 • • by varying displacement of the fluid {(see see provisionally [G08B 9/14](#))}
- G08B 9/20 • • by varying pressure of the fluid {(see see provisionally [G08B 9/14](#))}
- U 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
- U G08B 13/12 • • by the breaking or disturbance of stretched cords or wires

- G08B 13/122
 - • • {for a perimeter fence (features peculiar to electrified fences [A01K 3/00](#); fences [per-se-per se E04H 17/00](#))}
- U G08B 13/16
 - Actuation by interference with mechanical vibrations in air or other fluid
- G08B 13/1609
 - • {using active vibration detection systems (active detection systems [per-se-per se G01S](#))}
- 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 13/189
 - • using passive radiation detection systems
- G08B 13/19
 - • • using infra-red radiation detection systems {(G08B 13/194 takes precedence; lighting devices activated by motion detection [F21V 23/0442](#); radiation pyrometry [per-se-per se G01J 5/00](#); controlling circuits for electric light sources activated by motion detection [H05B 37/0227](#))}
- U G08B 13/194
 - • • using image scanning and comparing systems
- G08B 13/196
 - • • • using television cameras {(recognition of scenes under surveillance [G06K 9/00771](#); image analysis [per-se-per se G06T 7/00](#); television cameras [H04N 5/225](#); CCTV systems [H04N 7/18](#))}
- U G08B 13/19602
 - • • • {Image analysis to detect motion of the intruder, e.g. by frame subtraction}
- G08B 13/19608
 - • • • • {Tracking movement of a target, e.g. by detecting an object predefined as a target, using target direction and or velocity to predict its new position (analysis of motion by image processing [per-se-per se G06T 7/20](#))}
- U G08B 13/22
 - Electrical actuation {(G08B 13/2494 takes precedence)}
- U G08B 13/24
 - • by interference with electromagnetic field distribution {(signals actuated by trains [B61L](#); metal detectors using induction coils [G01V 3/10](#); metal detectors combined with record carrier readers [G06K 7/085](#))}
- U G08B 13/2402
 - • • {Electronic Article Surveillance [EAS], i.e. systems using tags for detecting removal of a tagged item from a secure area, e.g. tags for detecting shoplifting (mechanical aspects of the tags, e.g. related to locking [E05B 73/0017](#); RFID readers [G06K 7/00](#); RFID tags [G06K 19/00](#); access control systems [G07C 9/00](#); anti-theft control in point of sale systems [G07G 3/003](#); security seals [G09F 3/03](#))}
- U G08B 13/2405
 - • • • {characterised by the tag technology used}
- U G08B 13/2414
 - • • • • {using inductive tags}
- G08B 13/2417
 - • • • • • {having a radio frequency identification chip (radio frequency identification tags [per-se-per se G06K 19/00](#); inventory or logistics in general [G06Q 10/00](#))}
- U **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](#))}
- G08B 17/06
 - Electric actuation of the alarm, e.g. using a thermally-operated switch (thermally-operated electric switches [per-se-per se H01H 37/00](#))
- U G08B 17/10
 - Actuation by presence of smoke or gases {automatic alarm devices for analysing flowing fluid materials by the use of optical means (turbidimetric analysis of gases, e.g. of smoke [G01N 21/534](#))}
- G08B 17/117
 - • by using a detection device for specific gases, e.g. combustion products, produced by the fire (G08B 17/103, G08B 17/11 take precedence; investigating or analysing gases in general [G01N](#), e.g. by using electric means [G01N 27/00](#); {particle spectrometers [per-se-per se H01J 49/00](#))}

- 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
- U G08B 21/04 • • responsive to non-activity, e.g. of elderly persons ([G08B 21/06](#) takes precedence)
- U G08B 21/0407 • • • {based on behaviour analysis}
- G08B 21/0415 • • • • {detecting absence of activity ~~per se~~ [per se](#)}

Project: N/A (G08C)**G08C**

TRANSMISSION SYSTEMS FOR MEASURED VALUES, CONTROL OR SIMILAR SIGNALS (fluid pressure transmission systems [F15B](#); sensing members for specific physical variables, ~~see~~ [see](#) the relevant subclasses, e.g. of [G01](#) or [H01](#); indicators or recorders, ~~see~~ [see](#) the relevant subclasses, e.g. [G01D](#), [G09F](#); mechanical means for transferring the output of a sensing member [G01D 5/00](#); means for converting the output of the sensing member into a different variable [G01D 5/00](#); self-balancing bridges [G01R](#); position control in general [G05D 3/00](#); mechanical control systems [G05G](#); systems for transmitting "on/off" signals only, systems for transmitting alarm conditions [G08B](#); order telegraph systems [G08B 9/00](#); generating electric pulses [H03K](#); coding, decoding or code conversion [H03M](#); transmission of digital information [H04L](#); selective calling from one station to another [H04Q 9/00](#))

- U G08C 19/00** Electric signal transmission systems ([G08C 17/00](#) takes precedence)
- G08C 19/36 • using optical means to convert the input signal (analogue/digital converters ~~per se~~ [per se](#) [H03M 1/00](#); {optical analogue digital converters [G02F 7/00](#); contains no documents, ~~see~~ [see](#) [G01D 5/26](#)})
- G08C 19/38 • using dynamo-electric devices (operated by pulses [G08C 19/20](#); dynamo-electric machines ~~per se~~ [per se](#) [H02K](#))

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

- This subclass ~~covers~~ [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.
- This subclass ~~does not cover~~ [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](#)

G08G 5/00**Traffic control systems for aircraft {, e.g. air-traffic control [ATC]}**NOTES

1. This group covers arrangements, located in the aircraft or on the ground, for controlling aircraft within a traffic environment.
2. This group ~~does not cover~~ *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](#)

Project: N/A (G09B)**G09B**
EDUCATIONAL OR DEMONSTRATION APPLIANCES; APPLIANCES FOR TEACHING, OR COMMUNICATING WITH, THE BLIND, DEAF OR MUTE; MODELS; PLANETARIA; GLOBES; MAPS; DIAGRAMS (devices for psychotechnics or for testing reaction times [A61B 5/16](#); games, sports, amusements [A63](#); projectors, projector screens [G03B](#))
NOTES

1. This subclass ~~covers~~ *covers*:
 - simulators regarded as teaching or training devices, which is the case if they give perceptible sensations having a likeness to the sensations a student would experience in reality in response to actions taken by him;
 - models of buildings, installations, or the like.
2. This subclass ~~does not cover~~ *does not cover*:
 - simulators which demonstrate, by means involving computing, the function of apparatus or of a system, which are covered by class [G06](#), if no provision exists elsewhere
 - components of simulators, if identical with real devices or machines, which are covered by the relevant subclasses for these devices or machines (and not by class [G09](#)).

G09B 21/00

Teaching, or communicating with, the blind, deaf or mute (audible presentation of material to be studied [G09B 5/04](#); devices or methods for replacing direct visual or auditory perception by another kind of perception [A61F 9/08](#), [A61F 11/04](#); audible indication of meter readings or of colour [G01D 7/12](#); watches for blind persons [G04B 25/02](#); methods or arrangements for reading or recognising printed or written characters [G06K 9/00](#); speech analysis, speech recognition [G10L](#); sound-recording or reproducing, ~~per se~~ *per se* [G11B](#))

U G09B 29/00

Maps; Plans; Charts; Diagrams, e.g. route diagram (star maps [G09B 27/04](#); devices for holding or supporting maps [A47B 97/02](#); for computing purposes [G06G 1/14](#), [G09B 1/16](#); display boards [G09F](#))

G09B 29/10

• Map spot or coordinate position indicators; Map reading aids (optical projection apparatus ~~per se~~ *per se* [G03B](#))

Project: N/A (G09F)**G09F 5/00**

Means for displaying samples (packaging ~~per se~~ *per se* [B65](#))

- U G09F 9/00** **Indicating arrangements for variable information in which the information is built-up on a support by selection or combination of individual elements (in which the variable information is permanently attached to a movable support [G09F 11/00](#); abacus [G06C 1/00](#); slide-rules [G06G 1/00](#))**
- U G09F 9/30**
 - in which the desired character or characters are formed by combining individual elements (panels comprising a number of electrodes in a single cell controlling light arriving from an independent light source, e.g. electro-optical or magneto-optical cell, [G02F 1/00](#))
- G09F 9/301**
 - {flexible foldable or roll-able electronic displays, e.g. thin LCD, OLED}
- G09F 9/307**
 - • being incandescent filaments ([G09F 9/302](#) takes precedence; incandescent panels comprising a number of separate incandescent bodies, ~~per se~~ [per se](#) [H01K 9/00](#))
- G09F 9/313**
 - • being gas discharge devices ([G09F 9/302](#) takes precedence; gas discharge panels comprising a number of discharge gaps ~~per se~~ [per se](#) [H01J 17/49](#))
- G09F 9/33**
 - • being semiconductor devices, e.g. diodes ([G09F 9/302](#) takes precedence; semiconductor integrated circuits comprising components adapted for emission of light ~~per se~~ [per se](#) [H01L 27/15](#))
- G09F 9/35**
 - • being liquid crystals ([G09F 9/302](#) takes precedence; liquid crystal materials [C09K 19/00](#); {liquid crystal panels comprising a number of electrodes in a single cell ~~per se~~ [per se](#) [G02F 1/13](#)})
- U G09F 13/00** **Illuminated signs; Luminous advertising ([G09F 9/00](#), [G09F 11/00](#) take precedence; control of displays in general using static means to present variable information [G09G](#))**
- U G09F 13/20**
 - with luminescent surfaces or parts (luminescent compositions [C09K 11/00](#); light sources using luminescence [F21K 2/00](#))
- G09F 13/22**
 - • electroluminescent (electroluminescent light sources ~~per se~~ [per se](#) [H05B 33/00](#))
- G09F 13/34**
 - with light sources co-operating with movable members, e.g. with shutters to cover or uncover the light source (apparatus wherein advertising or display material is moved in a continuous or intermittent succession [G09F 11/00](#); construction or details of lighting devices [F21V 11/00](#))
- U G09F 19/00** **Miscellaneous advertising or display means not provided for elsewhere**
- U G09F 19/12**
 - using special optical effects (designs or pictures characterised by special light effects [B44F 1/00](#), e.g. changing pictures [B44F 1/10](#); projecting decorations in stage lighting [F21W 2111/06](#))
- G09F 19/18**
 - • involving the use of optical projection means, e.g. projection of images on clouds (projection apparatus ~~per se~~ [per se](#) [G03B](#))
- U G09F 21/00** **Mobile visual advertising**
- U G09F 21/06**
 - by aeroplanes, airships, balloons, or kites
- G09F 21/12**
 - • the advertising matter being towed by the aircraft (kites ~~per se~~ [per se](#) [B64C 21/06](#))
- G09F 25/00** **Audible advertising (sound recording or reproducing ~~per se~~ [per se](#) [G11B](#); public address systems [H04R 27/00](#))**

Project: N/A (G09G)

G09G

ARRANGEMENTS OR CIRCUITS FOR CONTROL OF INDICATING DEVICES USING STATIC MEANS TO PRESENT VARIABLE INFORMATION (lighting in general [F21](#); arrangements for displaying electric variables or waveforms [G01R 3/00](#); devices or arrangements for the control of light beams [G02F 1/00](#); indicating of time by visual means [G04B 19/00](#), [G04C 17/00](#), [G04G 9/00](#); arrangements for transferring data between computers and peripheral equipment [G06F 3/00](#); visible signalling arrangements or devices [G08B 5/00](#); traffic control systems [G08G](#); display, advertising, signs [G09F](#), e.g. static indicating arrangements comprising an association of a number of separate sources or light control cells [G09F 9/00](#); static indicating arrangements comprising integral associations of a number of light sources [H01J](#), [H01K](#), [H01L](#), [H05B 33/12](#); circuits in pulse counters for indicating the result [H03K 21/18](#); coding, decoding or code conversion, in general [H03M](#); reproducing a picture or pattern using electric signals representing parts thereof and produced by scanning an original [H04N](#))

NOTES

1. This subclass ~~covers~~[covers](#) indicator consoles, i.e. arrangements or circuits for processing control signals to achieve the display, e.g. for the calling up, reception, storage, regeneration, coding, decoding, addressing of control signals.
2. This subclass ~~does not cover~~[does not cover](#) the structural details of the indicating devices, such as panels or tubes ~~per se~~[per se](#), or assemblies of individual light sources, which are covered by the relevant subclasses, e.g. [H01J](#), [H01K](#), [H01L](#), [G02F](#), [G09F](#), [H05B](#).
3. Contrary to subclass [H04N](#), in which are classified display devices capable of representing continuous brightness value scales, this subclass is limited to devices using only a discrete number of brightness values, e.g. visible/non-visible.
4. The visual effect may be produced by a luminescent screen scanned by an electron beam, directly by controlled light sources, by projection of light, from controlled light sources onto characters, symbols, or elements thereof drawn on a support, or by electric, magnetic, or acoustic control of the parameters of light rays from an independent source.

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:

G09G 5/32	covered by	G09G 5/42
G09G 5/37	covered by	G09G 5/39
G09G 5/373	covered by	G09G 5/39
G09G 5/377	covered by	G09G 5/39
G09G 5/38	covered by	G09G 5/42
G09G 5/397	covered by	G09G 5/395 , G09G 5/399

U 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](#))}

G09G 1/24

- using tubes permitting selection of individual elements forming in combination a character {(~~see~~[see](#) provisionally also [G09G 1/22](#))}

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](#))

- G09G 3/001
- {using specific devices not provided for in groups [G09G 3/02](#) - [G09G 3/36](#), e.g. using an intermediate record carrier such as a film slide; Projection systems; Display of non-alphanumeric information, solely or in combination with alphanumeric information, e.g. digital display on projected diapositive as background (slide projectors ~~per se~~ [per se](#) [G03B 23/00](#) = 42 HP)}
- 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 3/34
- • by control of light from an independent source
- U G09G 3/3433
- • • {using light modulating elements actuated by an electric field and being other than liquid crystal devices and electrochromic devices (using liquid crystal devices [G09G 3/36](#); using electrochromic devices [G09G 3/38](#))}
- G09G 3/344
- • • • {based on particles moving in a fluid or in a gas, e.g. electrophoretic devices (electrophoretic devices ~~per se~~ [per se](#) [G02F 1/167](#))}
- G09G 3/346
- • • • {based on modulation of the reflection angle, e.g. micromirrors (micromirrors devices ~~per se~~ [per se](#) [G02B 26/0833](#))}
- 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 5/22
- characterised by the display of characters or indicia using display control signals derived from coded signals representing the characters or indicia, e.g. with a character-code memory
- U G09G 5/222
- • {Control of the character-code memory}
- G09G 5/225
- • • {comprising a loadable character generator (character generators ~~per se~~ [per se](#) [G09G 5/24](#))}
- G09G 5/32
- • with means for controlling the display position {(~~see~~ [see](#) provisionally [G09G 5/42](#))}
- U **G09G 2300/00**
- Aspects of the constitution of display devices (not used, see subgroups)**
- U G09G 2300/04
- Structural and physical details of display devices
- U G09G 2300/0469
- • Details of the physics of pixel operation
- U G09G 2300/0478
- • • related to liquid crystal pixels
- G09G 2300/0495
- • • • Use of transitions between isotropic and anisotropic phases in liquid crystals, by voltage controlled deformation of the liquid crystal molecules, as opposed to merely changing the orientation of the molecules as in, e.g. twisted-nematic [TN], vertical-aligned [VA], cholesteric, in-plane, or bi-refrigent liquid crystals
- U **G09G 2370/00**
- Aspects of data communication**
- G09G 2370/06
- Consumer Electronics Control, i.e. control of another device by a display or ~~vice-versa~~ [vice versa](#)

Project: N/A (G10)**G10****MUSICAL INSTRUMENTS; ACOUSTICS**NOTES

1. This class ~~covers~~ [covers](#) all sound-emitting devices, in general, whether or not they may be considered as being musical.
2. In this class, the following expression is used with the meaning indicated:

- "musical instrument" does not exclude devices emitting a single sound signal.

3. The following Class Index is given in place of subclass indexes, to show the grouping of the elaborations belonging to different subclasses, under the following three fundamental types:

- wind instruments;
- string instruments;
- percussion instruments,

which relate clearly to the majority of instruments.

4. There are of course some instruments of which the principle of operation belongs less clearly to one of the three types mentioned in Note 3. They correspond to groups [G10D 17/00](#) or [G10K 7/00](#), [G10K 9/00](#) or [G10K 15/04](#), all the other groups normally finding a definite place.

Project: N/A (G10B)

U G10B 3/00
G10B 3/02

Details or accessories

- Blowers (compressors, blowers, ~~per se~~ *per se* [F04](#))

Project: N/A (G10F)

G10F

AUTOMATIC MUSICAL INSTRUMENTS (non-musical aspects of toy instruments [A63H 5/00](#); sound recording or reproducing [G11B](#); working in association with recording or reproducing apparatus [G11B 31/02](#))

NOTE

This subclass ~~does not cover~~ *does not cover* aspects of musical instruments which are independent of the automatic actuation, which are covered by subclass [G10B](#), [G10C](#) or [G10D](#).

U G10F 1/00
G10F 1/06

Automatic musical instruments

- Musical boxes with plucked teeth, blades, or the like (combinations with other articles, ~~see~~ *see* the relevant classes for the articles)

Project: N/A (G10G)

U G10G 5/00
G10G 5/005

Supports for musical instruments {(cellopins or components therefor [G10D 3/003](#))}

- {while playing, e.g. cord, strap or harness (rests or guards as part of the instruments, ~~see~~ *see* the particular instruments, e.g. [G10D 3/18](#))}

Project: N/A (G10H)

G10H

ELECTROPHONIC MUSICAL INSTRUMENTS (electronic circuits in general [H03](#))

NOTE

This subclass ~~covers~~ *covers* musical instruments in which individual notes are constituted as electric oscillations under the control of a performer and the oscillations are converted to sound-vibrations by a loud-speaker or equivalent instrument.

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](#))

G10H 1/0008

- {Associated control or indicating means (teaching of music ~~per se~~ *per se* [G09B 15/00](#))}

- U G10H 1/0033
 - {Recording/reproducing or transmission of music for electrophonic musical instruments (of accompaniment [G10H 1/361](#))}
- G10H 1/0041
 - • {in coded form (~~see~~~~see~~ also [G10H 7/002](#))}
- 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](#))}
- U G10H 1/06
 - • Circuits for establishing the harmonic content of tones, {or other arrangements for changing the tone colour}
- G10H 1/08
 - • • by combining tones ([G10H 1/14](#), [G10H 1/16](#) take precedence; chord [G10H 1/38](#); analysis or synthesis of sound waves ~~per se~~ ~~per se~~ [G10L](#))
- U G10H 1/12
 - • • by filtering complex waveforms ([G10H 1/14](#), [G10H 1/16](#) take precedence)
- G10H 1/125
 - • • • {using a digital filter (digital filters ~~per se~~ ~~per se~~ [H03H 17/02](#))}
- U G10H 7/00**

Instruments in which the tones are synthesised from a data store, e.g. computer organs (synthesis of acoustic waves not specific to musical instruments [G10K 15/02](#), [G10L](#))
- G10H 7/008
 - {Means for controlling the transition from one tone waveform to another (glissando or legato ~~per se~~ ~~per se~~ [G10H 1/02](#))}
- U G10H 2210/00**

Aspects or methods of musical processing having intrinsic musical character, i.e. involving musical theory or musical parameters or relying on musical knowledge, as applied in electrophonic musical tools or instruments (processing aspects without intrinsic musical character [G10H 2250/00](#))
- U G10H 2210/031
 - Musical analysis, i.e. isolation, extraction or identification of musical elements or musical parameters from a raw acoustic signal or from an encoded audio signal (neural networks for electrophonic musical instruments or musical processing [G10H 2250/311](#))
- G10H 2210/051
 - • for extraction or detection of onsets of musical sounds or notes, i.e. note attack timings
- G10H 2210/071
 - • for rhythm pattern analysis or rhythm style recognition (rhythm pattern ~~per se~~ ~~per se~~ [G10H 2210/341](#))
- U G10H 2210/155
 - Musical effects
- U G10H 2210/195
 - • Modulation effects, i.e. smooth non-discontinuous variations over a time interval, e.g. within a note, melody or musical transition, of any sound parameter, e.g. amplitude, pitch, spectral response, playback speed (stepwise or discontinuous variations over time, e.g. sequence effects [G10H 2210/161](#))
- U G10H 2210/221
 - • • Glissando, i.e. pitch smoothly sliding from one note to another, e.g. gliss, glide, slide, bend, smear, sweep; ("discrete glissando" on instruments not permitting continuous glissando, like the xylophone or the piano, e.g. arpeggio [G10H 2210/185](#))
- G10H 2210/225
 - • • Portamento, i.e. smooth continuously variable pitch-bend, without emphasis of each chromatic pitch during the pitch change, which only stops at the end of the pitch shift, as obtained, e.g. by a MIDI pitch wheel or trombone (pitch bend with emphasis of each chromatic pitch during pitch change, e.g. glissando, [G10H 2210/221](#))
- G10H 2210/235
 - • • Flanging or phasing effects, i.e. creating time and frequency dependent constructive and destructive interferences, obtained, e.g. by using swept comb filters or a feedback loop around all-pass filters with gradually changing non-linear phase response or delays

U	G10H 2210/265	<ul style="list-style-type: none"> • • Acoustic effect simulation, i.e. volume, spatial, resonance or reverberation effects added to a musical sound, usually by appropriate filtering or delays (physical modeling of room acoustics G10H 2250/531; formant synthesis G10H 2250/481)
U	G10H 2210/281	<ul style="list-style-type: none"> • • • Reverberation or echo
	G10H 2210/291	<ul style="list-style-type: none"> • • • Reverberator using both direct, i.e. dry, and indirect, i.e. wet, signals or waveforms, indirect signals having sustained one or more virtual reflections
	G10H 2210/315	<ul style="list-style-type: none"> • • Dynamic effects for musical purposes, i.e. musical sound effects controlled by the amplitude of the time domain audio envelope, e.g. loudness-dependent tone color or musically desired dynamic range compression or expansion (crossfading or envelope processing per se per se G10H 2250/025)
U	G10H 2210/375	<ul style="list-style-type: none"> • Tempo or beat alterations; Music timing control (tempo display G10H 2220/081; tempo analysis G10H 2210/076; humanising effect G10H 2210/165; scratch effect G10H 2210/241)
	G10H 2210/385	<ul style="list-style-type: none"> • • Speed change, i.e. variations from preestablished tempo, tempo change, e.g. faster or slower, accelerando or ritardando, without change in pitch (with repetitive changes in pitch, e.g. scratch DJ effects G10H 2210/241)
U	G10H 2210/395	<ul style="list-style-type: none"> • Special musical scales, i.e. other than the 12- interval equally tempered scale; Special input devices therefor (keyboards G10H 2220/221)
	G10H 2210/405	<ul style="list-style-type: none"> • • Honkytonk scale, for producing, e.g. a honky-tonk piano effect, i.e. with deliberately detuned notes within each octave
U	G10H 2210/471	<ul style="list-style-type: none"> • • Natural or just intonation scales, i.e. based on harmonics consonance such that most adjacent pitches are related by harmonically pure ratios of small integers (pitch correction only when playing chords to ensure chord consonance G10H 2210/586)
	G10H 2210/496	<ul style="list-style-type: none"> • • • Redfield scales, i.e. 12 intervals per octave, based on note ratios equal to $(2^{**p}) \cdot (3^{**q}) \cdot (5^{**r})$ with p, q, r positive or negative integers
	G10H 2210/506	<ul style="list-style-type: none"> • • • Danielou 53 interval scale, with note ratios equal to $(2^{**p})(3^{**q})(5^{**r})$, with p, q, r positive or negative integers (53 interval equally tempered Holder scale G10H 2210/451)
U	G10H 2210/541	<ul style="list-style-type: none"> • • Pentatonal or pentatonic scale, i.e. five pitches or notes per octave, e.g. basic chinese musical scale, black piano keys, javanese gamelan slendr? scale, japanese shakuhachi flute (balinese pentatonic scales with deliberate interference beating, e.g. balinese gamelan slendr? scale G10H 2210/515)
	G10H 2210/545	<ul style="list-style-type: none"> • • • Yona Nuki , i.e. a family of pentatonic scales without fourth or seventh, e.g. Hirajoshi, Iwato, Kumoi, Sino-indian [Raga Amritavarsini] used, e.g. for japanese traditional music, koto or shamisen tunings
	G10H 2210/551	<ul style="list-style-type: none"> • • • Okinawa pentatonic scale, i.e. Okinawan min'yo, e.g. including the half-steps omitted in the min'yo pentatonic scale used in the main japanese islands
U	G10H 2220/00	Input/output interfacing specifically adapted for electrophonic musical tools or instruments
U	G10H 2220/135	<ul style="list-style-type: none"> • Musical aspects of games or videogames; Musical instrument-shaped game input interfaces (game background music G10H 2210/026; musical game scoring or performance evaluation G10H 2210/091)
	G10H 2220/141	<ul style="list-style-type: none"> • • Games on or about music, i.e. based on musical knowledge, e.g. musical multimedia quizzes (teaching of music per se per se G09B 15/00)
U	G10H 2220/155	<ul style="list-style-type: none"> • User input interfaces for electrophonic musical instruments (graphical user interfaces specifically adapted for electrophonic musical instruments G10H 2220/091; input means in general G06F 3/00)

G10H 2220/201	<ul style="list-style-type: none"> • for movement interpretation, i.e. capturing and recognizing a gesture or a specific kind of movement, e.g. to control a musical instrument
G10H 2220/206	<ul style="list-style-type: none"> • • Conductor baton movement detection used to adjust rhythm, tempo or expressivity of, e.g. the playback of musical pieces
G10H 2220/211	<ul style="list-style-type: none"> • for microphones, i.e. control of musical parameters either directly from microphone signals or by physically associated peripherals, e.g. karaoke control switches or rhythm sensing accelerometer within the microphone casing (microphones per se <i>per se</i> H04R)
G10H 2220/315	<ul style="list-style-type: none"> • for joystick-like proportional control of musical input; Videogame input devices used for musical input or control, e.g. gamepad, joysticks (joysticks per se <i>per se</i> G06F 3/033, G05G 9/047, A63F 13/20)
G10H 2220/321	<ul style="list-style-type: none"> • • Garment sensors, i.e. musical control means with trigger surfaces or joint angle sensors, worn as a garment by the player, e.g. bracelet, intelligent clothing (vital parameter sensing G10H 2220/371; wearable interfaces in general G06F 3/00)
G10H 2220/361	<ul style="list-style-type: none"> • • Mouth control in general, i.e. breath, mouth, teeth, tongue or lip-controlled input devices or sensors detecting, e.g. lip position, lip vibration, air pressure, air velocity, air flow or air jet angle
G10H 2220/365	<ul style="list-style-type: none"> • • Bow control in general, i.e. sensors or transducers on a bow; Input interface or controlling process for emulating a bow, bowing action or generating bowing parameters, e.g. for appropriately controlling a specialised sound synthesiser (bowed string instrument sound synthesis per se <i>per se</i> G10H 2250/445; electrophonic stringed instrument details G10H 2230/075)
G10H 2220/371	<ul style="list-style-type: none"> • • Vital parameter control, i.e. musical instrument control based on body signals, e.g. brainwaves, pulsation, temperature, perspiration; biometric information (signals from body positions or movements G10H 2220/321)
G10H 2220/405	<ul style="list-style-type: none"> • • Beam sensing or control, i.e. input interfaces involving substantially immaterial beams, radiation, or fields of any nature, used, e.g. as a switch as in a light barrier, or as a control device, e.g. using the theremin electric field sensing principle (theremins G10H 2230/051)
U G10H 2220/461	<ul style="list-style-type: none"> • Transducers, i.e. details, positioning or use of assemblies to detect and convert mechanical vibrations or mechanical strains into an electrical signal, e.g. audio, trigger or control signal (contact microphones for use on musical instrument H04R 1/46)
U G10H 2220/525	<ul style="list-style-type: none"> • • Piezoelectric transducers for vibration sensing or vibration excitation in the audio range; Piezoelectric strain sensing, e.g. as key velocity sensor; Piezoelectric actuators, e.g. key actuation in response to a control voltage
G10H 2220/555	<ul style="list-style-type: none"> • • Bimorph transducers, i.e. piezoelectric bending multilayer structures with one or more piezoelectric layers, e.g. piezo on metal, serial bimorph or parallel bimorph
U G10H 2230/00	General physical, ergonomic or hardware implementation of electrophonic musical tools or instruments, e.g. shape or architecture
U G10H 2230/025	<ul style="list-style-type: none"> • Computing or signal processing architecture features
G10H 2230/031	<ul style="list-style-type: none"> • • Use of cache memory for electrophonic musical instrument processes, e.g. for improving processing capabilities or solving interfacing problems
U G10H 2230/045	<ul style="list-style-type: none"> • Special instrument [spint], i.e. mimicking the ergonomics, shape, sound or other characteristic of a specific acoustic musical instrument category
G10H 2230/051	<ul style="list-style-type: none"> • • Spint theremin, i.e. mimicking electrophonic musical instruments in which tones are controlled or triggered in a touch-free manner by interaction with beams, jets or fields, e.g. theremin, air guitar, water jet controlled musical instrument, i.e. hydrophone

- U G10H 2230/065
 - • Spint piano, i.e. mimicking acoustic musical instruments with piano, cembalo or spinet features, e.g. with piano-like keyboard; Electrophonic aspects of piano-like acoustic keyboard instruments; MIDI-like control therefor
- G10H 2230/071
 - • • Spint harpsichord, i.e. mimicking plucked keyboard instruments, e.g. harpsichord, virginal, muselar, spinet, clavictherium, ottavino, archicembalo
- U G10H 2230/075
 - • Spint stringed, i.e. mimicking stringed instrument features, electrophonic aspects of acoustic stringed musical instruments without keyboard; MIDI-like control therefor (string instrument sound synthesis [G10H 2250/441](#))
- G10H 2230/121
 - • • Spint mandolin, i.e. mimicking instruments of the lute family with hard sounding board, e.g. with strings arranged and tuned in pairs for tremolo playing (lute with skin-like sounding board [G10H 2230/151](#))
- U G10H 2230/155
 - • Spint wind instrument, i.e. mimicking musical wind instrument features; Electrophonic aspects of acoustic wind instruments; MIDI-like control therefor. (wind instrument sound synthesis [G10H 2250/461](#); mouth control, e.g. breath [G10H 2220/361](#); natural aerodynamic noise synthesis, e.g. wind [G10H 2250/431](#))
- G10H 2230/161
 - • • Spint whistle, i.e. mimicking wind instruments in which the air is split against an edge, e.g. musical whistles, three tone samba whistle, penny whistle, pea whistle; whistle-emulating mouth interfaces; MIDI control therefor, e.g. for calliope
- U G10H 2240/00**
Data organisation or data communication aspects, specifically adapted for electrophonic musical tools or instruments
- U G10H 2240/011
 - Files or data streams containing coded musical information, e.g. for transmission (audio coding [G10L 19/00](#))
- U G10H 2240/046
 - • File format, i.e. specific or non-standard musical file format used in or adapted for electrophonic musical instruments, e.g. in wavetables (details of musical waveform synthesis [G10H 2250/541](#))
- G10H 2240/071
 - • • Wave, i.e. Waveform Audio File Format, coding, e.g. uncompressed PCM audio according to the RIFF bitstream format method
- G10H 2240/121
 - Musical libraries, i.e. musical databases indexed by musical parameters, wavetables, indexing schemes using musical parameters, musical rule bases or knowledge bases, e.g. for automatic composing methods; (audio retrieval [G06F 17/3074](#))
- U G10H 2240/131
 - • Library retrieval, i.e. searching a database or selecting a specific musical piece, segment, pattern, rule or parameter set
- G10H 2240/141
 - • • Library retrieval matching, i.e. any of the steps of matching an inputted segment or phrase with musical database contents, e.g. query by humming, singing or playing; the steps may include, e.g. musical analysis of the input, musical feature extraction, query formulation, or details of the retrieval process
- G10H 2240/325
 - Synchronizing two or more audio tracks or files according to musical features or musical timings (synchronised lyrics, e.g. for karaoke [G10H 2220/011](#))
- U G10H 2250/00**
Aspects of algorithms or signal processing methods without intrinsic musical character, yet specifically adapted for or used in electrophonic musical processing (methods with intrinsic musical character [G10H 2210/00](#))
- U G10H 2250/005
 - Algorithms for electrophonic musical instruments or musical processing, e.g. for automatic composition or resource allocation (mathematical functions therefor [G10H 2250/131](#); details of musical waveform synthesis [G10H 2250/541](#))

	G10H 2250/011	<ul style="list-style-type: none"> • Genetic algorithms, i.e. using computational steps analogous to biological selection, recombination and mutation on an initial population of, e.g. sounds, pieces, melodies or loops to compose or otherwise generate, e.g. evolutionary music or sound synthesis
	G10H 2250/025	<ul style="list-style-type: none"> • Envelope processing of music signals in, e.g. time domain, transform domain or cepstrum domain
U	G10H 2250/131	<ul style="list-style-type: none"> • Mathematical functions for musical analysis, processing, synthesis or composition (algorithms for musical processing G10H 2250/005; computation of mathematical functions G06F 17/10 and G06F 7/544)
U	G10H 2250/165	<ul style="list-style-type: none"> • Polynomials, i.e. musical processing based on the use of polynomials, e.g. distortion function for tube amplifier emulation, filter coefficient calculation, polynomial approximations of waveforms, physical modeling equation solutions
U	G10H 2250/175	<ul style="list-style-type: none"> • Jacobi polynomials of several variables, e.g. Heckman-Opdam polynomials, or of one variable only, e.g. hypergeometric polynomials
U	G10H 2250/181	<ul style="list-style-type: none"> • Gegenbauer or ultraspherical polynomials, e.g. for harmonic analysis
	G10H 2250/191	<ul style="list-style-type: none"> • Chebyshev polynomials, e.g. to provide filter coefficients for sharp rolloff filters (Chebyshev filters G10H 2250/091; Chebyshev windows G10H 2250/271)
	G10H 2250/201	<ul style="list-style-type: none"> • Parabolic or second order polynomials, occurring, e.g. in vacuum tube distortion modeling or for modeling the gate voltage to drain current relationship of a JFET
	G10H 2250/205	<ul style="list-style-type: none"> • Third order polynomials, occurring, e.g. in vacuum tube distortion modeling
U	G10H 2250/315	<ul style="list-style-type: none"> • Sound category-dependent sound synthesis processes [Gensound] for musical use (details of musical waveform synthesis G10H 2250/541; general musical sound synthesis principles G10H 2250/471; Sound category-specific synthesis-controlling parameters or control means therefor
U	G10H 2250/395	<ul style="list-style-type: none"> • Gensound nature
U	G10H 2250/415	<ul style="list-style-type: none"> • Weather
	G10H 2250/431	<ul style="list-style-type: none"> • Natural aerodynamic noises, e.g. wind gust sounds, rustling leaves, beating sails (gensound wind instruments G10H 2250/461; spint wind instruments G10H 2230/155)
U	G10H 2250/441	<ul style="list-style-type: none"> • Gensound string, i.e. generating the sound of a string instrument, controlling specific features of said sound (spint piano G10H 2230/065; spint stringed instruments G10H 2230/075)
	G10H 2250/445	<ul style="list-style-type: none"> • Bowed string instrument sound generation, controlling specific features of said sound, e.g. use of fret or bow control parameters for violin effects synthesis (bow interfaces per se per se G10H 2220/365; modulation effects G10H 2210/195; spint viola G10H 2230/081; spint cello G10H 2230/085)
U	G10H 2250/471	<ul style="list-style-type: none"> • General musical sound synthesis principles, i.e. sound category-independent synthesis methods (details of musical waveform synthesis G10H 2250/541; special instrument [spint] G10H 2230/045; sound category-specific synthesis G10H 2250/315)
	G10H 2250/481	<ul style="list-style-type: none"> • Formant synthesis, i.e. simulating the human speech production mechanism by exciting formant resonators, e.g. mimicking vocal tract filtering as in LPC synthesis vocoders, wherein musical instruments may be used as excitation signal to the time-varying filter estimated from a singer's speech (gensound singing voices G10H 2250/455; parcor synthesis G10H 2250/505; effect Helmholtz G10H 2210/275)
	G10H 2250/511	<ul style="list-style-type: none"> • Physical modelling or real-time simulation of the acoustomechanical behaviour of acoustic musical instruments using, e.g. waveguides or looped delay lines (models in general G05B 17/00)

- U G10H 2250/541
- Details of musical waveform synthesis, i.e. audio waveshape processing from individual wavetable samples, independently of their origin or of the sound they represent (sound category-dependent sound synthesis [G10H 2250/315](#); special instruments [spint] [G10H 2230/045](#); general musical sound synthesis principles [G10H 2250/471](#))
- U G10H 2250/621
- • Waveform interpolation
- G10H 2250/625
- • • Interwave interpolation, i.e. interpolating between two different waveforms, e.g. timbre or pitch or giving one waveform the shape of another while preserving its frequency or ~~vice-versa~~ [vice versa](#)

Project: N/A (G10K)**G10K**

SOUND-PRODUCING DEVICES (sound-producing toys [A63H 5/00](#); musical instruments or parts thereof, ~~see~~ [see](#) the relevant subclass, e.g. [G10D](#)); **ACOUSTICS NOT OTHERWISE PROVIDED FOR** (systems using the reflection or reradiation of acoustic waves [G01S 15/00](#); generating seismic energy [G01V 1/02](#); signalling or calling arrangements, alarm arrangements [G08B](#); piezo-electric electrostrictive or magnetostrictive elements in general [H01L 41/00](#); transmission systems using infrasonic, sonic, or ultrasonic waves [H04B 11/00](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#))

NOTES

1. This subclass ~~covers~~ [covers](#) arrangements for generating mechanical vibrations in fluids.
2. This subclass ~~covers~~ [covers](#) also the production of sounds which may not be audible to human beings but which are audible to animals.
3. In this subclass, the following terms are used with the meanings indicated:
 - "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 [B06B](#), subject to the exception specified in Note (1) above.

- U G10K 9/00
- 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 [H04R](#) {arrangement or adaptation for ships [B63B 45/08](#); mechanically driven vibrators [B06B 1/10](#)})**
- G10K 9/12
- electrically operated
- NOTE
- This group ~~does not cover~~ [does not cover](#) the construction of, or circuits for, broadband-transducers such as loudspeakers or microphones, which are covered by subclass [H04R](#).
- G10K 9/13
- • using electromagnetic driving means
- NOTE
- ~~see~~ [see](#) provisionally also [G10K 9/12](#)

G10K 11/00	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 A61F 11/06 }; sound insulation for vehicles B60R 13/08 ; sound insulation for aircraft B64C 1/40 ; sound insulating materials, see see the relevant places, e.g. C04B 26/00 - C04B 38/00 ; reduction of noise on permanent way E01B 19/00 ; absorption of air-transmitted noise from road or railway traffic E01F 8/00 ; noise insulation, absorption or reflection in buildings E04B 1/74 ; room acoustics E04B 1/99 ; sound insulation in floors E04F 15/20 ; gas-flow silencers or exhaust apparatus for machines or engines in general, for internal-combustion engines F01N ; intake silencers for internal-combustion engines F02M 35/00 ; suppression of undesired vibrations F16F 7/00 - G10K 15/00 ; preventing noise in valves F16K 47/02 ; noise absorbers in pipes F16L 55/02 ; arrangements for suppressing noise in direct-contact trickle coolers F28C 1/10 ; silencers for weapons F41)
G10K 11/004	<ul style="list-style-type: none"> • {Mounting transducers, e.g. provided with mechanical moving or orienting device (mountings specially adapted to a particular sound-producing device, see see the preceding groups G10K 1/00 - 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)}
U G10K 11/006	<ul style="list-style-type: none"> • • {Transducer mounting in underwater equipment, e.g. sonobuoys}
G10K 11/008	<ul style="list-style-type: none"> • • • {Arrays of transducers (seismic streamers, see see G01V 1/20)}
U G10K 11/02	<ul style="list-style-type: none"> • Mechanical acoustic impedances; Impedance matching, e.g. by horns; Acoustic resonators
G10K 11/025	<ul style="list-style-type: none"> • • {horns for impedance matching (see see provisionally also G10K 11/28)}
G10K 11/16	<ul style="list-style-type: none"> • 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 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.	
U G10K 15/00	Acoustics not otherwise provided for
G10K 15/02	<ul style="list-style-type: none"> • Synthesis of acoustic waves (synthesis of speech G10L)
NOTE	
see see provisionally G10H e.g. G10H 1/26	
U G10K 2210/00	Details of active noise control [ANC] covered by G10K 11/178 but not provided for in any of its subgroups
U G10K 2210/30	<ul style="list-style-type: none"> • Means
U G10K 2210/301	<ul style="list-style-type: none"> • • Computational
G10K 2210/3049	<ul style="list-style-type: none"> • • • Random noise used, e.g. in model identification

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~~[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~~[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](#) - [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:

G11B 5/65	covered by	G11B 5/64 - G11B 5/656
G11B 5/667	covered by	G11B 5/66
G11B 5/673	covered by	G11B 5/66
G11B 7/16	covered by	G11B 7/135
G11B 7/18	covered by	G11B 7/135
G11B 7/30	covered by	G11B 7/00
G11B 9/12	- G11B 9/14	covered by
G11B 9/00		
G11B 11/24	- G11B 11/26	covered by
G11B 11/00		
G11B 13/08	covered by	G11B 

U 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](#)})

- | | |
|--------------|---|
| G11B 3/007 | • {Devices for controlling sound, e.g. using acoustical impedances, using valves} |
| U G11B 3/02 | • Arrangements of heads (styli G11B 3/44) |
| G11B 3/04 | • • Multiple, convertible, or alternative transducing arrangements {(contains no documents see see G11B 3/42)} |
| U G11B 3/08 | • • Raising, lowering, traversing otherwise than for transducing, arresting, or holding-up heads against record carriers {(for transducing G11B 3/12 , G11B 3/34)} |
| G11B 3/085 | • • • using automatic means (G11B 3/095 takes precedence {; if particularly adapted for record-changers see see G11B 17/16 and subgroups }) |
| U G11B 3/10 | • • 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)} |
| U G11B 3/12 | • • • Supporting in balanced, counterbalanced or loaded operative position {during transducing}, e.g. loading in direction of traverse |
| U G11B 3/121 | • • • • {By using mechanical means not provided for in G11B 3/14 , G11B 3/20 , e.g. using cams} |
| G11B 3/122 | • • • • • {Providing horizontal force;} {Providing horizontal force} , e.g. anti-skating (G11B 3/124 takes precedence) |
| U G11B 3/14 | • • • • by using effects of gravity or inertia, e.g. counterweight (G11B 3/28 takes precedence) |

- G11B 3/145 • • • • {~~Providing horizontal force;~~ *Providing horizontal force*, e.g. anti-skating force ([G11B 3/18](#) takes precedence)}
- G11B 3/28 • • • • providing transverse bias parallel to record
- NOTE
see see provisionally also [G11B 3/14](#), [G11B 3/20](#))
- G11B 3/60 • Turntables for record carriers (forming rotor of dynamo-electric motor [H02K](#))
- NOTE
contains no documents, *see see* [G11B 19/2009](#)
- G11B 3/61 • • Damping of vibrations of record carriers on turntables
- NOTE
see see provisionally also [G11B 3/60](#), [G11B 3/589](#) and [G11B 17/02](#); contains no documents, *see see* [G11B 19/2018](#)
- U G11B 3/68 • Record carriers
- G11B 3/682 • • {comprising protective coatings, e.g. anti static, anti-friction}
- G11B 3/70 • • characterised by the selection of material or structure; Processes or apparatus specially adapted for manufacturing record carriers (processes involving a single technical art and for which provision exists elsewhere, *see see* the relevant places, e.g. [B29D 17/00](#))
- U **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](#) - [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) - [G11B 5/016](#)
- 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 see* under structures, e.g. [G11B 5/3106](#)})
- U 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](#))}
- U G11B 5/4806 • • {specially adapted for disk drive assemblies, e.g. assembly prior to operation, hard or flexible disk drives ([G11B 5/488](#) - [G11B 5/54](#) take precedence)}
- G11B 5/4866 • • • {the arm comprising an optical waveguide, e.g. for thermally-assisted recording}
- 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](#) - [G11B 5/5582](#), *see see* provisionally [G11B 5/5521](#) and [G11B 5/596](#)
- U G11B 5/5526 • • • • • {Control therefor; circuits, track configurations or relative disposition of servo-information transducers and servo-information tracks for control thereof ([G11B 5/556](#) takes precedence)}
- U G11B 5/553 • • • • • • {Details}

- U G11B 5/5534 {Initialisation, calibration, e.g. cylinder "set-up"}
- G11B 5/5539 {Skew adjustment, e.g. adjustment of the position of the first sector in each track with respect to the other tracks, for improving, e.g. access performance}
- U G11B 5/5569 {details of specially adapted mobile parts, e.g. electromechanical control devices (motors in general [H02K](#))}
- G11B 5/5573 {Details of the magnetic circuit, e.g. of actuators}
- G11B 5/5578 {Multiple actuators addressing the same disk, e.g. to improve data rate or access rate}
- G11B 5/5586 {Minimising seek noise, e.g. actuator noise}
- U 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
- U 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 5/592 using bimorph elements supporting the heads {(see [see](#) provisional also [G11B 5/588](#))}
- 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](#) - [G11B 5/59633](#), [see](#) provisionally [G11B 5/5521](#) and [G11B 5/596](#)
- 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~~ [does not cover](#) compositions, materials or processes, [per se](#), which are covered by the relevant subclasses of section [B](#) or [C](#).
- G11B 5/627 of leaders for magnetic tapes, e.g. non-magnetic strips on the tapes or for connection (constructional features [G11B 23/26](#))
- 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](#))
- U 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)

- U G11B 7/007
- Arrangement of the information on the record carrier, e.g. form of tracks, {actual track shape, e.g. wobbled, or cross-section, e.g. v-shaped; Sequential information structures, e.g. sectoring or header formats within a track}
- G11B 7/013
- • for discrete information, i.e. where each information unit is stored at a distinct discrete location {, e.g. digital information formats within a data block or sector}
- U 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 7/125
- • 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 7/127
- • Lasers; Multiple laser arrays {(lasers [per se](#) [per se](#) [H01S](#))}
- G11B 7/13
- • Optical detectors therefor {(optical detectors [per se](#) [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](#)
- U 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](#) [per se](#) [G02B 5/18](#); holograms [per se](#) [per se](#) [G02B 5/32](#); grating systems [G02B 27/44](#))}
- U G11B 7/1372
- • • Lenses
- G11B 7/1374
- • • • Objective lenses {(optical objectives [per se](#) [per se](#) [G02B 9/00](#))}
- G11B 7/1376
- • • • Collimator lenses {(collimators [per se](#) [per se](#) [G02B 27/30](#))}
- G11B 7/1392
- • • Means for controlling the beam wavefront, e.g. for correction of aberration {(optical systems for aberration correction [per se](#) [per se](#) [G02B 27/00](#))}
- G11B 7/1395
- • • Beam splitters or combiners ([G11B 7/1353](#), [G11B 7/1356](#) take precedence {; beam splitting or combining [per se](#) [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](#))
- 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 see](#) the relevant class, e.g. [B29](#), [G03](#) {manufacture of intermediate mediums, e.g. matrixes for processing [G11B 23/0057](#)})

- U G11B 9/00** **Recording or reproducing using a method not covered by one of the main groups [G11B 3/00](#) - [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 see](#) the relevant class, e.g. [B05D](#), [F16N](#), [C08L](#))}
- G11B 9/10
 - using electron beam; Record carriers therefor ([G11B 9/08](#) takes precedence {[see see](#) provisional also [G11B 11/03](#)})
- U 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](#) - [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](#) - [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](#) - [G11B 9/08](#)
- G11B 11/03
 - using recording by deforming with non-mechanical means, e.g. laser, beam of particles {([G11B 11/002](#) takes precedence; [see see](#) provisional also [G11B 3/68](#) - [G11B 3/72](#))}
- 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 see](#) provisionally [G11B 9/06](#), [G11B 9/07](#); [G11B 11/05](#)
- U 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](#) - [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 see](#) prov. also [G11B 15/602](#))}
- U G11B 15/02
 - Control of operating function, e.g. switching from recording to reproducing
- G11B 15/026
 - {by using processor, e.g. microcomputer}
- NOTE**
- [see see](#) provisional also [G11B 15/005](#)
- G11B 15/03
 - by using counters
- NOTE**
- [see see](#) prov. also [G11B 15/00](#), [G11B 27/00](#)

	G11B 15/05	<ul style="list-style-type: none"> • • by sensing features present on or derived from record carrier or container (G11B 15/16 takes precedence) <p><u>NOTE</u> see see provisional also G11B 15/02</p>
U	G11B 15/06	<ul style="list-style-type: none"> • • • by sensing auxiliary features on record carriers or containers, e.g. to stop machine near the end of a tape
	G11B 15/07	<ul style="list-style-type: none"> • • • • on containers <p><u>NOTE</u> see see provisional also G11B 15/06</p>
	G11B 15/087	<ul style="list-style-type: none"> • • • by sensing recorded signals <p><u>NOTE</u> see see provisional also G11B 15/06, G11B 15/02, G11B 27/00</p>
	G11B 15/093	<ul style="list-style-type: none"> • • • by sensing driving condition of record carrier, e.g. travel, tape tension <p><u>NOTE</u> see see provisional also G11B 15/16, G11B 15/22, G11B 15/46</p>
U	G11B 15/16	<ul style="list-style-type: none"> • • by sensing presence, absence or position of record carrier or container
	G11B 15/17	<ul style="list-style-type: none"> • • • of container <p><u>NOTE</u> see see prov. also G11B 15/16</p>
U	G11B 15/18	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • {Driving of both record carrier and head (G11B 15/467 takes precedence; mounting of head G11B 5/52)}
	G11B 15/1816	<ul style="list-style-type: none"> • • • {Programmed access in sequence to indexed parts of operating tapes cooperating with rotating heads (see see provisional also G11B 15/005)}
	G11B 15/26	<ul style="list-style-type: none"> • • Driving record carriers by members acting directly or indirectly thereon {(G11B 15/44 takes precedence; Driving features inside container, see see G11B 23/04 and subgroups)}
U	G11B 15/46	<ul style="list-style-type: none"> • • Controlling, regulating, or indicating speed {(dependent on position of tape in reserve, loop G11B 15/56, G11B 15/58)}
	G11B 15/467	<ul style="list-style-type: none"> • • • in arrangements for recording or reproducing wherein both record carriers and heads are driven {(see see provisional also G11B 15/1808)}
	G11B 15/473	<ul style="list-style-type: none"> • • • • by controlling the speed of the heads <p><u>NOTE</u> see see prov. also G11B 5/588</p>
	G11B 15/675	<ul style="list-style-type: none"> • Guiding containers {, e.g. loading, ejecting cassettes}
U	G11B 20/00	Signal processing not specific to the method of recording or reproducing; Circuits therefor
	G11B 20/00007	<ul style="list-style-type: none"> • {Time or data compression or expansion (audio compression based on psychoacoustics G10L 19/00; data processing for reproducing audio data at different playback speeds G10L 21/04; video compression H04N 19/00; data compression per se per se H03M 7/30)}
U	G11B 20/10	<ul style="list-style-type: none"> • 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 20/10009 • • {Improvement or modification of read or write signals}
- U G11B 20/10046 • • • {filtering or equalising, e.g. setting the tap weights of an FIR filter}
- U G11B 20/10055 • • • • {using partial response filtering when writing the signal to the medium or reading it therefrom}
- G11B 20/10064 • • • • • {EEPR4 or E2PR4, i.e. extended partial response class 4, polynomial $(1-D)*(1+D)3^3$ }
- G11B 20/10074 • • • • • {EPR4, i.e. extended partial response class 4, polynomial $(1-D)*(1+D)2^2$ }
- U G11B 20/14 • • using self-clocking codes
- U G11B 20/1403 • • • {characterised by the use of two levels}
- U G11B 20/1407 • • • • {code representation depending on a single bit, i.e. where a one is always represented by a first code symbol while a zero is always represented by a second code symbol}
- G11B 20/1419 • • • • • {to or from biphasic level coding, i.e. to or from codes where a one is coded as a transition from a high to a low level during the middle of a bit cell and a zero is encoded as a transition from a low to a high level during the middle of a bit cell or ~~vice-versa~~ *vice versa*, e.g. split phase code, Manchester code conversion to or from biphasic space or mark coding, i.e. to or from codes where there is a transition at the beginning of every bit cell and a one has no second transition and a zero has a second transition one half of a bit period later or ~~vice-versa~~ *vice versa*, e.g. double frequency code, FM code}

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~~ *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.

G11B 23/0007

- {Circuits or methods for reducing noise, for correction of distortion, or for changing density of recorded information, (volume compression or expansion circuits ~~per se~~ *per se* [H03G 7/00](#))}

NOTE

This group is closed down and will in due course be transferred to [G11B 20/22](#) and [G11B 20/24](#) and subgroups

U 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 23/113

- • Apparatus or processes specially adapted for the manufacture of magazines or cassettes {, e.g. initial loading into container (processes involving a single technical art and for which provision exists elsewhere, ~~see~~ *see* the relevant class, e.g. [B21](#), [B29](#), [B65](#))}

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*; ~~e.g. for editing~~; (transfer of record carriers from magazine [G11B 15/68](#), [G11B 17/10](#); [G11B 17/22](#))}

- U G11B 27/10 • Indexing; Addressing; Timing or synchronising; Measuring tape travel
- U G11B 27/11 • • by using information not detectable on the record carrier
- U G11B 27/13 • • • the information being derived from movement of the record carrier, e.g. using tachometer
- G11B 27/15 • • • • using mechanical sensing means {{[see see](#) provisionally also [G11B 27/13](#)}}
- G11B 27/17 • • • • using electrical sensing means {{[see see](#) provisionally also [G11B 27/13](#)}}
- G11B 27/36 • Monitoring, i.e. supervising the progress of recording or reproducing {{(for digital recording [G11B 20/00](#) and s.gr.; for monitoring, testing or measuring of TV recorders of the type covered by [H04N 5/76](#) and subgroups, [see see](#) [H04N 17/06](#))}}

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](#) - [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~~[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~~[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:

G11C 8/02	covered by	G11C 8/00 ,
H03K 17/00		
G11C 11/4193	covered by	
G11C 11/00		
G11C 11/4195	covered by	
G11C 11/00		
G11C 11/4197	covered by	
G11C 11/00		

- U **G11C 5/00** **Details of stores covered by [G11C 11/00](#)**
- U G11C 5/06 • Arrangements for interconnecting storage elements electrically, e.g. by wiring
- G11C 5/066 • • {Means for reducing external access-lines for a semiconductor memory clip, e.g. by multiplexing at least address and data signals}
- U 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 5/141 • • {Battery and back-up supplies (back-up supplies ~~per se~~[per se](#) [H02J 9/061](#))}

- G11C 5/143
 - {Detection of memory cassette insertion/removal; Continuity checks of supply and ground lines (in general [G01R 31/02](#)); Detection of supply variations/interruptions/levels ([G11C 5/148](#) takes precedence); Switching between alternative supplies (back-up supplies ~~per se~~ [per se](#) [H02J 9/061](#)), ([G11C 5/141](#) takes precedence)}
- G11C 5/145
 - {Applications of charge pumps (charge pumps ~~per se~~ [per se](#) [H02M 3/07](#)); Boosted voltage circuits (for logic circuits or inverting circuits [H03K 19/00](#)); Clamp circuits therefor ([G11C 5/141](#) takes precedence)}
- U 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 7/06
 - Sense amplifiers; Associated circuits, {e.g. timing or triggering circuits} (amplifiers ~~per se~~ [per se](#) [H03F](#), [H03K](#))
- U G11C 11/00**

Digital stores characterised by the use of particular electric or magnetic storage elements; Storage elements therefor ([G11C 14/00](#) - [G11C 21/00](#) take precedence)
- U 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~~ [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~~ [per se](#) [G01R 33/00](#)); magnetic properties, choice of materials or the like (materials ~~per se~~ [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~~ [see](#) [G11C 11/06007](#), [G11C 11/06014](#), [G11C 11/06021](#), [G11C 11/06028](#))}
- G11C 11/063
 - bit organised, such as 2 1/2D, 3D organisation, i.e. for selection of an element by means of at least two coincident parital currents both for reading and for writing {(contains no documents; ~~see~~ [see](#) [G11C 11/06035](#))}
- G11C 11/065
 - word organised, such as 2D organisation, or linear selection, i.e. for selection of all the elements of a word by means of a single full current for reading {(contains no documents; ~~see~~ [see](#) [G11C 11/06042](#))}
- G11C 11/067
 - using elements with single aperture or magnetic loop for storage, one element per bit, and for non-destructive read-out {(contains no documents, ~~see~~ [see](#) [G11C 11/0605](#) - [G11C 11/06071](#))}
- G11C 11/19
 - using non-linear reactive devices in resonant circuits {(contains no documents, ~~see~~ [see](#) [G11C 11/20](#))}
- G11C 11/48
 - using displaceable coupling elements, e.g. ferromagnetic cores, to produce change between different states of mutual or self-inductance {(contains no documents; ~~see~~ [see](#) [G11C 17/00](#) and subgroups)}

- U 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](#))}
 G11C 19/14 • using magnetic elements in combination with active elements, e.g. discharge tubes, semiconductor elements {(contains no documents, [see](#) [see](#) provisionally [G11C 19/02](#) - [G11C 19/10](#))}
- U 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 27/04 • Shift registers (charge coupled devices [per se](#) [per se](#) [H01L 29/76](#))
- U 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](#))}
- U G11C 29/70 • {Masking faults in memories by using spares or by reconfiguring}
 U G11C 29/88 • • {with partially good memories}
 G11C 29/883 • • • {using a single defective memory device with reduced capacity, e.g. half capacity}
 G11C 29/886 • • • {combining plural defective memory devices to provide a contiguous address range, e.g. one device supplies working blocks to replace defective blocks in another device}
- U G11C 2213/00** Indexing scheme relating to [G11C 13/00](#) for features not covered by this group
- U G11C 2213/30 • Resistive cell, memory material aspects
 G11C 2213/35 • • Material including carbon, e.g. graphite, grapheme
 U G11C 2213/70 • Resistive array aspects
 G11C 2213/81 • • Array wherein the array conductors, e.g. word lines, bit lines, are made of nanowires

Project: N/A (G12B)**G12B****CONSTRUCTIONAL DETAILS OF INSTRUMENTS, OR COMPARABLE DETAILS OF OTHER APPARATUS, NOT OTHERWISE PROVIDED FOR****NOTES**

1. This subclass [covers](#) [covers](#) only details which are not restricted to measuring instruments or to any other apparatus covered by a single class.
2. This subclass [does not cover](#) [does not cover](#):
 - details covered by any other subclass in section [AA](#), [FE](#), [GG](#) or [HH](#). In particular, details restricted to the measuring instruments are covered by the relevant subclasses of class [G01](#), e.g. [G01D](#);
 - constructional details restricted to electric apparatus, e.g. casings, screenings, which are covered by subclass [H05K](#) or the relevant subclass in section [HH](#).
3. Attention is drawn to the Notes following the title of section [GG](#), especially as regards to the definition of the term "measuring" in Note (2) following the title of class [G01](#).

G12B 5/00

Adjusting position or attitude, e.g. level, of instruments or other apparatus, or of parts thereof (levels [per se](#) [per se](#) [G01C 9/00](#)); Compensating for the effects of tilting or acceleration, e.g. for optical apparatus

G12B 17/00

Screening (insulation or other protection of buildings [E04B](#); emergency protection of apparatus in general [F16P 7/00](#); in connection with acoustic waves [G10K 11/00](#); in connection with nuclear radiation [G21F](#))

NOTE

This group ~~covers~~[covers](#):

- the protection of instruments or other apparatus from external radiation or other influences;
- the prevention of the emission of undesirable radiation or other influences by instruments or other apparatus.

Project: N/A (G21C)**G21C 9/00**

Emergency protection arrangements structurally associated with the reactor {, e.g. safety valves provided with pressure equalisation devices} (emergency cooling arrangements [G21C 15/18](#))

G21C 9/001

- {against explosions, e.g. blast shields}

G21C 9/02

- Means for effecting very rapid reduction of the reactivity factor under fault conditions, e.g. reactor fuse; {Control elements having arrangements activated in an emergency} (control elements ~~per se~~[per se](#) [G21C 7/00](#))

U G21C 15/00

Cooling arrangements within the pressure vessel containing the core; Selection of specific coolants

G21C 15/28

- Selection of specific coolants (if serving as the moderator [G21C 5/12](#); compositions ~~per se~~[per se](#) [C09K 5/00](#); {organic coolants [G21C 5/123](#)}); {Additions to the reactor coolants, e.g. against moderator corrosion (purification and regeneration of the reactor coolants [G21C 19/30](#))}

G21C 21/00

Apparatus or processes specially adapted to the manufacture of reactors or parts thereof (in general section [B B](#), e.g. [B23](#))

Project: N/A (G21D)**U G21D 7/00**

Arrangements for direct production of electric energy from fusion or fission reactions (obtaining electric energy from radioactive sources [G21H 1/00](#))

G21D 7/04

- using thermoelectric elements {or thermoionic converters} (structural combination of fuel element with thermoelectric element {or with thermoionic converters} [G21C 3/40](#) {, [G21H 1/10](#)}; thermoelectric elements ~~per se~~[per se](#) [H01L 35/00](#), [H01L 37/00](#))

Project: N/A (G21F)**U G21F 7/00**

Shielded cells or rooms (chambers provided with manipulating devices in general [B25J](#))

G21F 7/02

- Observation devices permitting vision but shielding the observer {(optical systems ~~per se~~[per se](#) [G02](#))}

Project: N/A (G21J)**G21J**

NUCLEAR EXPLOSIVES; APPLICATIONS THEREOF (electric or magnetic analogue computers, e.g. simulators, for nuclear physics [G06G 7/54](#))

NOTE

This subclass ~~covers~~[covers](#) uncontrollable fission or fusion reactions.

Project: N/A (H)

H

ELECTRICITYNOTE

These notes cover the basic principles and general instructions for use of section **H**.

Section **H** covers :

- a. basic electric elements, which cover all electric units and the general mechanical structure of apparatus and circuits, including the assembly of various basic elements into what are called printed circuits and also cover to a certain extent the manufacture of these elements (when not covered elsewhere);
- b. generation of electricity, which covers the generation, conversion, and distribution of electricity together with the controlling of the corresponding gear;
- c. applied electricity, which covers :
 - i. general utilisation techniques, viz. those of electric heating and electric lighting circuits;
 - ii. some special utilisation techniques, either electric or electronic in the strict sense, which are not covered by other sections of the Classification, including :
 1. electric light sources, including lasers;
 2. electric X-ray technique;
 3. electric plasma technique and the generation and acceleration of electrically charged particles or neutrons;
- d. basic electronic circuits and their control;
- e. radio or electric communication technique, including electromechanical transducers in general;
- f. the use of a specified material for the manufacture of the article or element described. In this connection, paragraphs 56 to 58 of the Guide should be referred to.

In this section, the following general rules apply :

- a. subject to the exceptions stated in I (c) above, any electric aspect or part peculiar to a particular operation, process, apparatus, object, or article classified in one of the sections of the Classification other than section **H** is always classified in the subclass for that operation, process, apparatus, object, or article, or where common characteristics concerning technical subjects of similar nature have been brought out at class level, it is classified, in conjunction with the operation, process, apparatus, object, or article in a subclass which covers entirely the general electrical applications for the technical subject in question;
- b. such electrical applications, either general or particular, include
 - i. the therapeutic processes and apparatus, in class **A61**;
 - ii. the electric processes and apparatus used in various laboratory or industrial operations, in classes **B01**, **B03**, and subclass **B23K**;
 - iii. the electricity supply, electric propulsion and electric lighting of vehicles in general and of particular vehicles, in the "Transporting" subsection of section **B**;
 - iv. the electric ignition systems of internal-combustion engines, in subclass **F02P**, and of combustion apparatus in general, in subclass **F23Q**;
 - v. the whole electrical part of section **G**, i.e. measuring devices including apparatus for measuring electric variables, checking, signalling, and calculating. Electricity in that section is generally dealt with as a means and not as an end in itself;
- c. all electrical applications, both general and particular, presuppose that the "basic electricity" aspect appears in section **H** (see 1 (a))

above) as regards the electric "basic elements" which they comprise. This rule is also valid for applied electricity, referred to under 1 (c) above, which appears in section [HH](#) itself.

In this section, the following special cases occur :

- a. among the general applications covered by sections other than section [HH](#), it is worth noting that electric heating in general is covered by subclasses [F24D](#) or [F24H](#) or class [F27](#), and that electric lighting in general is partly covered by class [F21](#), since in section [HH](#) ([see see](#) 1 (c) above) there are places in [H05B](#) which cover the same technical subjects;
- b. in the above two cases, the subclasses of section [FE](#), which deal with the respective subjects, essentially cover in the first place the whole mechanical aspect of the apparatus or devices, whereas the electrical aspect, as such, is covered by subclass [H05B](#);
- c. in the case of lighting, this mechanical aspect should be taken to cover the material arrangement of the various electric elements, i.e. their geometrical, or physical, position in relation to one another; this is covered by subclass [F21V](#), the elements themselves and the primary circuits remaining in section [HH](#). The same applies to electric light sources, when combined with light sources of a different kind. These are covered by subclass [H05B](#), whereas the physical arrangement which their combination constitutes is covered by the various subclasses of class [F21](#);
- d. as regards heating, not only the electric elements and circuitry designs, as such, are covered by subclass [H05B](#), but also the electric aspects of their arrangement, where these concern cases of general application; electric furnaces being considered as such. The physical disposition of the electric elements in furnaces is covered by section [FE](#). If a comparison is made with electric welding circuits which are covered by subclass [B23K](#) in connection with welding, it can be seen that electric heating is not covered by the general rule stated in 2 above.

Project: N/A (H01B)

U H01B 9/00

Power cables

- U H01B 9/02
 - with screens or conductive layers, e.g. for avoiding large potential gradients
- H01B 9/021
 - {Features relating to screening tape [per-se](#)[per se](#)}

U H01B 11/00

Communication cables or conductors (waveguides [H01P](#))

- U H01B 11/02
 - Cables with twisted pairs or quads (transposing, crossing or twisting at joints [H04B](#); balancing of earth capacitance [H04B](#))
- U H01B 11/06
 - • with means for reducing effects of electromagnetic or electrostatic disturbances, e.g. screen (screening in general [H05K 9/00](#))
- U H01B 11/10
 - • • Screens specially adapted for reducing interference from external sources
- H01B 11/1008
 - • • {Features relating to screening tape [per-se](#)[per se](#)}
- H01B 11/12
 - • Arrangements for exhibiting specific transmission characteristics (loading coils [per-se](#)[per se](#) [H01F 17/08](#); coil-loaded circuits [H04B](#))

Project: N/A (H01C)

U H01C 13/00

Resistors not provided for elsewhere

- H01C 13/02
 - Structural combinations of resistors (impedance networks [per-se](#)[per se](#) [H03H](#))

- U H01C 17/00** Apparatus or processes specially adapted for manufacturing resistors (providing fillings for housings or enclosures [H01C 1/02](#); reducing insulation surrounding a resistor to powder [H01C 1/03](#); manufacture of thermally variable resistors [H01C 7/02](#), [H01C 7/04](#))
- U H01C 17/22 • adapted for trimming
- U H01C 17/24 • • by removing or adding resistive material ([H01C 17/23](#), [H01C 17/232](#), [H01C 17/235](#) take precedence)
- H01C 17/2404 • • • {by charged particle impact, e.g. by electron or ion beam milling, sputtering, plasma etching}
- H01C 17/2412 • • • {by electrolytic treatment, e.g. electroplating (for anodic oxydation [H01C 17/262](#))}

Project: N/A (H01F)

- U H01F 1/00** Magnets or magnetic bodies characterised by the magnetic materials therefor; Selection of materials for their magnetic properties
- 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
- H01F 1/10 • • • • Non-metallic substances, e.g. ferrites {, e.g. [(Ba,Sr)O(Fe₂O₃)₆] ferrites with hexagonal structure}
- U H01F 1/12 • • • of soft-magnetic materials
- U H01F 1/34 • • • • Non-metallic substances, e.g. ferrites
- U H01F 1/342 • • • • • {Oxides ([H01F 1/36](#) and [H01F 1/38](#) take precedence)}
- H01F 1/344 • • • • • {Ferrites, e.g. having a cubic spinel structure (X₂+O)(Y₂₃+O₃), e.g. magnetite Fe₃O₄; e.g. magnetite-Fe₃O₄}
- H01F 1/42 • of organic or organo-metallic materials; {, e.g. graphene}([H01F 1/44](#) takes precedence)
- U 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 10/18 • • • being compounds
- U H01F 10/20 • • • • Ferrites
- H01F 10/22 • • • • • Orthoferrites {, e.g. RFeO₃ (R= rare earth element) with orthorhombic structure}
- U H01F 10/26 • characterised by the substrate or intermediate layers ({[H01F 10/06](#) and [H01F 10/32](#) take precedence})
- H01F 10/30 • • characterised by the composition of the intermediate layers {, e.g. seed, buffer, template, diffusion preventing, cap layers ([H01F 10/06](#) and [H01F 10/32](#) take precedence)}
- U H01F 41/00** Apparatus or processes specially adapted for manufacturing or assembling magnets, inductances or transformers; Apparatus or processes specially adapted for manufacturing materials characterised by their magnetic properties
- U H01F 41/02 • for manufacturing cores, coils, or magnets ([H01F 41/14](#) takes precedence; for dynamo-electric machines [H02K 15/00](#))
- H01F 41/0206 • • {Manufacturing of magnetic cores by mechanical means (magnetic cores ~~per se~~ [H01F 27/24](#))}

- U 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](#) - [H01F 41/24](#), and over group [H01F 41/32](#)
- H01F 41/16
- • the magnetic material being applied in the form of particles, e.g. by serigraphy {, i.e. forming thick magnetic films and precursors therefor, e.g. magnetisable pastes, inks, glass frits ([H01F 41/18](#) - [H01F 41/24](#) take precedence; thick magnetic films [H01F 1/0027](#))}
- U H01F 41/24
- • from liquids
- H01F 41/26
- • • using electric currents {, e.g. electroplating}
- U H01F 41/32
- for applying conductive, insulating or magnetic material on a magnetic film {, specially adapted for a thin magnetic film}
- H01F 41/325
- • {applying a noble metal capping on a spin-exchange-coupled multilayer, e.g. spin filter deposition}
- WARNING
This groups is not complete pending the completion of reclassification; see provisionally also [H01F 41/32](#)

Project: N/A (H01G)

- 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
- U H01G 4/06
- • • Solid dielectrics
- U H01G 4/08
- • • • Inorganic dielectrics
- H01G 4/12
- • • • • Ceramic dielectrics {([H01G 4/085](#) takes precedence; ceramic materials ~~per se~~ [per se C04B 35/00](#))}
- 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
- U H01G 9/04
- • Electrodes {or formation of dielectric layers thereon}
- H01G 2009/0404
- • • {characterised by the material (alloys in general ~~see~~ [see C22C](#))}
- U H01G 11/00** **Hybrid capacitors, i.e. capacitors having different positive and negative electrodes; Electric double-layer [EDL] capacitors [EDLCs]; Processes specially adapted for the manufacture thereof or of parts thereof**
- NOTE
Group [H01G 11/02](#) takes precedence over groups [H01G 11/04](#) - [H01G 11/14](#)
- U H01G 11/22
- Electrodes
- U H01G 11/26
- • characterised by the structures of the electrodes, e.g. multi-layered, shapes, dimensions, porosities or surface features
- H01G 11/28
- • • arranged or disposed on a current collector; Layers or phases between electrodes and current collectors, e.g. adhesives

Project: N/A (H01H)

H01H

ELECTRIC SWITCHES; RELAYS; SELECTORS; EMERGENCY PROTECTIVE DEVICES (contact cables [H01B 7/10](#); overvoltage protection resistors, resistive arresters [H01C 7/12](#), [H01C 8/04](#); electrolytic self-interrupters [H01G 9/18](#); switching devices of the waveguide type [H01P](#); devices for interrupted current collection [H01R 39/00](#); overvoltage arresters using spark gaps [H01T 4/00](#); emergency protective circuit arrangements [H02H](#); switching by electronic means without contact-making [H03K 17/00](#))

NOTES

1.

Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "micro-structural devices" and micro-structural systems"

2. This subclass ~~covers~~[covers](#) (in groups [H01H 69/00](#) - [H01H 87/00](#)) devices for the protection of electric lines or electric machines or apparatus in the event of undesired change from normal electric working conditions, the electrical condition serving directly as the input to the device.

3. This subclass ~~does not cover~~[does not cover](#) bases, casings, or ~~covers~~[covers](#) accomodating two or more switching devices or for accomodating a switching device as well as another electric component, e.g. bus-bar, line connector. Those bases, casings or ~~covers~~[covers](#) are covered by group [H02B 1/26](#).

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

- "relay" means a switching device having contacts which are operated from electric inputs which supply, directly or indirectly, all the mechanical energy necessary to cause both the closure and the opening of the contacts;
- "driving mechanism" refers to the means by which an operating force applied to the switch is transmitted to the moving contact or contacts;
- "operating" is used in a broader sense than "actuating" which is reserved for those parts not touched by hand to effect switching;
- "acting" or "action" means a self-induced movement of parts at one stage of the switching.

These connotations apply to all parts of the verbs "to operate", "to actuate" and "to act" and to words derived therefrom, e.g. to "actuation".

5. In this subclass, details are classified as follows :

- details of an unspecified type of switching device, or disclosed as applicable to two or more kinds of switching devices designated by the terms or expressions "switches", "relays", "selector switches", and "emergency protective devices", are classified in groups [H01H 1/00](#) - [H01H 9/00](#);
- details of an unspecified type of switch, or disclosed as applicable to two or more types of switches as defined by groups [H01H 13/00](#) - [H01H 43/00](#) and sub-groups [H01H 35/02](#), [H01H 35/06](#), [H01H 35/14](#), [H01H 35/18](#), [H01H 35/24](#) and [H01H 35/42](#), all hereinafter called basic types, are classified in groups [H01H 1/00](#) - [H01H 9/00](#);
- details of an unspecified type of relay, or disclosed as applicable to two or more types of relays as defined by groups [H01H 51/00](#) - [H01H 61/00](#), hereinafter called basic types are classified in [H01H 45/00](#);
- details of an unspecified protective device, or applicable to two or more types of protective devices as defined by groups [H01H 73/00](#) - [H01H 83/00](#), hereinafter called basic types, are classified in [H01H 71/00](#).
- However, details only described with reference to, or clearly only applicable to, switching devices of a single basic type, are classified in the group appropriate to switching devices of that basic type, e.g. [H01H 19/02](#), [H01H 75/04](#);
- mechanical structural details of control members of switches or of keyboards such as keys, push-buttons, levers or other mechanisms

for transferring the force to the activated elements are classified in this subclass, even when they are used for controlling electronic switches. However, mechanical details directly producing electronic effects are classified in group [H03K 17/94](#).

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 :

[H01H 33/575](#) covered by [H01H 33/56](#)

[H01H 33/825](#) " [H01H 33/82](#)

[H01H 33/835](#) " [H01H 33/83](#)

[H01H 33/867](#) " [H01H 33/86](#)

[H01H 33/873](#) " [H01H 33/86](#)

[H01H 33/915](#) " [H01H 33/91](#)

[H01H 33/985](#) " [H01H 33/98](#)

[H01H 33/99](#) " [H01H 33/98](#)

U H01H 1/00

Contacts (liquid contacts [H01H 29/04](#))

- U H01H 1/0015
 - {Means for testing or for inspecting contacts, e.g. wear indicator (measuring circuits [G01R 31/3274](#))}
- H01H 2001/0026
 - • {wherein one or both contacts contain embedded contact wear signal material, e.g. radioactive material being released as soon as the contact wear reaches the embedded layer}
- U H01H 1/12
 - characterised by the manner in which co-operating contacts engage
- U H01H 1/36
 - • by sliding (by rolling or wrapping [H01H 1/16](#))
- U H01H 1/40
 - • • Contact mounted so that its contact-making surface is flush with adjoining insulation
- H01H 1/403
 - • • • {Contacts forming part of a printed circuit (multilayer keyboard switches [H01H 13/702](#); thumbwheel switches [H01H 19/001](#); for rotary switches with axial contact pressure [H01H 19/585](#); printed contacts ~~per se~~ [per se](#) [H05K](#))}

U H01H 3/00

Mechanisms for operating contacts (snap-action arrangements [H01H 5/00](#); devices for introducing a predetermined time delay [H01H 7/00](#); {for tap changers [H01H 9/0027](#)}; thermal actuating or release means [H01H 37/02](#))

- U H01H 3/22
 - Power arrangements internal to the switch for operating the driving mechanism
- U H01H 3/30
 - • using spring motor
- U H01H 3/3005
 - • • {Charging means}
- H01H 3/3026
 - • • • {in which the closing spring charges the opening spring or ~~vice versa~~ [vice versa](#)}

U H01H 9/00

Details of switching devices, not covered by groups [H01H 1/00](#) - [H01H 7/00](#) (casings for switchgear [H02B 1/26](#); casings for electrical apparatus in general [H05K 5/00](#))

- H01H 2009/0083
 - {using redundant components, e.g. two pressure tubes for pressure switch}
- U H01H 9/30
 - Means for extinguishing or preventing arc between current-carrying parts
- H01H 9/46
 - • using arcing-horn (using blow-out magnet [H01H 9/44](#); arcing-horns ~~per se~~ [per se](#) [H01T 4/14](#))

U H01H 11/00	Apparatus or processes specially adapted for manufacture of electric switches (processes specially adapted for manufacture of rectilinearly movable switches having a plurality of operating members associated with different sets of contacts, e.g. keyboards, H01H 13/88; processes or apparatus specially adapted for the manufacture or treatment of micro-structural devices or systems, e.g. in combination with electrical devices, B81C)
U H01H 11/0006 H01H 11/0012	<ul style="list-style-type: none"> • {for converting electric switches (H01H 13/564 takes precedence)} • {for converting normally open to normally closed switches and vice-versavice versa}
U H01H 13/00	Switches having rectilinearly-movable operating part or parts adapted for pushing or pulling in one direction only, e.g. push-button switch (wherein the operating part is flexible H01H 17/00)
H01H 13/70	<ul style="list-style-type: none"> • having a plurality of operating members associated with different sets of contacts, e.g. keyboard ({keyboards specially adapted for specific applications, seesee the relevant subclasses or groups, e.g. B41J, G06F 3/023, H04L 17/00, H04M 1/00; multiple switches specially adapted for electromechanical clocks or watches G04C 3/005}; mounting together a plurality of independent switches H02B)
U H01H 33/00	High-tension or heavy-current switches with arc-extinguishing or arc-preventing means
U H01H 33/02 H01H 33/021	<ul style="list-style-type: none"> • Details • {Use of solid insulating compounds resistant to the contacting fluid dielectrics and their decomposition products, e.g. to SF₆ (insulators or insulating bodies characterised by the insulating materials, selection of materials for their insulating or dielectric properties per seper se H01B 3/00)}
U H01H 33/04	<ul style="list-style-type: none"> • Means for extinguishing or preventing arc between current-carrying parts (for switches in general H01H 9/30)
H01H 33/20	<ul style="list-style-type: none"> • using arcing horns (using blow-out magnet H01H 33/18; arcing horns per seper se H01T 4/14)
U H01H 33/70	<ul style="list-style-type: none"> • Switches with separate means for directing, obtaining, or increasing flow of arc-extinguishing fluid
U H01H 33/88	<ul style="list-style-type: none"> • the flow of arc-extinguishing fluid being produced or increased by movement of pistons or other pressure-producing parts
U H01H 33/90	<ul style="list-style-type: none"> • this movement being effected by or in conjunction with the contact-operating mechanism
H01H 2033/908	<ul style="list-style-type: none"> • {using valves for regulating communication between, e.g. arc space, hot volume, compression volume, surrounding volume}
U H01H 37/00	Thermally-actuated switches (electrothermal relays operated by electrical input H01H 61/00; protective switches with electrothermal release or actuation H01H 73/00 - H01H 83/00)
H01H 37/72	<ul style="list-style-type: none"> • Switches in which the opening movement and the closing movement of a contact are effected respectively by heating and cooling or vice-versavice versa
U H01H 61/00	Electrothermal relays (thermal switches not operated by electrical input, thermal switches with anticipating electrical input H01H 37/00; thermally-sensitive members H01H 37/32)
U H01H 61/002	<ul style="list-style-type: none"> • {Structural combination of a time delay electrothermal relay with an electrothermal protective relay, e.g. a start relay}
H01H 2061/004	<ul style="list-style-type: none"> • {PTC resistor in series with start winding, e.g. adapted for being switched off after starting for limiting power dissipation}

- U H01H 71/00** **Details of the protective switches or relays covered by groups [H01H 73/00](#) - [H01H 83/00](#)**
- U H01H 71/02 · Housings; Casings; Bases; Mountings
- U H01H 71/0207 · · {Mounting or assembling the different parts of the circuit breaker}
- H01H 71/0235 · · · {Contacts and the arc extinguishing space inside individual separate cases, which are positioned inside the housing of the circuit breaker (Cassettes for rotating bridges ~~see~~[see](#) [H01H 1/2058](#))}
- U H01H 73/00** **Protective overload circuit-breaking switches in which excess current opens the contacts by automatic release of mechanical energy stored by previous operation of a hand reset mechanism**
- U H01H 73/02 · Details
- U H01H 73/04 · · Contacts
- H01H 73/045 · · · {Bridging contacts (specific details for the contacting bridge ~~per se~~[per se](#) [H01H 1/20](#) and subgroups, e.g. rotating bridge [H01H 1/2041](#))}
- U H01H 2300/00** **Orthogonal indexing scheme relating to electric switches, relays, selectors or emergency protective devices covered by [H01H](#)**
- H01H 2300/044 · Application rejection 1: coded interacting surfaces, polarising, e.g. to avoid insertion of a circuit breaker or fuse or relay or rating plug of the wrong caliber or in the wrong direction
- H01H 2300/052 · Controlling, signalling or testing correct functioning of a switch (~~see~~[see](#) also [H01H 2300/056](#) - [H01H 2300/066](#) and [H01H 11/0062](#))

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~~[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](#) - [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)
	H01J 1/53	• Electrodes intimately associated with a screen on or from which an image or pattern is formed, picked up, converted, or stored {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/54	• Screens on or from which an image or pattern is formed, picked up, converted, or stored; Luminescent coatings on vessels {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/56	• • acting as light valves by shutter operation, e.g. for eidophor {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/58	• • acting by discolouration, e.g. halide screen {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/60	• • Incandescent screens {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/62	• • Luminescent screens; Selection of materials for luminescent coatings on vessels {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/63	• • • characterised by the luminescent material (luminescent materials or compositions C09K 11/00 {see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/64	• • • characterised by the binder or adhesive for securing the luminescent material to its supports {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/66	• • • Supports for luminescent material (vessels H01J 5/02 {see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/68	• • • with superimposed luminescent layers {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/70	• • • with protective, conductive, or reflective layers {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/72	• • • with luminescent material discontinuously arranged, e.g. in dots or lines {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/74	• • • • with adjacent dots or lines of different luminescent material {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/76	• • • provided with permanent marks or references {(see see provisionally also H01J 29/08 - H01J 29/36)}
	H01J 1/78	• • Photoelectric screens; Charge-storage screens {(see see provisionally also H01J 29/08 - 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 3/04	• Ion guns {(see see provisionally also H01J 27/00)}
	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 see provisionally also H01J 29/46 - H01J 29/84)}

- H01J 3/07
 - Arrangements for controlling convergence of a plurality of beams {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/08
 - Arrangements for controlling intensity of ray or beam ([H01J 3/02](#), [H01J 3/04](#) take precedence {[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)})
- H01J 3/10
 - Arrangements for centering ray or beam ([H01J 3/02](#), [H01J 3/04](#) take precedence {[see see](#) provisionally also [H01J 29/46](#) - [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 see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)})
- H01J 3/14
 - Arrangements for focusing or reflecting ray or beam ([H01J 3/02](#), [H01J 3/04](#) take precedence {[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)})
- H01J 3/16
 - Mirrors {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/18
 - Electrostatic lenses {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/20
 - Magnetic lenses {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/22
 - • using electromagnetic means only {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/24
 - • using permanent magnets only {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- U 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](#) - [H01J 29/84](#) and [H01J 37/147](#) take precedence })
- H01J 3/28
 - • along one straight line or along two perpendicular straight lines {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/30
 - • by electric fields only {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/32
 - • by magnetic fields only {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/34
 - • along a circle, spiral, or rotating radial line {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/36
 - Arrangements for controlling the ray or beam after passing the main deflection system, e.g. for post-acceleration or post-concentration {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- H01J 3/38
 - Mounting, supporting, spacing, or insulating electron-optical or ion-optical arrangements {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- U H01J 3/381
 - {Dispersed generators}
- H01J 3/388
 - • {using fuel cells (fuel cells [per se](#) [per se](#) [H01M 8/00](#))}
- H01J 3/40
 - Traps for removing or diverting unwanted particles, e.g. negative ions, fringing electrons; Arrangements for velocity or mass selection {{[see see](#) provisionally also [H01J 29/46](#) - [H01J 29/84](#)}}
- 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 see](#) provisionally [H01J 29/84](#)})
- U 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 9/20
 - Manufacture of screens on or from which an image or pattern is formed, picked up, converted or stored; Applying coatings to the vessel

- U H01J 9/22
 - • Applying luminescent coatings
- U H01J 9/227
 - • • with luminescent material discontinuously arranged, e.g. in dots or lines
- H01J 9/2276
 - • • • {Development of latent electrostatic images (~~per se~~ ~~per se~~ [G03G 15/06](#))}
- H01J 9/233
 - • Manufacture of photo-electric screens or charge-storage screens {(no documents, ~~see~~ ~~see~~ [H01J 29/36](#))}
- U H01J 17/00**

Gas-filled discharge tubes with solid cathode ([H01J 25/00](#), [H01J 27/00](#), [H01J 31/00](#) - [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 17/38
 - Cold-cathode tubes (TR boxes [H01J 17/64](#))
- U H01J 17/48
 - • with more than one cathode or anode, e.g. sequence-discharge tube, counting tube, dekatron
- H01J 17/49
 - • • Display panels, e.g. with crossed electrodes {, e.g. making use of direct current}(gas discharge type indicating arrangements effected by the combination of a number of individual lamps [G09F 9/313](#) {display panels making use of alternating current [H01J 11/00](#))}
- 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~~ ~~see~~ [H01J 5/46](#) - [H01J 5/62](#))}
- U H01J 29/00**

Details of cathode-ray tubes or of electron-beam tubes of the types covered by group [H01J 31/00](#)
- H01J 29/46
 - 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](#))}
- U 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 29/762
 - • • • • {using saddle coils or printed windings (coils ~~per se~~ ~~per se~~ [H01F](#))}
- H01J 29/768
 - • • • • {using printed windings (printed windings in general [H01F 27/2804](#); manufacturing printed coils ~~per se~~ ~~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 29/80
 - • Arrangements for controlling the ray or beam after passing the main deflection system, e.g. for post-acceleration or post-concentration, for colour switching {([H01J 29/701](#) takes precedence)}
- H01J 29/81
 - • • using shadow masks (shadow masks ~~per se~~ ~~per se~~ [H01J 29/07](#))
- U H01J 29/86**

Vessels; Containers; Vacuum locks
- H01J 29/865
 - • {Vacuum locks (for tubes for examining or processing of objects or materials, e.g. electron microscopes [H01J 37/18](#))}
- H01J 29/94
 - Selection of substances for gas fillings; Means for obtaining or maintaining the desired pressure within the tube, e.g. by gettering {(exhausting, degassing, gettering of electric discharge tubes in general [H01J 9/38](#))}

- U 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~~ [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 31/50 • • Image-conversion or image-amplification tubes, i.e. having optical, X-ray, or analogous input, and optical output
- U H01J 31/501 • • • {with an electrostatic electron optic system ([H01J 31/52](#) - [H01J 31/56](#) take precedence)}
- H01J 31/502 • • • • {with means to interrupt the beam, e.g. shutter for high speed photography (circuits using electron-beam shutters [G03B 27/725](#))}
- U 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 37/244 • • Detectors; Associated components or circuits therefor (detectors ~~per se~~ [per se](#) [G01T](#))
- H01J 37/248 • • Components associated with high voltage supply ({Means for measuring the high voltage ~~per se~~ [per se](#) [G01R 15/00](#)} ; high voltage supply ~~per se~~ [per se](#) [H02J](#), [H02M](#))
- U 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](#))}
- U H01J 37/32082 • • • {Radio frequency generated discharge ([H01J 37/32357](#), [H01J 37/32366](#), [H01J 37/32394](#) and [H01J 37/32403](#) take precedence)}
- U H01J 37/32174 • • • • {Circuits specially adapted for controlling the RF discharge}
- H01J 37/32183 • • • • • {Matching circuits, impedance matching circuits ~~per se~~ [per se](#) [H03H 7/38](#) and [H03H 7/40](#)}
- H01J 37/32357 • • • {Generation remote from the workpiece, [e.g. down-stream](#)}; ~~e.g. down-stream~~}
- H01J 37/32403 • • • {Treating multiple sides of workpieces, [e.g. 3D workpieces](#)}; ~~e.g. 3D workpieces~~}
- U H01J 37/32431 • • {Constructional details of the reactor}

- U 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}
- U H01J 37/32853
 - • • • {Hygiene}
- H01J 37/32862
 - • • • • {~~In situ~~ [In situ](#) cleaning of vessels and/or internal parts}
- 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~~ [per se](#) [H01J 49/00](#) {not used, [see](#) [see](#) [G01L 21/30](#)})
- 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.
- H01J 49/0022
 - {Portable spectrometers, e. g. devices comprising independent power supply, constructional details relating to portability (small scale devices ~~per se~~ [per se](#) [H01J 49/0013](#) and [H01J 49/0018](#))}
- U H01J 49/02
 - Details
- H01J 49/022
 - • {Circuit arrangements, e.g. for generating deviation currents or voltages (regulating electric or magnetic variables in general, e.g. current, magnetic field [G05F](#)); Components associated with high voltage supply (high voltage supply ~~per se~~ [per se](#) [H02M](#))}
- H01J 49/025
 - • {Detectors specially adapted to particle spectrometers (data acquisition [H01J 49/0036](#); detectors ~~per se~~ [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
- U H01J 49/0459
 - • • {for solid samples}
- H01J 49/0463
 - • • • {Desorption by laser or particle beam, followed by ionisation as a separate step (sample holder ~~per se~~ [per se](#) [H01J 49/0418](#))}
- H01J 49/0495
 - • • {Vacuum locks; Valves (valves ~~per se~~ [per se](#) [F16K](#))}
- U H01J 49/10
 - • Ion sources; Ion guns
- U H01J 49/16
 - • • using surface ionisation, e.g. field-, thermionic- or photo-emission
- U H01J 49/165
 - • • • {Electrospray ionisation}
- H01J 49/167
 - • • • • {Capillaries and nozzles specially adapted therefor; (electrostatic spraying ~~per se~~ [per se](#) [B05B 5/00](#))}
- H01J 49/168
 - • • • • {field ionisation, e.g. corona discharge (atmospheric pressure corona discharge ~~per se~~ [per se](#) [H01T 19/00](#))}
- U H01J 49/44
 - Energy spectrometers, e.g. alpha-, beta-spectrometers
- U H01J 49/46
 - • Static spectrometers
- H01J 49/466
 - • • {using crossed electric and magnetic fields perpendicular to the beam, e.g. Wien filter ([see](#) [see](#) also [H01J 49/288](#))}
- 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](#) [see](#) also [H01J 29/00](#)})

- U H01J 2225/00 Transit-time tubes, e.g. Klystrons, travelling-wave tubes, magnetrons**
- U H01J 2225/02 • Tubes with electron stream modulated in velocity or density in a modulator zone and thereafter giving up energy in an inducing zone, the zones being associated with one or more resonators
- H01J 2225/04 • • Tubes having one or more resonators, without reflection of the electron stream, and in which the modulation produced in the modulator zone is mainly density modulation, e.g. Heaff tube

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](#) - [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](#) - [H01J 2237/2487](#)
Imaging or analysing: [H01J 2237/25](#) - [H01J 2237/2857](#)
particle beam processing: [H01J 2237/30](#) - [H01J 2237/31798](#)
plasma processing: [H01J 2237/32](#) - [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](#))

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~~[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 of 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~~ 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

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

[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](#) - [H01L 29/365](#)
[H01L 29/96](#) covered by [H01L 29/68](#) - [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](#)

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](#) - [H01L 51/00](#) or of parts thereof, **see** **see** these groups; single-step processes covered by other subclasses, **see** **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 21/02002

- Manufacture or treatment of semiconductor devices or of parts thereof
- • {Preparing wafers}

NOTES

1. This group ~~covers~~**covers** processes for manufacturing wafers prior to the fabrication of any device, i.e. between the sawing of ingots (covered by [B28D](#)) and the cleaning of substrates (covered by [H01L 21/02041](#)).
2. This group ~~does not cover~~**does not cover**:
 - simple use of grinding or polishing machines [B24B](#)
 - thermal smoothening [H01L 21/324](#)

- U H01L 21/02104
- • {Forming layers (deposition in general [C23C](#); crystal growth in general [C30B](#))}
- WARNING
Groups [H01L 21/02104](#) – [H01L 21/02694](#) are incomplete pending reclassification of documents from groups [H01L 21/06](#), [H01L 21/16](#), and [H01L 21/20](#).
Groups [H01L 21/02104](#) – [H01L 21/02694](#), [H01L 21/06](#), [H01L 21/20](#), and [H01L 21/16](#) should be considered in order to perform a complete search.
- U H01L 21/02107
- • • {Forming insulating materials on a substrate}
- WARNING
Groups [H01L 21/02107](#) – [H01L 21/02326](#) are incomplete pending reclassification of documents from groups [H01L 21/312](#), [H01L 21/314](#), [H01L 21/316](#), and [H01L 21/318](#).
Groups [H01L 21/02107](#) – [H01L 21/02326](#), [H01L 21/312](#), [H01L 21/314](#), [H01L 21/316](#), and [H01L 21/318](#) should be considered in order to perform a complete search.
- U H01L 21/02109
- • • • {characterised by the type of layer, e.g. type of material, porous/non-porous, pre-cursors, mixtures or laminates}
- U 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 21/02118
- • • • • {carbon based polymeric organic or inorganic material, e.g. polyimides, poly cyclobutene or PVC (polymers ~~per se~~ [per se](#) [C08G](#), photoresist ~~per se~~ [per se](#) [G03F](#))}
- U H01L 21/02123
- • • • • {the material containing silicon}
- H01L 21/02164
- • • • • • {the material being a silicon oxide, e.g. SiO₂}
- NOTE
The formation of silicon oxide layers is classified in this group regardless of the precursor or of the process of formation; in case of explicit statements on doping, on rest-groups, or on material components ~~see~~[see](#) [H01L 21/02126](#) and subgroups; deposition of silicon oxide from organic precursors without further statements on film composition is classified here and in [H01L 21/02205](#) and subgroups
- U H01L 21/02205
- • • • • {the layer being characterised by the precursor material for deposition}
- U H01L 21/02208
- • • • • • {the precursor containing a compound comprising Si}
- H01L 21/02214
- • • • • • • {the compound comprising silicon and oxygen}
- NOTE
This group ~~does not cover~~ [does not cover](#) mixtures of a silane and oxygen
- H01L 21/02219
- • • • • • • {the compound comprising silicon and nitrogen}
- NOTE
This group ~~does not cover~~ [does not cover](#) mixtures of silane and nitrogen
- U H01L 21/02225
- • • • • {characterised by the process for the formation of the insulating layer}
- H01L 21/0226
- • • • • • {formation by a deposition process (~~per se~~ [per se](#) [C23C](#))}

- U H01L 21/02282 {liquid deposition, e.g. spin-coating, sol-gel techniques, spray coating}
- H01L 21/02288 {printing, e.g. ink-jet printing (~~per se~~ ~~per se~~ B41J)}
- H01L 21/02293 {formation of epitaxial layers by a deposition process (epitaxial growth ~~per se~~ ~~per se~~ C30B)}
- NOTE
Formation of non-epitaxial layers by MBE, ALE, etc. is not covered by this group; for MBE ~~see~~ ~~see~~ H01L 21/02269; for ALE ~~see~~ ~~see~~ H01L 21/0228
- 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~~ ~~see~~ H01L 21/02041 and subgroups; for etching processes ~~see~~ ~~see~~ H01L 21/311 and subgroups; for planarization processes ~~see~~ ~~see~~ H01L 21/31051 and subgroups; for processes to repair etch damage ~~see~~ ~~see~~ H01L 21/3105 and subgroups
- H01L 21/02299 {pre-treatment}
- NOTE
This group and subgroups cover treatments to improve adhesion or change the surface termination; for etching ~~see~~ ~~see~~ H01L 21/306 and subgroups and H01L 21/311 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~~ ~~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~~ ~~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)}
- U 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 21/0405
- • • {the devices having semiconductor bodies comprising semiconducting carbon, e.g. diamond, diamond-like carbon (multistep processes for the manufacture of said devices [H01L 29/66015](#))}
- NOTE
This group ~~covers~~[covers](#) passivation
- H01L 21/18
- • • the devices having semiconductor bodies comprising elements of the fourth group of the Periodic System or $A_{III}B_V$ compounds with or without impurities, e.g. doping materials {([H01L 21/041](#) - [H01L 21/0425](#), [H01L 21/045](#) - [H01L 21/048](#) take precedence)}
- NOTE
This group ~~covers~~[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 $A_{III}B_V$ compounds, even if the material used is not explicitly specified.
- U H01L 21/28
- • • • Manufacture of electrodes on semiconductor bodies using processes or apparatus not provided for in [H01L 21/20](#) - [H01L 21/268](#); {(etching for patterning the electrodes [H01L 21/311](#) and [H01L 21/3213](#))}
- U H01L 21/28008
- • • • • {Making conductor-insulator-semiconductor electrodes}
- H01L 21/28017
- • • • • {the insulator being formed after the semiconductor body, the semiconductor being silicon}
- NOTE
This group ~~covers~~[covers](#) deposition of the insulators, including epitaxial insulators, and the conductors within the same process or chamber
- U H01L 21/28158
- • • • • • {Making the insulator}
- U H01L 21/28167
- • • • • • • {on single crystalline silicon, e.g. using a liquid, i.e. chemical oxidation}
- H01L 21/28211
- • • • • • • • {in a gaseous ambient using an oxygen or a water vapour, e.g. RTO, possibly through a layer ([H01L 21/28194](#) and [H01L 21/28202](#) take precedence)}
- NOTE
thin oxidation layers used as a barrier layer or as a buffer layer, e.g. before the formation of a high-k insulator, are classified here only if important ~~per se~~[per se](#)
- U H01L 21/30
- • • • Treatment of semiconductor bodies using processes or apparatus not provided for in groups [H01L 21/20](#) - [H01L 21/26](#) (manufacture of electrodes thereon [H01L 21/28](#))
- U 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
- U H01L 21/3105
- • • • • • After-treatment
- U H01L 21/31051
- • • • • • • {Planarisation of the insulating layers ([H01L 21/31058](#) takes precedence)}
- U H01L 21/31053
- • • • • • • • {involving a dielectric removal step}
- H01L 21/31055
- • • • • • • • • {the removal being a chemical etching step, e.g. dry etching (etching ~~per se~~[per se](#) [H01L 21/311](#))}

- H01L 21/312
(Frozen)
- • • • • Organic layers, e.g. photoresist ([H01L 21/3105](#), [H01L 21/32](#) take precedence; {photoresists ~~per se~~ ~~per se~~ [G03C](#)})
- WARNING
Groups [H01L 21/312](#) – [H01L 21/3128](#) are no longer used for the classification of documents as of May 1, 2011. The content of these groups is being reclassified into groups [H01L 21/02107](#) – [H01L 21/02326](#).
Groups [H01L 21/02107](#) – [H01L 21/02326](#) should be considered in order to perform a complete search.
- 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](#) - [H01L 21/326](#) ({apparatus therefor [H01L 21/67005](#); insulative sealing of leads in bases [H01L 21/50](#) ; containers, encapsulations, fillings, mountings ~~per se~~ ~~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
- 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~~ ~~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~~ ~~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](#))}
- U 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 21/67092
- • • {Apparatus for mechanical treatment (or grinding or cutting, ~~see~~ ~~see~~ the relevant groups in subclasses [B24B](#) or [B28D](#))}
- H01L 21/67242
- • • {Apparatus for monitoring, sorting or marking (testing or measuring during manufacture [H01L 22/00](#), marks ~~per se~~ ~~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~~ ~~per se~~ [G05B 19/00](#), e.g. total factory control [G05B 19/418](#))}
- U 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](#))

- U 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 21/768
- Applying interconnections to be used for carrying current between separate components within a device {comprising conductors and dielectrics}
- NOTE**
- Groups [H01L 21/768](#) - [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 21/76801
- {characterised by the formation and the after-treatment of the dielectrics, e.g. smoothing}
- U H01L 21/76802
- {by forming openings in dielectrics}
- H01L 21/76816
- {Aspects relating to the layout of the pattern or to the size of vias or trenches (layout of the interconnections ~~per se~~ [H01L 23/528](#); CAD of ICs [G06F 17/50](#))}
- H01L 21/76819
- {Smoothing of the dielectric (planarisation of insulating materials ~~per se~~ [H01L 21/31051](#))}
- 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 21/76877
- {Filling of holes, grooves or trenches, e.g. vias, with conductive material}
- H01L 21/7688
- {by deposition over sacrificial masking layer, e.g. lift-off (lift-off ~~per se~~ [H01L 21/0272](#))}
- 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](#) - [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 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~~ *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](#) - [H01L 51/00](#), which details are covered by those groups.

- U 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](#)})
- H01L 23/10 • • characterised by the material or arrangement of seals between parts, ~~ween~~ *cap* e.g. between cap and base of the container or between leads and walls of the container
- U 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 23/29 • • characterised by the material {, e.g. carbon (interlayer dielectrics [H01L 23/5329](#))}
- U H01L 23/34 • Arrangements for cooling, heating, ventilating or temperature compensation; {Temperature sensing arrangements (thermal treatment apparatus [H01L 21/00](#))}
- U H01L 23/40 • • Mountings or securing means for detachable cooling or heating arrangements {(heating [H01L 23/345](#)); fixed by friction, plugs or springs}
- U H01L 23/4006 • • • {with bolts or screws}
- H01L 23/4012 • • • • {for stacked arrangements of a plurality of semiconductor devices (assemblies ~~per se~~ *per se* [H01L 25/00](#))}
- 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 23/488 • • consisting of soldered {or bonded} constructions {(bump connectors [H01L 24/01](#))}
- 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 23/49855 • • • • {for flat-cards, e.g. credit cards (cards ~~per se~~ *per se* [G06K 19/00](#))}
- 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~~ *per se* [H01L 23/12](#); {materials [H01L 23/49866](#)})
- H01L 23/5388 • • • {for flat cards, e.g. credit cards (cards ~~per se~~ *per se* [G06K 19/00](#))}

- 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](#) - [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 25/18
- the devices being of types provided for in two or more different subgroups of the same main group of groups [H01L 27/00](#) - [H01L 51/00](#) {(comprising devices provided for in [H01L 27/144](#) and subgroups, [see see H01L 27/144](#) and subgroups)}
- U 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](#) - [H01L 51/00](#); details thereof [H01L 23/00](#), [H01L 29/00](#) - [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.
- 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}
- U H01L 27/0207**
- • {Geometrical layout of the components, e.g. computer aided design; custom LSI, semi-custom LSI, standard cell technique}
- H01L 27/0211
- • • {adapted for requirements of temperature (cooling arrangements [per se](#) [per se H01L 23/34](#))}
- 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 27/105**
- • • including field-effect components
- NOTE
- In this group and its subgroups classification is made in any appropriate place
- U 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
- H01L 27/10802
- • • • • {comprising floating-body transistors, e.g. floating-body cells (floating-body transistors [per se](#) [per se H01L 29/7841](#))}
- U H01L 27/10844**
- • • • • {Multistep manufacturing methods}
- U H01L 27/10847**
- • • • • {for structures comprising one transistor one-capacitor memory cells}
- H01L 27/10873
- • • • • {with at least one step of making the transistor (making the transistor [per se](#) [per se H01L 29/66409](#))}

- U H01L 27/12
 - • the substrate being other than a semiconductor body, e.g. an insulating body
- U H01L 27/1214
 - • • {comprising a plurality of TFTs formed on a non-semiconducting substrate, e.g. driving circuits for AMLCDs}
- WARNING
- Group [H01L 27/1218](#) – [H01L 27/1296](#) are incomplete pending reclassification of documents from group [H01L 27/1214](#).
- Groups [H01L 27/1218](#) – [H01L 27/1296](#) and [H01L 27/1214](#) should be considered in order to perform a complete search.
- H01L 27/124
 - • • • {with a particular composition, shape or layout of the wiring layers specially adapted to the circuit arrangement, e.g. scanning lines in LCD pixel circuits (wiring structures ~~per se~~ per se [H01L 23/52](#))}
- U H01L 27/1259
 - • • • {Multistep manufacturing methods}
- U H01L 27/127
 - • • • • {with a particular formation, treatment or patterning of the active layer specially adapted to the circuit arrangement}
- H01L 27/1274
 - • • • • {using crystallisation of amorphous semiconductor or recrystallisation of crystalline semiconductor (crystallisation ~~per se~~ per se [H01L 21/02667](#))}
- U 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 27/14643
 - • • • {Photodiode arrays; MOS imagers}
- U H01L 27/14658
 - • • • • {X-ray, gamma-ray or corpuscular radiation imagers (measuring X-, gamma- or corpuscular radiation [G01T 1/00](#))}
- H01L 27/14663
 - • • • • • {Indirect radiation imagers, e.g. using luminescent members}
- U 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](#) - [H01L 29/51](#) and in groups [H01L 29/66](#) - [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}
 - U H01L 29/0657
 - • • {characterised by the shape of the body}
 - H01L 29/0665
 - • • {the shape of the body defining a nanostructure (nanotechnology ~~per se~~ ~~per se~~ B82B)}
 - 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~~ ~~per se~~ B82B; nanosized carbon materials, e.g. carbon nanotubes, ~~per se~~ ~~per se~~ C01B 31/0206)}
 - U H01L 29/43
 - • characterised by the materials of which they are formed
 - H01L 29/49
 - • • Metal-insulator-semiconductor electrodes, {e.g. gates of MOSFET (H01L 29/435 takes precedence)}
- NOTE
- This group ~~eovers~~~~covers~~ also devices using any other conductor material in place of metal
- U H01L 29/66
 - Types of semiconductor device; {Multistep manufacturing processes therefor}
 - 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 29/76
 - • • Unipolar devices, {e.g. field effect transistors}
 - U H01L 29/772
 - • • • Field effect transistors
 - U 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 29/7811
 - • • • • {with an edge termination structure (guard regions ~~per se~~ ~~per se~~ H01L 29/0619; field plates ~~per se~~ ~~per se~~ H01L 29/402)}
- WARNING
- Group H01L 29/7811 is incomplete pending reclassification of documents from group H01L 29/7802.
- Groups H01L 29/7811 and H01L 29/7802 should be considered in order to perform a complete search.
- H01L 29/7813
 - • • • • {with trench gate electrode, e.g. UMOS transistors (trench gate electrodes ~~per se~~ ~~per se~~ H01L 29/4236)}
 - U H01L 29/7816
 - • • • • {Lateral DMOS transistors, i.e. LDMOS transistors}
 - H01L 29/7823
 - • • • • {with an edge termination structure (guard regions ~~per se~~ ~~per se~~ H01L 29/0619; field plates ~~per se~~ ~~per se~~ H01L 29/402)}
 - H01L 29/7825
 - • • • • {with trench gate electrode (trench gate electrodes ~~per se~~ ~~per se~~ H01L 29/4236)}

- U 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 31/04** • adapted as photovoltaic [PV] conversion devices, e.g. PV modules or single PV cells (testing thereof during manufacture {[H01L 22/00](#)}; testing thereof after manufacture [H02S 50/10](#))
- U H01L 31/06** • • characterised by at least one potential-jump barrier or surface barrier
- H01L 31/061** • • • the potential barriers being of the point-contact type (~~H01L 31/07 takes precedence~~ [H01L 31/07 takes 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~~ [per se](#) [H05B 33/00](#))
- U H01L 31/16** • • the semiconductor device sensitive to radiation being controlled by the light source or sources
- U H01L 31/161** • • • {Semiconductor device sensitive to radiation without a potential-jump or surface barrier, e.g. photoresistors}
- H01L 31/162** • • • • {the light source being a semiconductor device with at least one potential-jump barrier or surface barrier, e.g. a light emitting diode}
- 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~~ [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.
- U H01L 33/02** • characterised by the semiconductor bodies
- H01L 33/04** • • with a quantum effect structure or superlattice, e.g. tunnel junction

H01L 33/48	<ul style="list-style-type: none"> characterised by the semiconductor body packages <p><u>NOTE</u></p> <p>This group coverscovers elements in intimate contact with the semiconductor body or integrated with the package</p>
U H01L 37/00	<p>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)</p>
H01L 37/02	<ul style="list-style-type: none"> using thermal change of dielectric constant, e.g. working above and below Curie point {, e.g. pyroelectric devices}
H01L 37/04	<ul style="list-style-type: none"> using thermal change of magnetic permeability, e.g. working above and below the Curie point {, e.g. pyromagnetic devices}
U H01L 41/00	<p>Piezo-electric devices in general; Electrostrictive devices in general; Magnetostrictive devices in general; Processes or apparatus specially adapted for 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)</p> <p><u>WARNING</u></p> <p>Groups H01L 41/23-H01L 41/47 are incomplete pending reclassification of documents from group H01L 41/22.</p> <p>Groups H01L 41/23-H01L 41/47 and H01L 41/22 should be considered in order to perform a complete search.</p>
U H01L 41/08	<ul style="list-style-type: none"> Piezo-electric or electrostrictive devices
H01L 41/09	<ul style="list-style-type: none"> • with electrical input and mechanical output {, e.g. actuators, vibrators (in frequency selective networks H03H 9/00)}
H01L 41/107	<ul style="list-style-type: none"> • with electrical input and electrical output {, e.g. transformers}
H01L 41/113	<ul style="list-style-type: none"> • with mechanical input and electrical output {, e.g. generators, sensors}
U H01L 41/16	<ul style="list-style-type: none"> Selection of materials
H01L 41/18	<ul style="list-style-type: none"> • for piezo-electric or electrostrictive devices {, e.g. bulk piezo-electric crystals}
H01L 41/187	<ul style="list-style-type: none"> • • Ceramic compositions {, i.e. synthetic inorganic polycrystalline compounds incl. epitaxial, quasi-crystalline materials}
H01L 41/193	<ul style="list-style-type: none"> • • Macromolecular compositions {, e.g. piezo-electric polymers}
U H01L 51/00	<p>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)</p>
H01L 51/0032	<ul style="list-style-type: none"> {Selection of organic semiconducting materials, e.g. organic light sensitive or organic light emitting materials} <p><u>NOTE</u></p> <p>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.</p>

For the materials ~~per se~~~~per se~~, ~~see~~~~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](#)

- | | |
|-----------------------|---|
| H01L 51/0034 | • {Organic polymers or oligomers (organic macromolecular compounds or compositions per se per se C08)} |
| H01L 51/0035 | • • {comprising aromatic, heteroaromatic, or arrayic chains, e.g. polyaniline (per se per se C08G 73/026), polyphenylene (per se per se C08G 61/10), polyphenylene vinylene (per se per se C08G 61/02)} |
| H01L 51/0036 | • • • {Heteroaromatic compounds comprising sulfur or selenene, e.g. polythiophene (per se per se C08G 61/126)} |
| H01L 51/0038 | • • • {Poly-phenylenevinylene and derivatives (per se per se C08G 61/10)} |
| U H01L 51/004 | • • {comprising aliphatic or olefinic chains, e.g. poly N-vinylcarbazol, PVC, PTFE} |
| H01L 51/0041 | • • • {Poly acetylene (per se per se C08G 61/04 , C08F 38/02 , C08F 138/02 , C08F 238/02) or derivatives} |
| H01L 51/0045 | • {Carbon containing materials, e.g. carbon nanotubes, fullerenes (per se per se C01B 31/0206)} |
| U 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 51/0059 | • • {Amine compounds having at least two aryl rest on at least one amine-nitrogen atom, e.g. triphenylamine (per se per se C07C 211/00)} |
| H01L 51/0075 | • {Langmuir Blodgett films (per se per se B05D 1/202)} |
| H01L 51/0076 | • {Liquid crystalline materials (per se per se C09K 19/00)} |
| U H01L 51/0077 | • {Coordination compounds, e.g. porphyrin} |
| H01L 51/0078 | • • {Phthalocyanine (per se per se C09B 47/04)} |
| U 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 51/5012 | • {Electroluminescent [EL] layer} |
| U H01L 51/5024 | • • {having a host comprising an emissive dopant and further additive materials, e.g. for improving the dispersability, for improving the stabilisation, for assisting energy transfer} |
| H01L 51/5028 | • • • {for assisting energy transfer, e.g. sensitization} |
| U H01L 2223/00 | Details relating to semiconductor or other solid state devices covered by the group H01L 23/00 |
| U H01L 2223/58 | • Structural electrical arrangements for semiconductor devices not otherwise provided for |
| U H01L 2223/64 | • • Impedance arrangements |
| U H01L 2223/66 | • • • High-frequency adaptations |
| H01L 2223/6644 | • • • • Packaging aspects of high-frequency amplifiers (amplifiers per se per se H03F) |
| H01L 2223/6661 | • • • • for passive devices (passive components per se per se H01L 28/00) |
| H01L 2223/6672 | • • • • • for integrated passive components, e.g. semiconductor device with passive components only (integrated circuits with passive components only per se per se H01L 27/01) |

	H01L 2223/6677	<ul style="list-style-type: none"> • • • • for antenna, e.g. antenna included within housing of semiconductor device (antennas per se <i>per se</i> H01Q)
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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • Bonding areas; Manufacturing methods related thereto
U	H01L 2224/07	<ul style="list-style-type: none"> • • • Structure, shape, material or disposition of the bonding areas after the connecting process
U	H01L 2224/08	<ul style="list-style-type: none"> • • • • of an individual bonding area
U	H01L 2224/081	<ul style="list-style-type: none"> • • • • • Disposition
U	H01L 2224/0812	<ul style="list-style-type: none"> • • • • • the bonding area connecting directly to another bonding area, i.e. connectorless bonding, e.g. bumpless bonding
	H01L 2224/08135	<ul style="list-style-type: none"> • • • • • the bonding area connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
U	H01L 2224/10	<ul style="list-style-type: none"> • • Bump connectors; Manufacturing methods related thereto
U	H01L 2224/15	<ul style="list-style-type: none"> • • • Structure, shape, material or disposition of the bump connectors after the connecting process
U	H01L 2224/16	<ul style="list-style-type: none"> • • • • of an individual bump connector
U	H01L 2224/161	<ul style="list-style-type: none"> • • • • • Disposition
	H01L 2224/16135	<ul style="list-style-type: none"> • • • • • the bump connector connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
U	H01L 2224/18	<ul style="list-style-type: none"> • • High density interconnect [HDI] connectors; Manufacturing methods related thereto
U	H01L 2224/23	<ul style="list-style-type: none"> • • • Structure, shape, material or disposition of the high density interconnect connectors after the connecting process
U	H01L 2224/24	<ul style="list-style-type: none"> • • • • of an individual high density interconnect connector
U	H01L 2224/241	<ul style="list-style-type: none"> • • • • • Disposition
	H01L 2224/24135	<ul style="list-style-type: none"> • • • • • Connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
U	H01L 2224/24151	<ul style="list-style-type: none"> • • • • • Connecting between a semiconductor or solid-state body and an item not being a semiconductor or solid-state body, e.g. chip-to-substrate, chip-to-passive
U	H01L 2224/24221	<ul style="list-style-type: none"> • • • • • the body and the item being stacked
U	H01L 2224/24225	<ul style="list-style-type: none"> • • • • • the item being non-metallic, e.g. insulating substrate with or without metallisation
	H01L 2224/24226	<ul style="list-style-type: none"> • • • • • the HDI interconnect connecting to the same level of the item at which the semiconductor or solid-state body is mounted, e.g. the item being planar
U	H01L 2224/24245	<ul style="list-style-type: none"> • • • • • the item being metallic
	H01L 2224/24246	<ul style="list-style-type: none"> • • • • • the HDI interconnect connecting to the same level of the item at which the semiconductor or solid-state body is mounted, e.g. the item being planar
U	H01L 2224/26	<ul style="list-style-type: none"> • • Layer connectors, e.g. plate connectors, solder or adhesive layers; Manufacturing methods related thereto
U	H01L 2224/31	<ul style="list-style-type: none"> • • • Structure, shape, material or disposition of the layer connectors after the connecting process

U	H01L 2224/32	• • • • of an individual layer connector
U	H01L 2224/321	• • • • • Disposition
	H01L 2224/32135	• • • • • the layer connector connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
U	H01L 2224/34	• • Strap connectors, e.g. copper straps for grounding power devices; Manufacturing methods related thereto
U	H01L 2224/39	• • • Structure, shape, material or disposition of the strap connectors after the connecting process
U	H01L 2224/40	• • • • of an individual strap connector
U	H01L 2224/401	• • • • • Disposition
	H01L 2224/4013	• • • • • Connecting within a semiconductor or solid-state body, i.e. fly strap, bridge strap
	H01L 2224/40135	• • • • • Connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
U	H01L 2224/42	• • Wire connectors; Manufacturing methods related thereto
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 2224/481	• • • • • Disposition
	H01L 2224/4813	• • • • • Connecting within a semiconductor or solid-state body, i.e. fly wire, bridge wire
	H01L 2224/48135	• • • • • Connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
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 2224/48698	• • • • • with a principal constituent of the bonding area being a combination of two or more material regions, i.e. being a hybrid material, e.g. segmented structures, island patterns
U	H01L 2224/48699	• • • • • Principal constituent of the connecting portion of the wire connector being Aluminium (Al)
	H01L 2224/48798	• • • • • with a principal constituent of the bonding area being a combination of two or more material regions, i.e. being a hybrid material, e.g. segmented structures, island patterns
U	H01L 2224/48799	• • • • • Principal constituent of the connecting portion of the wire connector being Copper (Cu)
	H01L 2224/48898	• • • • • with a principal constituent of the bonding area being a combination of two or more material regions, i.e. being a hybrid material, e.g. segmented structures, island patterns
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
	H01L 2224/80007	• • • involving a permanent auxiliary member being left in the finished device, e.g. aids for protecting the bonding area during or after the bonding process
U	H01L 2224/81	• • using a bump connector
	H01L 2224/81007	• • • involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the bump connector during or after the bonding process

- U H01L 2224/82
 - • by forming build-up interconnects at chip-level, e.g. for high density interconnects [HDI]
- H01L 2224/82007
 - • • involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting a build-up interconnect during or after the bonding process
- U H01L 2224/83
 - • using a layer connector
- H01L 2224/83007
 - • • involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the layer connector during or after the bonding process
- U H01L 2224/84
 - • using a strap connector
- H01L 2224/84007
 - • • involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the strap connector during or after the bonding process
- U H01L 2224/84909
 - • • Post-treatment of the connector or bonding area
- H01L 2224/8493
 - • • • Reshaping, e.g. for severing the strap, modifying the loop shape
- U H01L 2224/85
 - • using a wire connector
- H01L 2224/85007
 - • • involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the wire connector during or after the bonding process
- U H01L 2224/85909
 - • • Post-treatment of the connector or wire bonding area
- H01L 2224/8593
 - • • • Reshaping, e.g. for severing the wire, modifying the wedge or ball or the loop shape
- U H01L 2224/86
 - • using tape automated bonding [TAB]
- H01L 2224/86007
 - • • involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the TAB connector during or after the bonding process
- U H01L 2224/93
 - Batch processes
- U H01L 2224/95
 - • at chip-level, i.e. with connecting carried out on a plurality of singulated devices, i.e. on diced chips
- U H01L 2224/95053
 - • • Bonding environment
- U H01L 2224/95091
 - • • • Under pressure
- H01L 2224/95092
 - • • • • Atmospheric pressure, e.g. dry self-assembly
- U H01L 2224/9512
 - • • Aligning the plurality of semiconductor or solid-state bodies
- U H01L 2224/95121
 - • • • Active alignment, i.e. by apparatus steering
- H01L 2224/95123
 - • • • • by applying a pressurised fluid flow, e.g. liquid or gas flow
- U H01L 2224/95143
 - • • • Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
- H01L 2224/95145
 - • • • • Electrostatic alignment, i.e. polarity alignment with Coulomb charges
- 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](#) - [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 2225/06541
 - • • • • Conductive via connections through the device, e.g. vertical interconnects, through silicon via [TSV] (manufacturing via connections ~~per se~~ [per se](#) [H01L 21/76898](#))

U	H01L 2251/00	Indexing scheme relating to organic semiconductor devices covered by group H01L 51/00
U	H01L 2251/50	• Organic light emitting devices
U	H01L 2251/53	• • Structure
U	H01L 2251/5307	• • • specially adapted for controlling the direction of light emission
	H01L 2251/5323	• • • • Two-side emission, i.e. TOLED
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 2924/013	• Alloys
U	H01L 2924/0132	• • Binary Alloys
	H01L 2924/01322	• • • Eutectic Alloys, i.e. obtained by a liquid transforming into two solid phases
	H01L 2924/01325	• • • Peritectic Alloys, i.e. obtained by a liquid and a solid transforming into a new and different solid phase
	H01L 2924/01326	• • • Monotectics, i.e. obtained by a liquid transforming into a solid and a new and different liquid phase
	H01L 2924/01327	• • • Intermediate phases, i.e. intermetallics compounds
U	H01L 2924/042	• Borides composed of metals from groups of the periodic table
	H01L 2924/04494	• • having an amorphous microstructure, i.e. glass
U	H01L 2924/045	• Carbides composed of metals from groups of the periodic table
	H01L 2924/04694	• • having an amorphous microstructure, i.e. glass
U	H01L 2924/047	• Silicides composed of metals from groups of the periodic table
	H01L 2924/04894	• • having an amorphous microstructure, i.e. glass
U	H01L 2924/049	• Nitrides composed of metals from groups of the periodic table
	H01L 2924/05094	• • having an amorphous microstructure, i.e. glass
U	H01L 2924/051	• Phosphides composed of metals from groups of the periodic table
	H01L 2924/05294	• • having an amorphous microstructure, i.e. glass
U	H01L 2924/053	• Oxides composed of metals from groups of the periodic table
	H01L 2924/05494	• • having an amorphous microstructure, i.e. glass
U	H01L 2924/055	• Chalcogenides other than oxygen i.e. sulfides, selenides and tellurides composed of metals from groups of the periodic table
	H01L 2924/05694	• • having an amorphous microstructure, i.e. glass
U	H01L 2924/057	• Halides composed of metals from groups of the periodic table
	H01L 2924/05894	• • having an amorphous microstructure, i.e. glass
	H01L 2924/059	• Being combinations of any of the materials from the groups H01L 2924/042 - H01L 2924/0584 , e.g. oxynitrides
	H01L 2924/05994	• • having an amorphous microstructure, i.e. glass
	H01L 2924/06	• Polymers (polymers <i>per se</i> C08 ; polymer adhesives C09J)
U	H01L 2924/095	• with a principal constituent of the material being a combination of two or more materials provided in the groups H01L 2924/013 - H01L 2924/0715
	H01L 2924/097	• • Glass-ceramics, e.g. devitrified glass
U	H01L 2924/10	• Details of semiconductor or other solid state devices to be connected
U	H01L 2924/102	• • Material of the semiconductor or solid state bodies
U	H01L 2924/1025	• • • Semiconducting materials
	H01L 2924/10251	• • • • Elemental semiconductors, i.e. Group IV

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 2924/1515	• • • Shape
	H01L 2924/15151	• • • • the die mounting substrate comprising an aperture, e.g. for underfilling, outgassing, window type wire connections
U	H01L 2924/153	• • • Connection portion
U	H01L 2924/1531	• • • • the connection portion being formed only on the surface of the substrate opposite to the die mounting surface
	H01L 2924/15311	• • • • • being a ball array, e.g. BGA
	H01L 2924/15312	• • • • • being a pin array, e.g. PGA
	H01L 2924/15313	• • • • • being a land array, e.g. LGA
U	H01L 2924/1532	• • • • the connection portion being formed on the die mounting surface of the substrate
	H01L 2924/15321	• • • • • being a ball array, e.g. BGA
	H01L 2924/15322	• • • • • being a pin array, e.g. PGA
	H01L 2924/15323	• • • • • being a land array, e.g. LGA
U	H01L 2924/1533	• • • • • the connection portion being formed both on the die mounting surface of the substrate and outside the die mounting surface of the substrate
	H01L 2924/15331	• • • • • • being a ball array, e.g. BGA
	H01L 2924/15332	• • • • • • being a pin array, e.g. PGA
	H01L 2924/15333	• • • • • • being a land array, e.g. LGA
U	H01L 2924/161	• • Cap
U	H01L 2924/1615	• • • Shape
	H01L 2924/16151	• • • • Cap comprising an aperture, e.g. for pressure control, encapsulation
	H01L 2924/16196	• • • • Cap forming a cavity, e.g. being a curved metal foil
U	H01L 2924/162	• • • Disposition
	H01L 2924/16235	• • • • Connecting to a semiconductor or solid-state bodies, i.e. cap-to-chip
	H01L 2924/1627	• • • • stacked type assemblies, e.g. stacked multi-cavities
	H01L 2924/163	• • • Connection portion, e.g. seal
U	H01L 2924/171	• • Frame
U	H01L 2924/1715	• • • Shape
	H01L 2924/17151	• • • • Frame comprising an aperture, e.g. for pressure control, encapsulation
	H01L 2924/173	• • • Connection portion, e.g. seal
U	H01L 2924/181	• • Encapsulation
	H01L 2924/183	• • • Connection portion, e.g. seal
	H01L 2924/18301	• • • • being an anchoring portion, i.e. mechanical interlocking between the encapsulation resin and another package part

Project: N/A (H01M)**H01M**

PROCESSES OR MEANS, e.g. BATTERIES, FOR THE DIRECT CONVERSION OF CHEMICAL INTO ELECTRICAL ENERGY (electrochemical processes or apparatus in general [C25](#); semiconductor or other solid state devices for converting light or heat into electrical energy [H01L](#), e.g. [H01L 31/00](#), [H01L 35/00](#), [H01L 37/00](#))

NOTE

This subclass ~~covers~~[covers](#) galvanic primary or secondary cells or batteries, fuel cells or batteries.

U H01M 4/00

Electrodes (electrodes for electrolytic processes [C25](#), {electrodes for hybrid or electric double capacitor [H01G 11/22](#)})

U H01M 4/02

- Electrodes composed of or comprising active material

H01M 4/13

- • Electrodes for accumulators with non-aqueous electrolyte, e.g. for lithium-accumulators; Processes of manufacture thereof

NOTE

This group ~~does not cover~~[does not cover](#) electrodes for accumulators working at high temperatures, e.g. molten sodium electrodes, which subject matter is classified in group [H01M 10/39](#)

U H01M 4/64

- • Carriers or collectors {(current collector for hybrid or electric double layer capacitors [H01G 11/66](#))}

H01M 4/82

- • • Multi-step processes for manufacturing carriers for lead-acid accumulators (single step processes ~~see~~[see](#) the relevant subclasses, e.g. [B21D](#); [B22D](#))

U H01M 4/86

- Inert electrodes with catalytic activity, e.g. for fuel cells

U H01M 4/90

- • Selection of catalytic material

U H01M 4/9016

- • • {Oxides, hydroxides or oxygenated metallic salts}

U H01M 4/9025

- • • • {Oxides specially used in fuel cell operating at high temperature, e.g. SOFC}

H01M 4/9033

- • • • • {Complex oxides, optionally doped, of the ~~type~~[M1MeO3](#)[type M1MeO3](#), M1 being an alkaline earth metal or a rare earth, Me being a metal, e.g. perovskites}

U H01M 8/00

Fuel cells; Manufacture thereof

NOTE

Fuel cells are electrochemical generators wherein the reactants are supplied from outside

U H01M 8/10

- Fuel cells with solid electrolytes

U H01M 8/1016

- • characterised by the electrolyte material ([H01M 8/12](#) takes precedence)

U H01M 8/1018

- • • Polymeric electrolyte materials

U H01M 8/1069

- • • • characterised by the manufacturing processes

H01M 8/1072

- • • • • by chemical reactions, e.g. ~~in-situ~~[in situ](#) polymerisation or ~~in-situ~~[in situ](#) crosslinking

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)

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~~**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~~**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.

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~~**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.

Project: N/A (H01R)**H01R**

LINE CONNECTORS; CURRENT COLLECTORS (switches, fuses [H01H](#); coupling devices of the waveguide type [H01P 5/00](#); switching arrangements for the supply or distribution of electric power [H02B](#); installations of electric lines, cables or auxiliary apparatus [H02G](#); printed means for providing electric connections to or between printed circuits [H05K](#))

NOTES

1. This subclass ~~covers~~**covers**:
 - all kinds of contact-making disconnectible and non-disconnectible electric line connectors, coupling devices, lamp or similar holders or current collectors for all kinds of electric lines, cables or apparatus;
 - non-printed means for electric connections to or between printed circuits.
2. This subclass ~~does not cover~~**does not cover** mounting of connections in or specified apparatus. Such mounting is covered by the relevant subclass for such apparatus, e.g. mounting in junction or distribution boxes is covered by subclass [H02B](#) or [H02G](#), high-temperature connections for heating elements is covered by group [H05B 3/08](#). Structural association of one part of a two-part coupling device with specific electric apparatus is classified with the apparatus e.g. association of cap with incandescent lamp is covered by subclass [H01K](#).
3. In this subclass, a contact in a coupling device is only regarded as an additional earth contact if this contact is clearly designed for that purpose.
4. General details are classified in groups [H01R 4/00](#), [H01R 9/00](#), [H01R 11/00](#).

- U H01R 4/00** **Electrically-conductive connections between two or more conductive members in direct contact and means for effecting or maintaining such contact (details of disengageable contacts of two-part coupling devices [H01R 13/00](#); two-part coupling devices [H01R 12/70](#), [H01R 24/00](#) - [H01R 33/00](#); flexible or turnable line connectors [H01R 35/00](#); non rotary current collectors [H01R 41/00](#))**
- U H01R 4/24** • Needle-point, slotted plate, or analogous contact members penetrating insulation or cable strands {(for multiphase cables [H01R 9/031](#); for coaxial cables [H01R 9/053](#); for flat cables [H01R 12/67](#))}
- H01R 4/2416** • {having insulation cutting edges, e.g. tuning fork type, slotted plate type, wire type}
- H01R 4/2445** • • {the contact member being provided with additional means acting on the wire, e.g. a second insulation penetrating means, strain relief means, wire cutting knife}
- U H01R 12/00** **Structural associations of a plurality of mutually-insulated electrical connecting elements, specially adapted for printed circuits, e.g. printed circuit boards [PCBs], flat or ribbon cables, or like generally planar structures, e.g. terminal strips, terminal blocks; Coupling devices specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures; Terminals specially adapted for contact with, or insertion into, printed circuits, flat or ribbon cables, or like generally planar structures (printed connections to, or between, printed circuits [H05K 1/11](#))**
- WARNING
Not complete pending completion of a reclassification; see also groups [H01R 9/07](#), [H01R 9/09](#), [H01R 23/66](#), [H01R 23/68](#), [H01R 23/70](#), [H01R 23/72](#) and their respective subgroups
- U H01R 12/50** • Fixed connections
- WARNING
This group and its subgroups are not complete pending completion of a reclassification; see also groups [H01R 9/07](#), [H01R 9/09](#) and their respective subgroups
- U H01R 12/59** • • for flexible printed circuits, flat or ribbon cables or like structures
- U H01R 12/65** • • • characterized by the terminal
- H01R 12/69** • • • deformable terminals, e.g. crimping terminals
- U H01R 12/70** • Coupling devices
- WARNING
This group and its subgroups are not complete pending completion of a reclassification; see also groups [H01R 23/66](#), [H01R 23/68](#), [H01R 23/70](#), [H01R 23/72](#) and their respective subgroups
- U H01R 12/82** • • connected with low or zero insertion force
- U H01R 12/85** • • • contact pressure producing means, contacts activated after insertion of printed circuits or like structures
- H01R 12/89** • • • acting manually by moving connector housing parts linearly, e.g. slider
- H01R 12/91** • • allowing relative movement between coupling parts, e.g. floating or self aligning (for coupling devices not specially adapted for printed circuits, flat or ribbon cables, or like generally planar structures, [H01R 13/6315](#) takes precedence)
- 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](#))}**

- H01R 13/648
- Protective earth or shield arrangements on coupling devices (coaxially arranged shields [H01R 24/38](#)) {, e.g. anti-static shielding}

H01R 33/00 **Coupling devices in which a holder is adapted for supporting apparatus to which its counterpart is attached; Separate parts thereof (structural association of counterpart with specific apparatus, [see see](#) the relevant subclass for the apparatus)**

Project: N/A (H01S)

H01S

DEVICES USING STIMULATED EMISSION

NOTE

This subclass ~~covers~~[covers](#):-

- devices for the generation or amplification, by using stimulated emission, of coherent electromagnetic waves or other forms of wave energy;
- such functions as modulating, demodulating, controlling, or stabilising such waves.

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:

- [H01S 3/098](#) covered by [H01S 3/08018](#), [H01S 3/11](#) and s.gr.

- 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](#))**
- U 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 3/0092 • • {Nonlinear frequency conversion, e.g. second harmonic generation [SHG] or sum- or difference-frequency generation outside the laser cavity (nonlinear frequency conversion ~~per se~~ [per se](#) [G02F 1/35](#))}
- U H01S 3/05 • Construction or shape of optical resonators; Accommodation 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](#))}
- U 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](#))}
- U H01S 3/06708 • • • • • {Constructional details of the fibre, e.g. compositions, cross-section, shape or tapering (optical fibres as passive waveguides [G02B 6/02](#))}
- H01S 3/06716 • • • • • {Fibre compositions (~~per se~~ [per se](#) [C03C 13/04](#)) or doping with active elements (lasing materials in general [H01S 3/14](#))}
- H01S 3/06795 • • • • • {with superfluorescent emission, e.g. amplified spontaneous emission sources for fibre laser gyrometers (fibre laser gyrometers ~~per se~~ [per se](#) [G01C 19/72](#))}
- 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~~ *per se* [H01J 61/80](#); circuit arrangements for operating flash lamps in general [H05B 41/30](#)})
- 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](#) - [H01S 3/104](#)
- H01S 3/105
- • by controlling the mutual position or the reflecting properties of the reflectors of the cavity {, e.g. by controlling the cavity length}{([H01S 3/10076](#)), [H01S 3/13](#) 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](#) - [H01S 3/134](#)
- 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}
- U H01S 3/14
- characterised by the material used as the active medium
- U H01S 3/16
- • Solid materials
- U H01S 3/163
- • • {characterised by a crystal matrix}
- U H01S 3/1631
- • • • {aluminate}
- H01S 3/1633
- • • • • {BeAl₂O₄, i.e. Chrysoberyl}
- U H01S 3/1645
- • • • {halide}
- H01S 3/1653
- • • • • {YLiF₄ (YLF, LYF)}
- H01S 3/1683
- • • {using superconductivity, e.g. provided with Josephson junctions}
- U H01S 3/20
- • Liquids
- H01S 3/207
- • • including a chelate {, e.g. including atoms or ions, e.g. Nd}
- U H01S 5/00**
- Semiconductor lasers {(superluminescent diodes [H01L 33/0045](#))}**
- H01S 5/0014
- {Measuring characteristics or properties thereof (measuring techniques ~~per se~~ *per se* [G01J](#), [G01K](#), [G01N](#), [G01R](#))}
- U 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)}
- H01S 5/0092
- • {Nonlinear frequency conversion, e.g. second harmonic generation [SHG] or sum- or difference-frequency generation outside the laser cavity (nonlinear frequency conversion ~~per se~~ *per se* [G02F 1/35](#))}
- U H01S 5/02
- Structural details or components not essential to laser action
- H01S 5/022
- • Mountings; Housings {(packaging and electrical lead-through ~~per se~~ *per se* [H01L 23/00](#))}
- U H01S 5/024
- • Cooling arrangements {(cooling solid state junction devices [H01L 23/34](#); Heating arrangements ; [H01S 5/0261](#) takes precedence)}
- H01S 5/02453
- • • {Heating, e.g. the laser is heated for stabilisation against temperature fluctuations of the environment ([H01S 5/0612](#) takes precedence, for monolithically integrated heaters ~~see~~ *see* also [H01S 5/0261](#))}
- 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)}
- U H01S 5/18
- • Surface-emitting lasers (SE-lasers)

- U H01S 5/183
 - • • having a vertical cavity (VCSE-lasers)
- U H01S 5/18308
 - • • • {having a special structure for lateral current or light confinement}
- H01S 5/18319
 - • • • {comprising a periodical structure in lateral directions (photonic crystals in semiconductor laser structures ~~per se~~ ~~per se~~ H01S 5/105)}
- U H01S 5/30
 - Structure or shape of the active region; Materials used for the active region
- U H01S 5/305
 - • {characterised by the doping materials used in the laser structure}
- U H01S 5/3086
 - • • {doping of the active layer}
- H01S 5/309
 - • • • {doping of barrier layers that confine charge carriers in the laser structure, e.g. the barriers in a quantum well structure (Barriers in quantum wells ~~per se~~ ~~per se~~ H01S 5/3407)}
- U H01S 5/32
 - • comprising PN junctions, e.g. hetero- or double- heterostructures (H01S 5/34, H01S 5/36 take precedence)
- U H01S 5/323
 - • • in $A_{III}B_V$ compounds, e.g. AlGaAs -laser, { InP -based laser}
- U H01S 5/3235
 - • • • {emitting light at a wavelength longer than 1000 nm, e.g. InP -based 1300 nm and 1500 nm lasers}
- U H01S 5/32358
 - • • • • {containing very small amounts, usually less than 1%, of an additional III or V compound to decrease the band-gap strongly in a non-linear way by the bowing effect}
- H01S 5/32383
 - • • • • {small amount of Thallium (TI), e.g. GaTiP }
- H01S 5/32391
 - • • • • {based ~~on~~ ~~on~~ $\text{In}(\text{Ga})(\text{As})\text{P}$ }
- H01S 5/34
 - • comprising quantum well, ~~or~~ superlattice structures, e.g. single quantum well lasers (SQW lasers), multiple quantum well lasers (MQW lasers), graded index separate confinement heterostructure lasers (GRINSEL lasers) (H01S 5/36 takes precedence)

Project: N/A (H02B)

H02B

BOARDS, SUBSTATIONS, OR SWITCHING ARRANGEMENTS FOR THE SUPPLY OR DISTRIBUTION OF ELECTRIC POWER (basic electric elements, their assembly, including the mounting in enclosures or on bases, or the mounting of covers thereon, ~~see~~ ~~see~~ the subclasses for such elements, e.g. transformers H01F, switches, fuses H01H, line connectors H01R; installation of lines, cables, or other conductors for supply or distribution H02G)

NOTE

This subclass ~~covers~~ ~~covers~~ boards, switchyards, switchgear or their installation, or the association of switching devices with each other or with other devices, e.g. transformers, fuses, meters or distribution boards; such associations constitute substations or distribution points.

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~~[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~~[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 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 9/10

- in cable chambers, e.g. in manhole, in handhole (building aspects of cable chambers Section ~~EE~~[E](#), e.g. [E04H 5/06](#))

U H02G 15/00**Cable fittings****U H02G 15/02**

- Cable terminations (for gas- or oil-filled cables [H02G 15/22](#))

H02G 15/025

- {for coaxial cables or hollow conductors (connections between HF conductors [H01P 1/04](#); plug and socket connections ~~per se~~[per se](#) [H01R 24/38](#))}

U H02G 15/08

- Cable junctions (for gas- or oil-filled cables [H02G 15/24](#); disconnectible junctions, electrical connections [H01R](#))

H02G 15/085

- {for coaxial cables or hollow conductors (plug and socket connections between HF conductors [H01P 1/04](#); plug and socket connections ~~per se~~[per se](#) [H01R 24/38](#))}

H02G 15/10

- protected by boxes, e.g. by distribution, connection or junction boxes (terminal blocks [H01R 9/00](#); {distribution boxes ~~per se~~[per se](#) [H02G 3/08](#)})

H02G 15/34

- Cable fittings for cryogenic cables {(superconductive cables ~~per se~~[per se](#) [H01B 12/00](#))}

Project: N/A (H02H)**H02H**

EMERGENCY PROTECTIVE CIRCUIT ARRANGEMENTS (indicating or signalling undesired working conditions [G01R](#), e.g. [G01R 31/00](#), [G08B](#); locating faults along lines [G01R 31/08](#); emergency protective devices [H01H](#))

NOTE

This subclass ~~covers~~[covers](#) only circuit arrangements for the automatic protection of electric lines or electric machines or apparatus in the event of an undesired change from normal working conditions

H02H 7/00 Emergency protective circuit arrangements specially adapted for specific types of electric machines or apparatus or for sectionalised protection of cable or line systems, and effecting automatic switching in the event of an undesired change from normal working conditions (structural association of protective devices with specific machines or apparatus and their protection without automatic disconnection, [see see](#) the relevant subclass for the machine or apparatus)

H02H 7/10 · for converters; for rectifiers {(forming part of the control circuit of the converter, [see see](#) the relevant group in [H02M](#))}

H02H 9/00 Emergency protective circuit arrangements for limiting excess current or voltage without disconnection (structural association of protective devices with specific machines or apparatus, [see see](#) the relevant subclass for the machine or apparatus)

Project: N/A (H02J)

U H02J 3/00 Circuit arrangements for ac mains or ac distribution networks

U H02J 3/38 · Arrangements for parallely feeding a single network by two or more generators, converters or transformers

U H02J 3/381 · · {Dispersed generators}

H02J 3/387 · · · {using fuel cells (fuel cells [per se](#) [per se](#) [H01M 8/00](#))}

Project: N/A (H02K)

H02K DYNAMO-ELECTRIC MACHINES (measuring instruments [G01](#); dynamo-electric relays [H01H 53/00](#); conversion of dc or ac input power into surge output power {[H03K 3/53](#)}; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#))

NOTES

1. This subclass [covers covers](#) structural adaptation of the machine for the purposes of its control.

2. This subclass [does not cover does not cover](#) starting, regulating, electronically commutating, braking, or otherwise controlling motors, generators or dynamo-electric converters, in general, which are covered by subclass [H02P](#).

U H02K 7/00 Arrangements for handling mechanical energy structurally associated with the machine, e.g. structural association with mechanical driving motor or auxiliary dynamo-electric machine

H02K 7/06 · Means for converting reciprocating into rotary motion or [vice-versa vice versa](#)

H02K 7/18 · Structural association of electric generator with mechanical driving motor, e.g. turbine (if the driving-motor aspect predominates, [see see](#) the relevant subclass of section [FE](#), e.g. [F03B 13/00](#))

U H02K 15/00 Methods or apparatus specially adapted for manufacturing, assembling, maintaining or repairing dynamo-electric machines (manufacture of current collectors in general [H01R 43/00](#))

U H02K 15/0056 · {Manufacturing winding connections (manufacturing connectors in general [H01R 43/00](#))}

H02K 15/0062 · · {Manufacturing the terminal arrangement [per se](#) [per se](#); Connecting the terminals to an external circuit}

H02K 44/00 Machines in which the dynamo-electric interaction between a plasma or flow of conductive liquid or of fluid-borne conductive or magnetic particles and a coil system or magnetic field converts energy of mass flow into electrical energy or [vice-versa vice versa](#)

H02K 53/00

Alleged dynamo-electric ~~perpetua mobilia~~*perpetua mobilia*

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~~*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 1/00**Details of apparatus for conversion**

U H02M 2001/0048

- {Circuits or arrangements for reducing losses (using snubbers [H02M 1/34](#))}

U H02M 2001/0054

- {Transistor switching losses (periodically suspending operation of switching converter in low power mode [H02M 2001/0035](#))}

H02M 2001/0058

- • {by employing soft switching techniques, i.e. commutation of transistor when voltage applied to it is zero and/or when current flowing through it is zero (in resonant inverters [H02M 2007/4815](#); in inverters operating from a resonant dc source [H02M 7/4826](#); using an auxiliary actively switched resonant commutation circuit connected to an intermediate dc voltage or between two push-pull branches of an inverter bridge [H02M 2007/4811](#))}

Project: N/A (H02N)

H02N

ELECTRIC MACHINES NOT OTHERWISE PROVIDED FORNOTES

1. This subclass ~~covers~~*covers*:

- electrostatic generators, motors, clutches, or holding devices;
- other non-dynamo-electric generators or motors;
- holding or levitation devices using magnetic attraction or repulsion;
- arrangements for starting, regulating, braking, or otherwise controlling such machines unless in conjoint operation with a second machine.

2. Specific provision for generators, motors, or other means for converting between electric and other forms of energy also exists in other subclasses, e.g. in subclasses [H01L](#), [H01M](#), [H02K](#), [H04R](#).

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](#)

U H02N 2/02

- producing linear motion, e.g. actuators; Linear positioners; {Linear motors}

H02N 2/08

- • using travelling waves {, i.e. Rayleigh surface waves}

U H02N 2/10

- producing rotary motion, e.g. rotary motors

H02N 2/16

- • using travelling waves {, i.e. Rayleigh surface waves}

H02N 11/00

Generators or motors not provided for elsewhere; Alleged ~~perpetua mobilia~~ [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](#))

H02N 11/008

- {Alleged electric or magnetic ~~perpetua mobilia~~ [perpetua mobilia](#)}

Project: N/A (H02P)

U H02P 7/00

Arrangements for regulating or controlling the speed or torque of electric DC motors

WARNING

Group [H02P 7/00](#) is impacted by reclassification into groups [H02P 7/02](#), [H02P 7/025](#).

Groups [H02P 7/00](#), [H02P 7/02](#), and [H02P 7/025](#) should be considered in order to perform a complete search.

U H02P 7/06

- for regulating or controlling an individual dc dynamo-electric motor by varying field or armature current

U H02P 7/08

- • by manual control without auxiliary power

U H02P 7/10

- • • of motor field only

H02P 7/12

- • • • Switching field from series to shunt excitation or ~~vice-versa~~ [vice versa](#)

U H02P 9/00

Arrangements for controlling electric generators for the purpose of obtaining a desired output (Ward-Leonard arrangements [H02P 7/34](#); vector control [H02P 21/00](#); feeding a network by two or more generators [H02J](#); for charging batteries [H02J 7/14](#))

H02P 9/04

- Control effected upon non-electric prime mover and dependent upon electric output value of the generator (effecting control of the prime mover in general, ~~see~~ [see](#) the relevant class for such prime mover)

H02P 9/06

- Control effected upon clutch or other mechanical power transmission means and dependent upon electric output value of the generator (effecting control of the power transmission means, ~~see~~ [see](#) the relevant class for such means)

H02P 15/00	<p>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 {seesee provisionally also H02K 49/00 and H02P 29/0022})</p> <p><u>WARNING</u></p> <p>Not complete, see also H02K 49/00 and H02P 29/0022</p>
U H02P 21/00	<p>Arrangements or methods for the control of electric machines by vector control, e.g. by control of field orientation</p> <p><u>NOTES</u></p> <p>1. When classifying in this group, classification should also be made in group H02P 25/00 when the method of control is characterised by the kind of motor being controlled.</p> <p>2. When classifying in this group, classification should also be made in group H02P 27/00 when the method of control is characterised by the kind of supply voltage of the motor being controlled.</p>
H02P 21/0003	<ul style="list-style-type: none"> • {Control strategies in general, e.g. linear type, e.g. P, PI, PID, using robust control}
U H02P 23/00	<p>Arrangements or methods for the control of AC motors characterised by a control method other than vector control</p> <p><u>NOTE</u></p> <p>When classifying in this group, subject matter also relating to groups H02P 21/00, H02P 25/00 or H02P 27/00 is further classified in those groups whenever appropriate.</p>
H02P 23/0004	<ul style="list-style-type: none"> • {Control strategies in general, e.g. linear type, e.g. P, PI, PID, using robust control}
U H02P 25/00	<p>Arrangements or methods for the control of AC motors characterised by the kind of AC motor or by structural details</p> <p><u>NOTE</u></p> <p>When classifying in this group, subject matter also relating to groups H02P 21/00, H02P 23/00 or H02P 27/00 is further classified in those groups whenever appropriate.</p>
U H02P 25/16	<ul style="list-style-type: none"> • characterised by the circuit arrangement or by the kind of wiring
U H02P 25/18	<ul style="list-style-type: none"> • • with arrangements for switching the windings, e.g. with mechanical switches or relays
H02P 25/184	<ul style="list-style-type: none"> • • {wherein the motor speed is changed by switching from a delta to a star, e.g. wye, connection of its windings, or vice-versavice versa}
H02P 25/188	<ul style="list-style-type: none"> • • {wherein the motor windings are switched from series to parallel or vice-versavice versa to control speed or torque}
H02P 29/00	<p>Arrangements for regulating or controlling electric motors, appropriate for both AC and DC motors (arrangements for starting electric motors H02P 1/00; arrangements for stopping or slowing electric motors H02P 3/00; control of motors that can be connected to two or more different electric power supplies H02P 4/00; regulating or controlling the speed or torque of two or more electric motors H02P 5/00; vector control H02P 21/00)</p> <p><u>WARNING</u></p> <p>Group H02P 29/00 is impacted by reclassification into groups H02P 29/10, H02P 29/20, H02P 29/40, H02P 29/50, H02P 29/60, H02P 29/62, H02P 29/64, H02P 29/66 and H02P 29/68.</p>

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

- U H02P 2207/00** **Indexing scheme relating to controlling arrangements characterised by the type of motor**
- U H02P 2207/07
 - Doubly fed machines receiving two supplies both on the stator only wherein the power supply is fed to different sets of stator windings or to rotor and stator windings
- H02P 2207/073
 - • wherein only one converter is used, the other windings being supplied without converter, e.g. doubly-fed induction machines

Project: N/A (H03B)

- U 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 5/08
 - with frequency-determining element comprising lumped inductance and capacitance
- U H03B 5/12
 - • active element in amplifier being semiconductor device (H03B 5/14 takes precedence)

WARNING
Subgroups [H03B 5/1203](#) - [H03B 5/1296](#) are incomplete pending reclassification; see also the other subgroups of [H03B 5/12](#)
- U H03B 5/1206
 - • • {using multiple transistors for amplification}
- H03B 5/1209
 - • • • {the amplifier having two current paths operating in a differential manner and a current source or degeneration circuit in common to both paths, e.g. a long-tailed pair. (H03B 5/1215 takes precedence)}
- U H03B 5/1237
 - • • {comprising means for varying the frequency of the generator}
- U H03B 5/1256
 - • • • {the means comprising a variable inductance}
- H03B 5/1259
 - • • • • {the means comprising a variable active inductor, e.g. gyrator circuits}
- H03B 5/1271
 - • • • {the frequency being controlled by a control current, i.e. current controlled oscillators}
- H03B 5/1293
 - • • • {having means for achieving a desired tuning characteristic, e.g. linearising the frequency characteristic across the tuning voltage range}
- U H03B 5/18
 - with frequency-determining element comprising distributed inductance and capacitance
- U H03B 5/1805
 - • {the frequency-determining element being a coaxial resonator}
- H03B 5/1811
 - • • {the active element in the amplifier being a vacuum tube (see [see](#) provisionally also [H03B 5/1835](#))}
- U 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)}
- H03B 5/1858
 - • • {the active element in the amplifier being a vacuum tube (see [see](#) provisionally also [H03B 5/1835](#))}
- H03B 15/00** **Generation of oscillations using galvano-magnetic devices, e.g. Hall-effect devices, or using super-conductivity effects (galvano-magnetic devices [per se](#) [per se](#) [H01L 43/00](#))**
- U H03B 2200/00** **Indexing scheme relating to details of oscillators covered by [H03B](#)**
- U H03B 2200/003
 - Circuit elements of oscillators
- H03B 2200/0044
 - • including optical elements, e.g. optical injection locking

Project: N/A (H03D)**H03D**

DEMODULATION OR TRANSFERENCE OF MODULATION FROM ONE CARRIER TO ANOTHER (masers, lasers [H01S](#); circuits capable of acting both as modulator and demodulator [H03C](#); details applicable to both modulators and frequency-changers [H03C](#); demodulating pulses [H03K 9/00](#); transforming types of pulse modulation [H03K 11/00](#); coding, decoding or code conversion, in general [H03M](#); repeater stations [H04B 7/14](#); demodulators adapted for ac systems of digital information transmission [H04L 27/00](#); synchronous demodulators adapted for colour television [H04N 9/66](#))

NOTE

This subclass **covers** only:

- demodulation or transference of signals modulated on a sinusoidal carrier or on electromagnetic waves;
- comparing phase or frequency of two mutually-independent oscillations.

Project: N/A (H03F)**H03F**

AMPLIFIERS (measuring, testing [G01R](#); optical parametric amplifiers [G02F](#); circuit arrangement with secondary emission tubes [H01J 43/30](#); masers, lasers [H01S](#); control of amplification [H03G](#); coupling arrangements independent of the nature of the amplifiers, voltage dividers [H03H](#); amplifiers capable only of dealing with pulses [H03K](#); repeater circuits in transmission lines [H04B 3/36](#), [H04B 3/58](#); application of speech amplifiers in telephonic communication [H04M 1/60](#), [H04M 3/40](#))

NOTE

This subclass **covers**:

- linear amplification, there being linear relationship between the amplitudes of input and output, and the output having substantially the same waveform as the input;
- dielectric amplifiers, magnetic amplifiers, and parametric amplifiers when used as oscillators or frequency-changers;
- constructions of active elements of dielectric amplifiers and parametric amplifiers if no provision exists elsewhere.

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:

H03F 1/44	covered by	H03F 1/42
H03F 1/46	covered by	H03F 1/42
H03F 3/18	covered by	H03F 3/00
H03F 3/32	covered by	H03F 3/30
H03F 7/06	covered by	H03F 7/00

U H03F 1/00

Details of amplifiers with only discharge tubes, only semiconductor devices or only unspecified devices as amplifying elements

U H03F 1/08

- Modification of amplifiers to reduce detrimental influences of internal impedances of amplifying elements (wide-band amplifiers with inter-stage coupling networks incorporating these impedances [H03F 1/42](#); eliminating transit-time effects in vacuum tubes [H01J 21/34](#))

H03F 1/18

- • by use of distributed coupling {[H03F 1/18](#), i.e. distributed amplifiers (distributed amplifiers using coupling networks with distributed constants [H03F 3/605](#))}

U H03F 3/00

Amplifiers with only discharge tubes or only semiconductor devices as amplifying elements

- U H03F 3/60 • Amplifiers in which coupling networks have distributed constants, e.g. with waveguide resonators ([H03F 3/54](#) takes precedence)
- H03F 3/602 • • {Combinations of several amplifiers}
- WARNING
Not complete, see also [H03F 3/68](#)}

U H03F 2203/00 Indexing scheme relating to amplifiers with only discharge tubes or only semiconductor devices as amplifying elements covered by [H03F 3/00](#)

- U H03F 2203/45 • Indexing scheme relating to differential amplifiers
- H03F 2203/45096 • • the difference of two signals being made by, e.g. combining two or more current mirrors, e.g. differential current mirror
- H03F 2203/45571 • • the IC comprising two diodes, e.g. Gilbert circuit

Project: N/A (H03G)

H03G

CONTROL OF AMPLIFICATION (impedance networks, e.g. attenuators, [H03H](#); control of transmission in lines [H04B 3/04](#))

NOTES

1. This subclass ~~covers~~[covers](#):-
 - control of gain of amplifiers or frequency-changers,
 - control of frequency range of amplifiers,
 - limiting amplitude or rate of change of amplitude
2. Attention is drawn to the Note following the title of subclass [H03F](#).

H03G 1/00

Details of arrangements for controlling amplification {(for arrangements combined with means for generating a controlling signal, or these means ~~per se~~[per se](#), ~~see~~[see](#) the other main groups of [H03G](#))}

U H03G 5/00

Tone control or bandwidth control in amplifiers

- H03G 5/005 • {of digital signals (~~see~~[see](#) provisionally also [H03G 5/00](#))}

U H03G 7/00

Volume compression or expansion in amplifiers {(frequency dependent [H03G 9/00](#))}

- 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 7/007 • {of digital or coded signals (~~see~~[see](#) provis. also [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~~[see](#) provisional also [H03G 11/00](#))}
- H03G 11/008 • {of digital or coded signals (~~see~~[see](#) provis. also [H03G 11/00](#), [H03G 11/02](#))}

Project: N/A (H03H)

U H03H 2/00

Networks using elements or techniques not provided for in groups [H03H 3/00](#) - [H03H 21/00](#)

- H03H 2/003 • {comprising optical fibre network elements (optical elements ~~per se~~[per se](#) [G02B](#), [G02F](#); transmission systems using light waves [H04B 10/00](#))}

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~~[per se](#) [H01L 41/00](#); electromechanical transducers [H04R](#))

- 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~~ [per se G06K 7/10009](#), [G01S 13/74](#))}
- U H03H 17/00 **Networks using digital techniques**
- U H03H 17/02 • Frequency selective networks {(digital computers for complex mathematical operations [G06F 17/10](#))}
- H03H 17/0223 • • {Computation saving measures; Accelerating measures (computations ~~per se~~ [per se G06F](#))}

Project: N/A (H03J)

H03J

TUNING RESONANT CIRCUITS; SELECTING RESONANT CIRCUITS
(indicating arrangements for measuring [G01D](#); measuring, testing [G01R](#); remote-control in general [G05](#), [G08](#); automatic control or stabilisation of generators [H03L](#))

NOTE

This subclass ~~covers~~[covers](#) also the control of tuning, including the combined control of tuning and other functions, e.g. combinations of tuning control and volume control, combinations of control of local oscillator and of supplementary resonant circuits.

- U H03J 2200/00 **Indexing scheme relating to tuning resonant circuits and selecting resonant circuits**
- H03J 2200/36 • Circuit arrangements for, e.g. increasing the tuning range, linearizing the voltage-capacitance relationship, lowering noise, constant slope in different bands

Project: N/A (H03K)

H03K

PULSE TECHNIQUE (measuring pulse characteristics [G01R](#); mechanical counters having an electrical input [G06M](#); information storage devices in general [G11](#); sample-and-hold arrangements in electric analogue stores [G11C 27/02](#); construction of switches involving contact making and breaking for generation of pulses, e.g. by using a moving magnet, [H01H](#); static conversion of electric power [H02M](#); generation of oscillations by circuits employing active elements which operate in a non-switching manner [H03B](#); modulating sinusoidal oscillations with pulses [H03C](#), [H04L](#); discriminator circuits involving pulse counting [H03D](#); automatic control of generators [H03L](#); starting, synchronisation or stabilisation of generators where the type of generator is irrelevant or unspecified [H03L](#); coding, decoding or code conversion in general [H03M](#))

NOTES

1. This subclass ~~covers~~[covers](#):
 - methods, circuits, devices, or apparatus using active elements operating in a discontinuous or switching manner for generating, counting, amplifying, shaping, modulating, demodulating, or otherwise manipulating signals;
 - electronic switching not involving contact-making and braking;
 - logic circuits handling electric pulses.
2. In this subclass, the following expression is used with the meaning indicated:

- "active element" exercises control over the conversion of input energy into an oscillation or a discontinuous flow of energy.

3. In this subclass, where the claims of a patent document are not limited to a specific circuit element, the document is classified at least according to the elements used in the described embodiment.

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 :

[H03K 17/695](#) covered by [H03K 17/687](#)

- U H03K 3/00** **Circuits for generating electric pulses; Monostable, bistable or multistable circuits ([H03K 4/00](#) takes precedence; for digital computers [G06F 1/025](#), {[G06F 1/04](#)})**
- U H03K 3/02
 - Generators characterised by the type of circuit or by the means used for producing pulses ([H03K 3/64](#) - [H03K 3/84](#) take precedence)
- U H03K 3/26
 - • by the use, as active elements, of bipolar transistors with internal or external positive feedback ([H03K 3/023](#), [H03K 3/027](#) take precedence)
- U H03K 3/28
 - • • using means other than a transformer for feedback
- U H03K 3/281
 - • • • using at least two transistors so coupled that the input of one is derived from the output of another, e.g. multivibrator
- U H03K 3/282
 - • • • • astable
- H03K 3/283
 - • • • • Stabilisation of output {e.g. using crystal}
- 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)}
- H03K 17/94
 - characterised by the way in which the control signal is generated (mechanical structural details of control members of switches or keyboards, such as keys, push-buttons, levers or other mechanisms for transferring force to the activated elements, not directly producing electronic effects [H01H](#); keyboards for special applications, [see see](#) the relevant places, e.g. [B41J](#), [G06F 3/023](#), [H04L 15/00](#), [H04L 17/00](#), [H04M 1/00](#))
- U H03K 19/00** **Logic circuits, i.e. having at least two inputs acting on one output; Inverting circuits {(inverting circuits used as delay elements [H03K 5/13](#))}**
- U H03K 19/02
 - using specified components ({[H03K 19/0005](#) - [H03K 19/0021](#)}, [H03K 19/003](#) - [H03K 19/0175](#) take precedence)
- H03K 19/14
 - • using opto-electronic devices, i.e. light-emitting and photoelectric devices electrically- or optically-coupled (optical logic elements [per se](#) [per se](#) [G02F 3/00](#))
- U H03K 2217/00** **Indexing scheme related to electronic switching or gating, i.e. not by contact-making or -breaking covered by [H03K 17/00](#)**
- H03K 2217/0027
 - Measuring means of, e.g. currents through or voltages across the switch
- U H03K 2217/94
 - characterised by the way in which the control signal is generated
- U H03K 2217/96
 - • Touch switches

- H03K 2217/96015 • • • Constructional details for touch switches (for capacitive touch switches ~~see~~[see](#) [H03K 2217/9607](#))

Project: N/A (H03L)**H03L****AUTOMATIC CONTROL, STARTING, SYNCHRONISATION, OR STABILISATION OF GENERATORS OF ELECTRONIC OSCILLATIONS OR PULSES (of dynamo-electric generators [H02P](#))****NOTES**

1. This subclass ~~covers~~[covers](#):
 - automatic control circuits for generators of electronic oscillations or pulses;
 - starting, synchronisation, or stabilisation circuits for generators where the type of generator is irrelevant or unspecified.
2. This subclass ~~does not cover~~[does not cover](#) stabilisation or starting circuits specially adapted to only one specific type of generator, which are covered by subclasses [H03B](#), [H03K](#).
3. In this subclass, the following expression is used with the meaning indicated:
 - "automatic control" covers only closed loop systems.

U H03L 1/00 Stabilisation of generator output against variations of physical values, e.g. power supply (automatic control [H03L 5/00](#), [H03L 7/00](#))

- U H03L 1/02 • against variations of temperature only**
- H03L 1/028 • • {of generators comprising piezo-electric resonators ([H03L 1/021](#) and [H03L 1/022](#) take precedence; oscillation generators with a piezo-electric resonator ~~per se~~[per se](#) [H03B 5/32](#))}**

H03L 7/00 Automatic control of frequency or phase; Synchronisation (tuning of resonant circuits in general [H03J](#); synchronising in digital communication systems, ~~see~~[see](#) the relevant groups in class [H04](#))

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~~[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](#))

- H03M 1/12 • Analogue/digital converters ({[H03M 1/001](#) - [H03M 1/004](#) ~~as well as~~, } [H03M 1/02](#) - [H03M 1/10](#) take precedence)**

U H03M 1/22 • • Pattern-reading type

U H03M 1/24 • • • using relatively movable reader and disc or strip

	H03M 1/245	<ul style="list-style-type: none"> • • • {Constructional details of parts relevant to the encoding mechanism, e.g. pattern carriers, pattern sensors (for details of other parts, e.g. housings, casings or the like, see the relevant application subclasses of G01, H01)}
U	H03M 1/28	<ul style="list-style-type: none"> • • • • with non-weighted coding
U	H03M 1/30	<ul style="list-style-type: none"> • • • • incremental
	H03M 1/301	<ul style="list-style-type: none"> • • • • • {Constructional details of parts relevant to the encoding mechanism, e.g. pattern carriers, pattern sensors (details of housings, casings or the like, see the relevant application subclasses of G01, H01)}
	H03M 1/66	<ul style="list-style-type: none"> • Digital/analogue converters ({H03M 1/001 - H03M 1/004 as well as, } H03M 1/02 - H03M 1/10 take precedence)
U	H03M 3/00	Conversion of analogue values to or from differential modulation
U	H03M 3/30	<ul style="list-style-type: none"> • {Delta-sigma modulation} <p><u>NOTE</u></p> <p>In this group branch, in the absence of an indication of the contrary, classification is made in the first appropriate place</p>
	H03M 3/50	<ul style="list-style-type: none"> • • {Digital/analogue converters using delta-sigma modulation as an intermediate step (digital delta-sigma modulators per se per se H03M 7/3004)}
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 7/30	<ul style="list-style-type: none"> • 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)}
	H03M 7/3082	<ul style="list-style-type: none"> • • {Vector coding (for television signals, see H04N 19/94)}
	H03M 9/00	Parallel/series conversion or vice versa vice versa (digital stores in which the information is moved stepwise per se per se G11C 19/00)
U	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 - 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • 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	<ul style="list-style-type: none"> • • • using multiple parity bits
U	H03M 13/1102	<ul style="list-style-type: none"> • • • • {Codes on graphs and decoding on graphs, e.g. low-density parity check [LDPC] codes}
U	H03M 13/1148	<ul style="list-style-type: none"> • • • • • {Structural properties of the code parity-check or generator matrix}

- H03M 13/1174 {Parity-check or generator matrices built from sub-matrices representing known block codes such as, e.g. Hamming codes, e.g. generalized LDPC codes}
- U H03M 13/13 . . . Linear codes
- U H03M 13/15 Cyclic codes, i.e. cyclic shifts of codewords produce other codewords, e.g. codes defined by a generator polynomial, Bose-Chaudhuri-Hocquenghem [BCH] codes ([H03M 13/17](#) takes precedence)
- H03M 13/1505 {Golay Codes}
- WARNING
[H03M 13/1505](#) is not complete, see provisionally also [H03M 13/15](#) }
- U H03M 13/27 . using interleaving techniques
- H03M 13/2732 . . {Convolutional interleaver; Interleavers using shift-registers or delay lines like, e.g. Ramsey type interleaver}
- U H03M 13/29 . combining two or more codes or code structures, e.g. product codes, generalised product codes, concatenated codes, inner and outer codes
- H03M 13/2957 . . {Turbo codes and decoding}
- NOTE
This group ~~covers~~[covers](#) also aspects when a component code is replaced by a non-coded constraint, e.g. like in joint turbo decoding and detection
- H03M 13/296 . . {Particular turbo code structure}
- NOTE
this group ~~covers~~[covers](#) hybrid parallel and serial concatenated turbo code structures and other unusual code structures that do not fit into [H03M 13/2963](#) - [H03M 13/2972](#)
- H03M 13/2975 . . . {Judging correct decoding, e.g. iteration stopping criteria (stopping criteria for iterative decoding, ~~see~~[see](#) also [H04L 1/0051](#))}
- U H03M 13/37 . Decoding methods or techniques, not specific to the particular type of coding provided for in groups [H03M 13/03](#) - [H03M 13/35](#)
- U H03M 13/39 . . Sequence estimation, i.e. using statistical methods for the reconstruction of the original codes
- H03M 13/42 . . . {MAP decoding or approximations thereof based on trellis or lattice decoding, e.g. forward-backward algorithm, log-MAP decoding, max-log-MAP decoding (~~see~~[see](#) also [H04L 1/0055](#))}

U 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]
- U H03M 2201/615 • • • • Compensation [3]
- H03M 2201/6164 • • • • • using stored correction values (for previous editions, [see](#)[see](#) provisionally [H03M 2201/72](#))[3]
- H03M 2201/6171 • • • • • using a computer for more than just storing (for previous editions, [see](#)[see](#) provisionally [H03M 2201/72](#))[3]
- U H03M 2201/63 • • Calibration; Deviation correction [2]
- U H03M 2201/6345 • • • Type of correction [H]
- H03M 2201/639 • • • • Offset or drift correction (for the second edition, [see](#)[see](#) provisionally [H03M 2201/64](#))[3]

Project: N/A (H04)

H04

ELECTRIC COMMUNICATION TECHNIQUE

NOTE

This class [covers](#)[covers](#) electrical communication systems with propagation paths employing light (optical communication), infra-red, ultrasonic, sonic, or infrasonic waves.

Project: N/A (H04B)

H04B

TRANSMISSION (transmission systems for measured values, control or similar signals [G08C](#); coding, decoding, code conversion, in general [H03M](#); broadcast communication [H04H](#); multiplex systems [H04J](#); secret communication [H04K](#); transmission of digital information [H04L](#))

NOTE

This subclass [covers](#)[covers](#) the transmission of information-carrying signals, the transmission being independent of the nature of the information, and includes monitoring and testing arrangements and the suppression and limitation of noise and interference.

U H04B 1/00

Details of transmission systems, not covered by a single one of groups [H04B 3/00](#) - [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](#) - [H04B 1/76](#)

- U 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 1/0017
- • {Digital filtering ([H04B 1/001](#) takes precedence; digital filters ~~per se~~ *per se* [H03H 17/00](#))}
- 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~~ *per se* [H03D 3/007](#), [H03C 3/40](#))}
- H04B 1/0042
- • {Digital filtering ([H04B 1/0035](#) takes precedence; digital filters ~~per se~~ *per se* [H03H 17/00](#))}
- U H04B 1/06
- Receivers (control of amplification [H03G](#); television receivers [H04N 5/44](#), [H04N 5/64](#))
- U H04B 1/16
- • Circuits {(demodulators [H03D](#))}
- U 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~~ *see* [H03G 3/34](#))}
- U H04B 1/38
- Transceivers, i.e. devices in which transmitter and receiver form a structural unit and in which at least one part is used for functions of transmitting and receiving
- U H04B 1/40
- • Circuits
- U H04B 1/50
- • • using different frequencies for the two directions of communication
- H04B 1/52
- • • Hybrid arrangements, i.e. arrangements for transition from single-path two-direction transmission to single-direction transmission on each of two paths or ~~vice versa~~ *vice versa*
- U H04B 1/54
- • • using the same frequency for two directions of communication ([H04B 1/44](#) takes precedence)
- H04B 1/58
- • • Hybrid arrangements, i.e. arrangements for transition from single-path two-direction transmission to single-direction transmission on each of two paths or ~~vice versa~~ *vice versa*
- U 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 3/26
- • Improving frequency characteristic by the use of loading coils (loading coils ~~per se~~ *per se* [H01F 17/08](#))
- U H04B 5/00
- Near-field transmission systems, e.g. inductive loop type**

	H04B 5/0018	<ul style="list-style-type: none"> • {using leaky or radiating cables, e.g. leaky coaxial cables or power lines for inductive transmission (leaky cables per se per se H01Q 13/20; for railways B61L 3/22)}
U	H04B 7/00	Radio transmission systems, i.e. using radiation field (H04B 10/00, H04B 15/00 take precedence)
U	H04B 7/02	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • {Site diversity, e.g. macro-diversity (for co-located independent aerials H04B 7/04)}
	H04B 7/026	<ul style="list-style-type: none"> • • • {Cooperative diversity, e.g. using fixed or mobile stations as relays (cooperative coding H04L 1/0077, relays per se per se in CoMP H04B 7/15592)}
U	H04B 7/14	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • • Active relay systems
U	H04B 7/155	<ul style="list-style-type: none"> • • • Ground-based stations (H04B 7/204 takes precedence; {for satellite systems H04B 7/18517})
U	H04B 7/15528	<ul style="list-style-type: none"> • • • • {Control of operation parameters of a relay station to exploit the physical medium}
	H04B 7/1555	<ul style="list-style-type: none"> • • • • • {Selecting relay station antenna mode, e.g. selecting omnidirectional -, directional beams, selecting polarizations}
	H04B 7/15557	<ul style="list-style-type: none"> • • • • • {Selecting relay station operation mode, e.g. between amplify and forward mode, decode and forward mode or FDD - and TDD mode}
U	H04B 7/15564	<ul style="list-style-type: none"> • • • • {Relay station antennae loop interference reduction}
	H04B 7/15571	<ul style="list-style-type: none"> • • • • • {by signal isolation, e.g. isolation by frequency or by antenna pattern, or by polarization}
U	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
		<p><u>NOTE</u></p> <p>Groups H04B 10/03, H04B 10/07, H04B 10/11, H04B 10/25, H04B 10/27, H04B 10/29 and H04B 10/40 - H04B 10/90, and their subgroups are based on IPC2013.01</p>
	H04B 10/25	<ul style="list-style-type: none"> • Arrangements specific to fibre transmission {(optical fibres per se per se, structural details of arrangements comprising optical fibres or other optical elements G02B 6/00)} <p><u>WARNING</u></p> <p>This group and its subgroups are not complete pending reclassification; see also H04B 10/12 and its subgroups</p>
U	H04B 10/2507	<ul style="list-style-type: none"> • • for the reduction or elimination of distortion or dispersion
U	H04B 10/2513	<ul style="list-style-type: none"> • • • due to chromatic dispersion
	H04B 10/25133	<ul style="list-style-type: none"> • • • • {including a lumped electrical or optical dispersion compensator (H04B 10/2519, H04B 10/2525 take precedence) ; optical dispersion compensators involving optical fibres per se per se G02B 6/293}
	H04B 10/2519	<ul style="list-style-type: none"> • • • • using Bragg gratings {(Bragg gratings per se per se G02B 6/02076; devices using fibre gratings for dispersion control per se per se G02B 6/29316)}

- H04B 10/2525
 - • • using dispersion-compensating fibres {(dispersion-tailored or dispersion compensation fibres ~~per se~~ per se [G02B 6/02214](#))}
- H04B 10/25253
 - • • • {with dispersion management, i.e. using a combination of different kind of fibres in the transmission system (devices with different kinds of fibres for dispersion control ~~per se~~ per se [G02B 6/29374](#))}
- U H04B 10/29
 - Repeaters
- H04B 10/291
 - • in which processing or amplification is carried out without conversion of the main signal from optical form {(fibre optical amplifiers ~~per se~~ per se [H01S 3/067](#))}
- U H04B 10/2912
 - • • {characterised by the medium used for amplification or processing}
- H04B 10/2914
 - • • • {using lumped semiconductor optical amplifiers [SOA] (semiconductor optical amplifiers ~~per se~~ per se [H01S 5/50](#))}
- H04B 10/2916
 - • • • {using Raman or Brillouin amplifiers (Raman or Brillouin amplifiers ~~per se~~ per se [H01S 3/302](#))}
- U H04B 10/293
 - • • Signal power control
- H04B 10/294
 - • • • in a multiwavelength system, e.g. gain equalisation {(for general power control in WDM systems, ~~see~~ see also [H04J 14/0221](#))}
- U H04B 10/50
 - Transmitters
- U H04B 10/516
 - • Details of coding or modulation
- H04B 10/532
 - • • Polarisation modulation {, e.g. polarization switching or transmission of a single data stream on two orthogonal polarizations (polarization multiplexed systems [H04J 14/06](#))}
- 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~~ per se [H04L](#))
- H04B 14/04
 - • using pulse code modulation (analogue/digital or digital/analogue conversion ~~per se~~ per se [H03M 1/00](#); {for TV signals [H04N 7/24](#)})
- U H04B 15/00
 - **Suppression or limitation of noise or interference (by means associated with receiver [H04B 1/10](#))**
- H04B 15/005
 - {Reducing noise, e.g. humm, from the supply}
- U H04B 2210/00
 - **Indexing scheme relating to optical transmission systems**
- H04B 2210/517
 - Optical NRZ to RZ conversion, or ~~vice versa~~ vice versa

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~~ 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 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~~ [per se](#) [H03H 7/00](#), [H03H 9/00](#))}
- H04J 3/22 • in which the sources have different rates or codes {(simultaneous speech and digital data or video transmission [H04M 11/06](#); ~~see~~[see](#) provisional also [H04J 3/16](#))}
- H04J 14/00 **Optical multiplex systems (optical coupling, mixing or splitting, ~~per-se~~ [per se](#) [G02B](#))**
- U H04J 2211/00 **Orthogonal indexing scheme relating to orthogonal multiplex systems**
- H04J 2211/001 • using small cells within macro cells, e.g. femto, pico or micro cells

Project: N/A (H04K)

- H04K 1/00 **Secret communication (ciphering or deciphering apparatus ~~per-se~~ [per se](#) [G09C](#); systems with reduced bandwidth or suppressed carrier [H04B 1/66](#); spread spectrum techniques [H04B 1/69](#); by using a sub-carrier [H04B 14/08](#); by multiplexing [H04J](#); transmission systems for secret digital information [H04L 9/00](#); secret or subscription television systems [H04N 7/16](#), [H04N 21/00](#))**
- 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~~[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~~[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

}

Project: N/A (H04L)

H04L

TRANSMISSION OF DIGITAL INFORMATION, e.g. TELEGRAPHIC COMMUNICATION (typewriters [B41J](#); order telegraphs, fire or police telegraphs [G08B](#); visual telegraphy [G08B](#), [G08C](#); teleautographic systems [G08C](#); ciphering or deciphering apparatus ~~per se~~ [per se](#) [G09C](#); coding, decoding or code conversion, in general [H03M](#); arrangements common to telegraphic and telephonic communication [H04M](#); selecting [H04Q](#))

NOTE

This subclass ~~covers~~ [covers](#) transmission of signals having been supplied in digital form and includes data transmission, telegraphic communication and methods or arrangements for monitoring.

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:

H04L 12/20	covered by	H04L 29/00
H04L 25/04	"	H04L 25/03
H04L 25/17	"	H03H
H04L 25/18	"	H04L 25/027
H04L 25/28	"	H04L 25/0268
H04L 25/30	"	H04L 25/061
H04L 25/32	"	H04L 25/49
H04L 25/34	"	H04L 25/4917
H04L 25/36	"	
H04L 25/48	"	H04L 25/49
H04L 25/50	"	H04L 25/05
H04L 25/52	"	H04L 25/20
H04L 25/54	"	H04L 25/20
H04L 25/56	"	H04L 25/202
H04L 25/58	"	H04L 25/20
H04L 25/60	"	H04L 25/207
H04L 25/62	"	H04L 25/205
H04L 25/64	"	H04L 25/245
H04L 25/66	"	H04L 25/247

- U H04L 1/00 Arrangements for detecting or preventing errors in the information received (correcting synchronisation [H04L 7/00](#); {for digital computers [G06F 11/00](#)}; arrangements in the transmission path [H04B](#))**
- U H04L 1/004** • {by using forward error control ([H04L 1/0618](#) takes precedence; coding, decoding or code conversion, for error detection or correction [H03M 13/00](#))}
- U H04L 1/0056** • • {Systems characterized by the type of code used ([H04L 1/08](#) takes precedence)}
- H04L 1/007** • • • {Unequal error protection (for format [H04L 1/0078](#); for codes ~~per se~~ [per se](#) [H03M 13/35](#))}

- H04L 1/0071
 - • • {Use of interleaving (interleaving ~~per se~~ per se [H03M 13/27](#))}
- U H04L 1/12
 - by using return channel
- U H04L 1/16
 - in which the return channel carries supervisory signals, e.g. repetition request signals
- U H04L 1/18
 - • • Automatic repetition systems, e.g. van Duuren system; {ARQ protocols}
- U H04L 1/1829
 - • • • {Arrangements specific to the receiver end}
- H04L 1/1861
 - • • • • {Physical mapping arrangements (for ACK signaling ~~see see~~ also [H04L 5/0053](#))}
- U H04L 1/20
 - using signal quality detector

WARNING

see [G01R 29/02](#)

- H04L 1/201
 - • {Frame classification, e.g. bad, good or erased (frame indication ~~per se~~ per se [H04L 1/0082](#))}
- H04L 1/22
 - using redundant apparatus to increase reliability {(~~see see~~ [G06F 11/08](#) - [G06F 11/20](#))}
- U H04L 5/00

Arrangements affording multiple use of the transmission path (multiplex communication in general [H04J](#); {orthogonal multiplex systems [H04J 11/00](#)})
- U H04L 5/0001
 - {Arrangements for dividing the transmission path (duplexing [H04L 5/14](#); multiplexing of different sources on one path [H04J](#))}
- U 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](#))}
- U H04L 5/0005
 - • • {Time-frequency}
- H04L 5/0007
 - • • • {the frequencies being orthogonal, e.g. OFDM(A), DMT}
- U H04L 5/02
 - Channels characterised by the type of signal
- U H04L 5/06
 - • the signals being represented by different frequencies (combined with time-division multiplexing [H04L 5/26](#))
- H04L 5/08
 - • • each combination of signals in different channels being represented by a fixed frequency {(, e.g. twinplex; ~~see see~~ [H04L 27/16](#))}
- 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 see~~: [H04L 13/00](#) - [H04L 23/00](#), [H03K 5/15](#), [H03K 17/62](#), [H04J 3/047](#))}

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~~ 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~~[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](#)

U 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

U H04L 9/0816

- • {Key establishment, i.e. cryptographic processes or cryptographic protocols whereby a shared secret becomes available to two or more parties, for subsequent use}

H04L 9/0852

- • • {Quantum cryptography (transmission systems employing electromagnetic waves other than radio waves, e.g. light, infra-red [H04B 10/00](#); wavelength-division multiplex systems [H04J 14/02](#))}

H04L 9/10

- with particular housing, physical features or manual controls {(not used; ~~see~~[see](#) [H04L 9/00](#))}

U H04L 9/18

- Encryption by serially and continuously modifying data stream elements, e.g. stream cipher systems

WARNING

This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/065](#)

H04L 9/20

- • Pseudorandom key sequence combined element-for-element with data sequence {(not used; ~~see~~[see](#) [H04L 9/18](#))}

U H04L 9/22

- • • with particular pseudorandom sequence generator

WARNING

This subgroup is no longer used for the classification of new documents as from 1.02.2012 and the backlog of this subgroup is being continuously reclassified to [H04L 9/065](#)

H04L 9/24

- • • sequence produced by more than one generator {(not used; ~~see~~[see](#) [H04L 9/22](#))}

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
- H04L 12/14 • • {Metering,} charging {or billing} arrangements {specially adapted for data wireline or wireless communications (payment schemes, architectures or protocols ~~per se~~ ~~per se~~ [G06Q 20/00](#))}
- 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](#)
- U H04L 12/2401 • • • {involving integration or standardization}
- 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 41/02](#)
- H04L 12/2404 • • • • {Multivendor or multistandard integration}
- WARNING
~~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 41/022](#) }
- U H04L 12/28 • characterised by path configuration, e.g. local area networks [LAN], wide area networks [WAN]
- 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~~[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~~[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 12/40 | • • Bus networks |
| U | H04L 12/403 | • • • with centralised control, e.g. polling |
| | H04L 12/4035 | • • • {in which slots of a TDMA packet structure are assigned based on a contention resolution carried out at a master unit (TDM/TDMA multiplex systems per se <i>per se</i> H04J 3/1694 ; hybrid switching systems H04L 12/64)} |
| 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~~ *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~~ *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

- U H04L 12/54 · Store-and-forward switching systems (packet switching systems [H04L 12/56](#))
- U H04L 12/56 · · {Packet switching systems}
- H04L 12/5696 · · · {Packet switches, e.g. Layer 2 switches, Layer 3 switches, Multilayer switches}

WARNING

This subgroup is no longer used for classification as from 01.05.2012.
The backlog of this subgroup is being continuously reclassified to group [H04L 49/00](#) }

U H04L 25/00

Baseband systems

- U 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 25/0202 · · {Channel estimation}
- U H04L 25/0224 · · · {using sounding signals}
- H04L 25/0226 · · · · {sounding signals ~~per se~~[per se](#)}
- U H04L 25/0264 · · {Arrangements for coupling to transmission lines (duplexing arrangements [H04L 5/14](#); line equalisers, line build-out devices [H04L 25/03878](#))}
- U H04L 25/028 · · · {Arrangements specific to the transmitter end}
- H04L 25/0286 · · · · {Provision of wave shaping within the driver (wave shaping ~~per se~~[per se](#) [H04L 25/03834](#))}
- H04L 25/0288 · · · · · {the shape being matched to the transmission line (pre-equalisation ~~per se~~[per se](#) [H04L 25/03343](#))}
- H04L 25/03 · · Shaping networks in transmitter or receiver, e.g. adaptive shaping networks (impedance networks ~~per se~~[per se](#) [H03H](#)); {Receiver end arrangements for processing baseband signals}
- U H04L 25/03006 · · · {Arrangements for removing intersymbol interference}
- U H04L 25/03178 · · · · {Arrangements involving sequence estimation techniques}
- H04L 25/03248 · · · · · {Arrangements for operating in conjunction with other apparatus}

NOTE

This group ~~covers~~[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~~[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~~[see](#) also [H04B 1/10](#))}

- U 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](#)}}
- U H04L 27/0014 · {Carrier regulation (of chaotic carriers [H04L 27/001](#); for multicarrier receivers [H04L 27/2657](#))}
- U H04L 2027/0024 · · {at the receiver end}
- U H04L 2027/0026 · · · {Correction of carrier offset}
- U H04L 2027/0038 · · · · {using an equaliser}
- H04L 2027/0042 · · · · · {the equaliser providing the offset correction [per-se-per se](#)}
- 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}
- U H04L 27/261 · · · · {Details of reference signals ([H04L 27/262](#) takes precedence)}
- H04L 27/2613 · · · · · {Structure of the reference signals [per-se-per se](#)}
- U H04L 27/2647 · · · {Arrangements specific to the receiver (equalisation [H04L 25/03006](#), [H04L 27/01](#))}
- U H04L 27/2655 · · · · {Synchronisation arrangements}
- U H04L 27/2689 · · · · · {Link with other circuits, i.e. special connections between synchronisation arrangements and other circuits for achieving synchronisation}
- H04L 27/2695 · · · · · · {with channel estimation, e.g. determination of delay spread, derivative or peak tracking (channel estimation [per-se-per se](#) [H04L 25/0202](#))}
- U H04L 29/00** **Arrangements, apparatus, circuits or systems, not covered by a single one of groups [H04L 1/00](#) - [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}**
- U 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
- 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](#)~~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~~ **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~~ **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](#)

- | | | |
|---|---------------|---|
| U | 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 29/06414 | . . . {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 29/08 | . . . Transmission control procedure, e.g. data link level control procedure |
| U | 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 29/08135 {in which application tasks are distributed across nodes in the network (multiprogramming arrangements [G06F 9/46](#))}
- U 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](#))}
- U 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 29/08414 {~~Discovery involving distributed pre-established resource-based relationships among peers;~~ *Discovery involving distributed pre-established resource-based relationships among peers,* e.g. based on DHTs (pre-configuration of logical or physical connections [H04L 29/0836](#))}
- 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~~*covers* session signaling at higher OSI layers to support networked applications.

- U H04L 29/12 . characterised by the data terminal {contains provisionally no documents}
- U H04L 29/12009 . . {Arrangements for addressing and naming in data networks}

NOTES

1. [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](#)) .
2. Aspects relating to switching and routing are classified in [H04L 12/56](#).
3. 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 29/1215
- • • • {Directories for electronic mail or instant messaging (message switching systems ~~per se~~ [per se](#) [H04L 12/58](#))}
- 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 61/1564](#)
- 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~~[covers](#):
1. Flow control or congestion control
 2. Queue scheduling
 3. Admission control or resource allocation
- U H04L 47/10
- {Flow control or congestion control}
- H04L 47/34
- • {Sequence integrity, e.g. sequence numbers}
- U H04L 49/00**
- {Packet switching elements (selecting arrangements for multiplex arrangements using optical switching [H04Q 11/0001](#))}**
- U H04L 49/35
- {Application specific switches}
- H04L 49/354
- • {Support for virtual LAN, VLAN tagging or multiple registration, e.g. according to IEEE 802.1q}
- U 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](#))}**
- U H04L 63/04
- {for providing a confidential data exchange among entities communicating through data packet networks}
- H04L 63/0428
- • {wherein the data content is protected, e.g. by encrypting or encapsulating the payload}
- U H04L 63/14
- {for detecting or protecting against malicious traffic}
- H04L 63/1408
- • {by monitoring network traffic (monitoring network traffic ~~per se~~ [per se](#) [H04L 12/2602](#))}

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~~[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

}

- U H04L 65/10 - {Signalling, control or architecture (selecting or control in telephonic networks [H04Q 3/00](#); data network management [H04L 12/24](#); data network testing or monitoring [H04L 12/26](#); admission control or resource reservation in packet switching networks [H04L 12/5695](#); control signalling related to video distribution [H04N 21/63](#))}
- 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 [H04L 12/1822](#); admission control/resource reservation in packet switching networks [H04L 12/5695](#))}
- 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~~[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~~[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](#) }

Project: N/A (H04M)

H04M

TELEPHONIC COMMUNICATION (counting mechanisms [G06M](#); circuits for controlling other apparatus via a telephone cable and not involving telephone switching apparatus [G08](#); reels or other take-up devices for cords [H02G 11/00](#); multiplex transmission between switching centres [H04J](#); selecting arrangements [H04Q](#); loudspeakers, microphones, gramophone pick-ups or like electromechanical transducers [H04R](#))

NOTES

1. This subclass ~~covers~~[covers](#) :

- telephonic communication systems combined with other electrical systems;
- testing arrangements peculiar to telephonic communication systems.

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

- "subscriber" is a general term for terminal equipment, e.g. telephone for public use;
- "substation" means a subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
- "satellite" is a type of exchange the operation of which depends upon control signals received from a supervisory exchange;
- "switching centres" includes exchanges and satellites.

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 :

[H04M 1/677](#) covered by [H04M 1/677](#)

[H04M 7/02](#) covered by [H04Q 3/00](#)

[H04M 7/04](#) covered by [H04Q 3/00](#)

[H04M 7/10](#) covered by [H04Q 3/00](#)

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

U H04M 1/0202 • {Portable telephone sets, e.g. cordless phones, mobile phones or bar type handsets (constructional features of telephone transmitters or receivers, e.g. of speakers or microphones [H04M 1/03](#); mounting of the dialing module [H04M 1/23](#); with protection against RF exposure [H04B 1/3838](#))}

WARNING

Groups [H04M 1/0249](#) - [H04M 1/0285](#) are not complete pending a reorganisation. See also group [H04M 1/0202](#)

U H04M 1/026 • • {Details of the structure or mounting of specific components}

H04M 1/0264 • • • {for a camera module assembly (photo or video cameras ~~per se~~ [per se](#) [G03B](#); television cameras ~~per se~~ [per se](#) [H04N 5/225](#))}

H04M 1/0272 • • • {for a projector or beamer module assembly (constructional features of projectors ~~per se~~ [per se](#) [G03B 21/00](#); constructional details of projectors using electronic spatial light modulators ~~per se~~ [per se](#) [H04N 9/31](#))}

H04M 1/17 • Hygienic or sanitary devices on telephone equipment (for mouth-pieces or earpieces ~~per se~~ [per se](#) [H04R 1/12](#))

H04M 1/18 • Telephone sets modified for use in ships, mines, or other places exposed to adverse environment ([H04M 1/19](#) takes precedence; telephone cabinets ~~per se~~ [per se](#) [E04H 1/14](#))

H04M 1/19 • Arrangements of transmitters, receivers, or complete sets to prevent eavesdropping, to attenuate local noise or to prevent undesired transmission; Special mouthpieces or receivers therefor (circuit arrangements for preventing eavesdropping [H04M 1/68](#); telephone cabinets ~~per se~~ [per se](#) [E04H 1/14](#))

U H04M 1/23 • Construction or mounting of dials or of equivalent devices; Means for facilitating the use thereof (by improving visibility [H04M 1/22](#))

- H04M 1/233
 - • • {including a pointing device, e.g. roller key, track ball, rocker switch or joystick (constructional details of pointing devices ~~per se~~ ~~per se~~ [G06F 3/033](#))}
- U 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 1/2474
 - • {Telephone terminals specially adapted for disabled people ([H04M 1/72588](#) takes precedence; network based special services or facilities for hearing-impaired persons [H04M 3/42391](#); devices for conversing with the deaf-blind [G09B 21/04](#))}
- H04M 1/2475
 - • • {for a hearing impaired user (hearing-aids ~~per se~~ ~~per se~~ [H04R 25/00](#))}
- U H04M 1/72
 - Substation extension arrangements; Cordless telephones, i.e. devices for establishing wireless links to base stations without route selecting {(constructional features of cordless telephones [H04M 1/0202](#))}
- U H04M 1/725
 - • Cordless telephones {(for handsfree use [H04M 1/6041](#))}
- U H04M 1/72519
 - • • {Portable communication terminals with improved user interface to control a main telephone operation mode or to indicate the communication status}
- U H04M 1/72522
 - • • • {With means for supporting locally a plurality of applications to increase the functionality (for selecting a function in a menu [H04M 1/2477](#))}
- H04M 1/72558
 - • • • {for playing back music files (portable music players ~~per se~~ ~~per se~~ [G11B 27/00](#))}
- H04M 1/72583
 - • • • {for operating the terminal by selecting telephonic functions from a plurality of displayed items, e.g. menus, icons (interaction techniques for Graphical User Interfaces ~~per se~~ ~~per se~~ [G06F 3/048](#))}
- U H04M 1/72588
 - • • • {specially adapted for disabled people (devices for conversing with the deaf-blind [G09B 21/04](#))}
- H04M 1/72591
 - • • • {for a hearing impaired user (hearing-aids ~~per se~~ ~~per se~~ [H04R 25/00](#))}
- U **H04M 3/00**
 - Automatic or semi-automatic exchanges {(constructional details of telephone exchanges [H04Q 1/02](#))}**
- H04M 3/002
 - {Applications of echo suppressors or cancellers in telephonic connections (in two-way loud-speaking telephone systems [H04M 9/08](#), echo suppressors or cancellers ~~per se~~ ~~per se~~ [H04B 3/20](#))}
- U H04M 3/22
 - Supervisory, monitoring, {management, i.e. operation, administration, maintenance} or testing arrangements
- U H04M 3/24
 - • with provision for checking the normal operation
- H04M 3/248
 - • • {for metering arrangements or prepayment telephone systems (metering arrangements ~~per se~~ ~~per se~~ [H04M 15/00](#); prepayment telephone systems ~~per se~~ ~~per se~~ [H04M 17/00](#))}
- U H04M 3/42
 - Systems providing special services or facilities to subscribers
- U H04M 3/487
 - • Arrangements for providing information services, e.g. recorded voice services, time announcement
- U H04M 3/493
 - • • Interactive information services, e.g. directory enquiries {; Arrangements therefor, e.g. interactive voice response [IVR] systems or voice portals}
- H04M 3/4936
 - • • • {Speech interaction details (speech recognition ~~per se~~ ~~per se~~ [G10L 15/00](#))}
- H04M 3/4938
 - • • • {comprising a voice browser which renders and interprets, e.g. VoiceXML}
- 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}

U	H04M 3/51	<ul style="list-style-type: none"> • • Centralised call answering arrangements requiring operator intervention, {e.g. call or contact centers for telemarketing}
	H04M 3/5166	<ul style="list-style-type: none"> • • • {in combination with interactive voice response systems or voice portals, e.g. as front-ends}
	H04M 3/53	<ul style="list-style-type: none"> • • Centralised arrangements for recording incoming messages {, i.e. mailbox systems}
U	H04M 3/56	<ul style="list-style-type: none"> • • 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)}
	H04M 3/568	<ul style="list-style-type: none"> • • {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 per se H04S 7/30)}
	H04M 3/569	<ul style="list-style-type: none"> • • • {using the instant speaker's algorithm (speech detection per se per se G10L 25/78)}
U	H04M 9/00	Interconnection arrangements not involving centralised switching
U	H04M 9/08	<ul style="list-style-type: none"> • Two-way loud-speaking telephone systems with means for suppressing echoes or otherwise conditioning for one or other direction of traffic (for line transmission in general H04B 3/20)
	H04M 9/082	<ul style="list-style-type: none"> • • {using echo cancellers (echo cancellers per se per se H04B 3/23)}
U	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)
U	H04M 17/20	<ul style="list-style-type: none"> • {with provision for recharging the prepaid account or card, or for credit establishment}
	H04M 17/204	<ul style="list-style-type: none"> • • {on-line recharging, e.g. cashless}
U	H04M 2017/24	<ul style="list-style-type: none"> • {with on-line recharging of an account or card, e.g. cashless}
	H04M 2017/243	<ul style="list-style-type: none"> • • {by sending a message, e.g. SMS, MMS, EMS}
U	H04M 17/30	<ul style="list-style-type: none"> • {using a code}
	H04M 17/307	<ul style="list-style-type: none"> • • {Code type, e.g. alphanumeric code, bar code}
U	H04M 19/00	Current supply arrangements for telephone systems (for selecting-equipment H04Q 1/28)
U	H04M 19/001	<ul style="list-style-type: none"> • {Current supply source at the exchanger providing current to substations}
	H04M 19/008	<ul style="list-style-type: none"> • • {Using DC/DC converters (DC/DC converters per se per se H02M 3/28)}
U	H04M 2201/00	Electronic components, circuits, software, systems or apparatus used in telephone systems
	H04M 2201/39	<ul style="list-style-type: none"> • using speech synthesis (speech synthesis per se per se G10L 13/00)
	H04M 2201/40	<ul style="list-style-type: none"> • using speech recognition (speech recognition per se per se G10L 15/00)
	H04M 2201/41	<ul style="list-style-type: none"> • using speaker recognition (speaker recognition per se per se G10L 17/00)
U	H04M 2203/00	Aspects of automatic or semi-automatic exchanges
U	H04M 2203/35	<ul style="list-style-type: none"> • related to information services provided via a voice call
	H04M 2203/353	<ul style="list-style-type: none"> • • where the information comprises non-audio but is provided over voice channels (protocols for multimedia information services per se per se H04L 65/00)
U	H04M 2242/00	Special services or facilities

H04M 2242/22

- Automatic class or number identification arrangements

WARNING

This group is no longer used for classification of new documents as from November 20, 2009. The backlog of this group is being continuously reclassified to [H04M 3/42034](#) and [H04M 3/42085](#)

U H04M 2250/00

H04M 2250/70

Details of telephonic subscriber devices

- methods for entering alphabetical characters, e.g. multi-tap or dictionary disambiguation (methods for entering alphabetical characters ~~per se~~ *per se* [G06F 3/0237](#))

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~~ 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~~ ~~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~~ 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](#)

U 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 1/00127 • {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}
- 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}
- H04N 1/00185 • • • {Image output (for details of particular output arrangements [see](#) the relevant sub-class, e.g. [B41J](#), [G03B](#), [G09G](#), [G11B](#))}
- H04N 1/00249 • • {with a photographic apparatus, e.g. a photographic printer or a projector (photographic apparatus [per se](#) [per se](#) [G03B](#), [G03D](#))}
- U 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](#))}
- U H04N 1/00283 • • • {with a television apparatus}

- H04N 1/00286
 - • • {with studio circuitry, devices or equipment, e.g. television cameras (television studio circuitry, devices or equipment ~~per se~~ *per se* [H04N 5/222](#))}
- H04N 1/00291
 - • • {with receiver circuitry (television receiver circuitry ~~per se~~ *per se* [H04N 5/44](#))}
- 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](#))}
- U H04N 1/024
 - Details of scanning heads; {Means for illuminating the original (circuit details thereof [H04N 1/40](#))}
- U H04N 1/028
 - • for picture information pick-up
- H04N 1/0281
 - • • {with means for collecting light from a line or an area of the original and for guiding it to only one or a relatively low number of picture element detectors (light-guides ~~per se~~ *per se* [G02B 6/00](#))}
- U H04N 1/02815
 - • • {Means for illuminating the original, not specific to a particular type of pick-up head}
- U H04N 1/0282
 - • • • {Using a single or a few point light sources, e.g. a laser diode}
- H04N 1/02835
 - • • • {in combination with a light guide, e.g. optical fibre, glass plate (light-guides ~~per se~~ *per se* [G02B 6/00](#))}
- U H04N 1/02845
 - • • • {using an elongated light source, e.g. tubular lamp, LED array}
- H04N 1/02855
 - • • • {in combination with a light guide, e.g. optical fibre, glass plate (light-guides ~~per se~~ *per se* [G02B 6/00](#))}
- U H04N 1/02885
 - • • • {Means for compensating spatially uneven illumination, e.g. an aperture arrangement}
- H04N 1/0289
 - • • • {Light diffusing elements, e.g. plates or filters (optical diffusing elements ~~per se~~ *per se* [G02B 5/02](#))}
- H04N 1/02895
 - • • • {Additional elements in the illumination means or cooperating with the illumination means, e.g. filters ([H04N 1/02885](#) takes precedence; optical elements other than lenses ~~per se~~ *per se* [G02B 5/00](#))}
- 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~~ *vice versa* ([H04N 1/387](#) takes precedence; {scanning by varying the direction of light in general [G02B 26/10](#))}
- U 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 1/1205
 - • • {using a device, e.g. an optical fibre bundle, converting rectilinear scanning into circular line scanning or ~~vice versa~~ *vice versa*}
- U H04N 1/19
 - • using multi-element arrays
- U H04N 1/195
 - • • the array comprising a two-dimensional array {or a combination of two-dimensional arrays}
- U H04N 1/19505
 - • • • {Scanning picture elements spaced apart from one another in at least one direction}
- H04N 1/19521
 - • • • {Arrangements for moving the elements of the array relative to the scanned image or ~~vice versa~~ *vice versa*}
- H04N 1/19578
 - • • • • {Hybrid systems, i.e. systems combining more than one arrangement for moving the elements of the array relative to the scanned image or ~~vice versa~~ *vice versa*}

- U 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)}
 - U 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](#))}
 - H04N 1/32026
 - {Changing the receiver mode of operation, e.g. paper reception to memory reception or ~~vice-versa~~ [vice versa](#) ([H04N 1/32673](#) takes precedence)}
 - U H04N 1/32358
 - {using picture signal storage, e.g. at transmitter ([H04N 1/17](#) takes precedence)}
 - U H04N 1/32459
 - {for changing the arrangement of the stored data}
 - H04N 1/32475
 - {Changing the format of the data, e.g. parallel to serial or ~~vice-versa~~ [vice versa](#)}
 - H04N 1/34
 - for coin-freed systems; {pay systems (telephonic metering [H04M 15/00](#), coin-freed or like apparatus ~~per se~~ [per se](#) [G07F](#))}
 - U 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 1/3872
 - {Repositioning or masking}
 - U H04N 1/3873
 - {defined only by a limited number of coordinate points or parameters, e.g. corners, centre; for trimming}
 - H04N 1/3875
 - {combined with enlarging or reducing (enlarging or reducing ~~per se~~ [per se](#) [H04N 1/393](#))}
 - U H04N 1/40
 - Picture signal circuits ([H04N 1/387](#) takes precedence)
 - U H04N 1/405
 - Halftoning, i.e. converting the picture signal of a continuous-tone original into a corresponding signal showing only two levels
- WARNING**
[H04N 1/405](#) and sub-groups, except for [H04N 1/4056](#) are not complete, see [H04N 1/40018](#)
- U H04N 1/4051
 - {producing a dispersed dots halftone pattern, the dots having substantially the same size (different sizes [H04N 1/4057](#))}
 - U H04N 1/4052
 - {by error diffusion, i.e. transferring the binarising error to neighbouring dot decisions}
 - H04N 1/4053
 - {with threshold modulated relative to input image data or ~~vice-versa~~ [vice versa](#)}
 - H04N 1/42
 - Systems for two-way working {, e.g. conference systems ([H04N 1/32](#) takes precedence)}
 - U H04N 1/46
 - Colour picture communication systems {(colorimetry [G01J 3/46](#))}
 - 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~~ [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](#))

- U H04N 3/14
- • by means of electrically scanned solid-state devices (for picture generation [H04N 5/335](#))
- WARNING
Constructional details **97DP12C2B**
- H04N 3/15
- • • {for picture signal generation}
- WARNING
This group is no longer used for classification of new documents as from December 1st, 2009. The backlog is continuously reclassified into group [H04N 5/335](#) and subgroups]
- U 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](#) - [H04N 5/378](#) are based on IPC2012.01
- U H04N 5/04
- Synchronising (for television systems using pulse code modulation [H04N 7/24](#); in general [H03L 7/00](#))
- U H04N 5/08
- • Separation of synchronising signals from picture signals
- H04N 5/10
- • • Separation of line synchronising signal from frame synchronising signal {or **vice-versa** [vice versa](#)}
- U H04N 5/14
- Picture signal circuitry for video frequency region ([H04N 5/222](#) takes precedence)
- 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](#))}
- H04N 5/2171
- • • • {Dust removal, e.g. from surfaces of image sensor or processing of the image signal output by the electronic image sensor}
- 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}
- 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 5/2257
- • • {Mechanical and electrical details of cameras or camera modules for embedding in other devices (mounting structure in mobile phone **see** [see](#) [H04M 1/0264](#); optical details [G03B](#))}

	H04N 5/2259	<ul style="list-style-type: none"> • • {Means for changing the camera field of view without moving the camera body, e.g. nutating 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	<ul style="list-style-type: none"> • • • 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)
	H04N 5/23216	<ul style="list-style-type: none"> • • • {Control of parameters, e.g. field/angle of view of camera via graphical user interface, e.g. touchscreen}
	H04N 5/23219	<ul style="list-style-type: none"> • • • {Control of camera operation based on recognized human faces, facial parts, facial expressions or other parts of the human body (face recognition per se per se G06K 9/00221)}
	H04N 5/23248	<ul style="list-style-type: none"> • • • {for stable pick-up of the scene in spite of camera body vibration (image-sensor selective scanning per se per se H04N 3/1562)}
U	H04N 5/235	<ul style="list-style-type: none"> • • • Circuitry {or methods} for compensating for variation in the brightness of the object {, e.g. based on electric image signals provided by an electronic image sensor}
	H04N 5/2356	<ul style="list-style-type: none"> • • • {Bracketing, i.e. taking a series of images with varying, e.g. stepwise, exposure conditions or focusing conditions}
	H04N 5/72	<ul style="list-style-type: none"> • Modifying the appearance of television pictures by optical filters or diffusing screens (optical filters or diffusing screens per se per se G02B 5/00)
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)
U	H04N 7/01	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • {involving interpolation processes (interpolation-based image scaling G06T 3/4007; interpolation for video coding H04N 19/587, H04N 19/59)}
U	H04N 7/16	<ul style="list-style-type: none"> • Analogue secrecy systems; Analogue subscription systems
U	H04N 7/167	<ul style="list-style-type: none"> • • Systems rendering the television signal unintelligible and subsequently intelligible {(secret communication in general H04K 1/00)}
U	H04N 7/169	<ul style="list-style-type: none"> • • • Systems operating in the time domain of the television signal
	H04N 7/1693	<ul style="list-style-type: none"> • • • {by displacing synchronisation signals relative to active picture signals or vice versa vice versa}
U	H04N 9/00	Details of colour television systems
U	H04N 9/12	<ul style="list-style-type: none"> • Picture reproducers (devices or arrangements for the electro-, magneto- or acousto-optical modulation or deflection of light beams G02F)
U	H04N 9/16	<ul style="list-style-type: none"> • • using cathode ray tubes (H04N 9/11 takes precedence; cathode-ray tubes H01J 31/00)
U	H04N 9/28	<ul style="list-style-type: none"> • • • Arrangements for convergence or focusing
	H04N 9/285	<ul style="list-style-type: none"> • • • using quadrupole lenses (quadrupole lenses per se per se G21K 1/08, H01J 3/14, H01J 29/58, H01J 37/10)
	H04N 9/31	<ul style="list-style-type: none"> • • 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)}

- U 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~~ [per se G02B 27/10](#))}
- U H04N 9/3141
 - • • {Constructional details thereof (details not peculiar to the presence of an electronic spatial light modulator [G03B 21/14](#))}
- 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 9/3152
 - • • • • {for shaping the light beam (beam shaping ~~per se~~ [per se G02B 27/09](#))}
- H04N 9/3155
 - • • • • {for controlling the light source (light source control ~~per se~~ [per se H05B 37/00](#), [H05B 41/00](#); control of an illumination source for displays in general [G09G 3/3406](#))}
- H04N 9/3167
 - • • • • {for polarizing the light beam (polarizing optical systems ~~per se~~ [per se G02B 27/28](#))}
- U H04N 9/3179
 - • • {Video signal processing therefor}
- H04N 9/3182
 - • • • {Colour adjustment, e.g. white balance, shading or gamut (white balance ~~per se~~ [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](#))}
- U H04N 11/00** **Colour television systems (details [H04N 9/00](#))**
- U H04N 11/06
 - Transmission systems characterised by the manner in which the individual colour picture signal components are combined
- U H04N 11/20
 - • Conversion of the manner in which the individual colour picture signal components are combined, e.g. conversion of colour television standards
- H04N 11/22
 - • • in which simultaneous signals are converted into sequential signals or ~~vice versa~~ [vice versa](#)

H04N 13/00**Stereoscopic {or multiview} television systems; Details thereof**NOTE

{This group ~~covers~~ [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](#))}

- U 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](#))}
- U H04N 13/0007
 - • {Processing stereoscopic image signals ([H04N 19/597](#), [H04N 13/004](#) take precedence; image processing as such [G06T](#))}
- H04N 13/0029
 - • {Format conversion of stereoscopic images, e.g. frame-rate or size (standards conversion [per se 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 13/0037
 - • {Colour aspects (processing of colour signals [per se per se H04N 9/64](#))}
- U H04N 13/02
 - Picture signal generators
- H04N 13/0257
 - • {Colour aspects (processing of color signals [per se per se H04N 9/64](#))}
- 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 per se H04N 9/64](#))}
- H04N 13/0459
 - • {using an image projection screen ([H04N 13/0493](#), [H04N 13/0495](#) take precedence; projection devices [per se per se H04N 9/31](#))}
- U **H04N 19/00**

Methods or arrangements for coding, decoding, compressing or decompressing digital video signals
- U H04N 19/10
 - using adaptive coding

NOTE

When classifying in this group, each aspect relating to adaptive coding should, inasmuch as possible, be classified in each one of subgroups [H04N 19/102](#), [H04N 19/134](#), [H04N 19/169](#) and [H04N 19/189](#).
- U H04N 19/102
 - • characterised by the element, parameter or selection affected or controlled by the adaptive coding
- H04N 19/119
 - • Adaptive subdivision aspects, e.g. subdivision of a picture into rectangular or non-rectangular coding blocks
- 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 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 (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 21/218
 - • • 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** [per se G06F 3/0689](#); use of parity to protect data in RAID systems [G06F 11/1008](#))}
- U H04N 21/23
 - • Processing of content or additional data; Elementary server operations; Server middleware
- 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 per se** [H04N 19/00](#))}
- 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](#))}
- U 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 21/2543
 - • • • 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](#))}
- U 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

- 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 see G06F 3/048](#); computer pointing devices in general, [see 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 21/435
 - • • Processing of additional data, e.g. decrypting of additional data, reconstructing software from modules extracted from the transport stream
- U 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](#))}
- H04N 21/4356
 - • • {by altering the spatial resolution, e.g. to reformat additional data on a handheld device, attached to the STB}
- 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
- 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 21/60
 - {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 21/63
 - • 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](#))

- U H04N 21/637
 - • • Control signals issued by the client directed to the server or network components
- H04N 21/6373
 - • • • for rate control {, e.g. request to the server to modify its transmission rate (flow control in packet networks [H04L 12/569](#))}
- H04N 21/80
 - Generation or processing of content or additional data by content creator independently of the distribution process; Content ~~per se~~ *per se* {(arrangements for generating broadcast information [H04H 60/02](#))}
- U H04N 21/81
 - • Monomedia components thereof
- H04N 21/812
 - • • {involving advertisement data (advertising ~~per se~~ *per se* [G06Q 30/02](#))}
- 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)
- U H04N 2201/0015
 - • Control of image communication with the connected apparatus, e.g. signalling capability
- H04N 2201/0024
 - • • Converting image communication control signals, e.g. group 3 facsimile protocol signals, to non-image communication control signals or ~~vice versa~~ *vice versa*
- H04N 2201/0025
 - • • Adapting an image communication to a non-image communication or ~~vice versa~~ *vice versa*, e.g. data rate-conversion
- H04N 2201/0065
 - • Converting image data to a format usable by the connected apparatus or ~~vice versa~~ *vice versa*
- U H04N 2201/04
 - Scanning arrangements (not used)
- U H04N 2201/0402
 - • Arrangements not specific to a particular one of the scanning methods covered by groups [H04N 1/04](#) - [H04N 1/207](#) (not used)
- H04N 2201/044
 - • • Moving a scanning element into cooperation with a calibration element, e.g. a grey-wedge mounted on the document support, or ~~vice versa~~ *vice versa*
- 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~~ *see* the appropriate place, e.g. [H04N 1/60](#), [H04N 1/60](#) and subgroups)

Project: N/A (H04Q)**H04Q****SELECTING (switches, relays, selectors [H01H](#); electronic switches [H03K 17/00](#))****NOTES****1. This subclass ~~covers~~ *covers*:**

- methods, circuits, or apparatus for stablishing selectively a connect ion between a desired number of stations (normally two), or between a main station and a desired number of substations (normally one) for the purpose of transferring information via this connection after it has been established;
- selective calling arrangements over connections already established.

In either case, the connection may be made by means of electric conductors or electromagnetic waves.

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

- "subscriber" is a general term for terminal equipment, e.g. telephone for public use;
- "substation" means a subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
- "satellite" is a kind of exchange the operation of which depends upon control signals received from a supervisory exchange;
- "switching centres" includes exchanges and satellites.

U H04Q 11/00

Selecting arrangements for multiplex systems (multiplex systems [H04J](#))

U H04Q 11/04

- for time-division multiplexing {([H04Q 11/0001](#) takes precedence)}

U H04Q 11/0428

- • {Integrated services digital network, i.e. systems for transmission of different types of digitised signals, e.g. speech, data, telecentral, television signals}

U H04Q 11/0478

- • • {Provisions for broadband connections}

H04Q 11/0485

- • • {Circuit arrangements therefor (contains no documents, [see see](#) provisionally [H04Q 11/0492](#))}

Project: N/A (H04R)

U H04R 1/00

Details of transducers, {loudspeakers or microphones}

H04R 1/10

- Earpieces; Attachments therefor; {Earphones; Monophonic headphones ([H04R 1/28](#) takes precedence; stereophonic headphones [H04R 5/033](#))}

NOTES

1. This group [covers 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 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 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](#))}

H04R 1/1083

- • {Reduction of ambient noise (active noise reduction [per se per se](#) [G10K 11/175](#); protective devices for the ear, e.g. providing acoustic protection [A61F 11/06](#))}

U H04R 23/00

Transducers other than those covered by groups [H04R 9/00](#) - [H04R 21/00](#) {(diaphragms for transducers of the distributed-mode type [H04R 7/045](#))}

H04R 23/006

- {using solid state devices (solid state devices [per se per se](#) [H01L](#))}

H04R 25/00

Deaf-aid sets {providing an auditory perception; Electric tinnitus maskers providing an auditory perception} (constructions of transducers [per se per se](#) [H04R 9/00](#) - [H04R 23/00](#); {non-electric hearing aids [A61F 11/008](#); replacing direct auditory perception by another kind of perception [A61F 11/04](#); electrical stimulation of auditory nerves to promote the auditory function [A61N 1/36032](#)}; structural combination with spectacle frames [G02C 11/06](#); processing of speech signals [G10L 21/00](#))}

NOTE

Classification should be directed to groups [H04R 25/02](#), [H04R 25/04](#) or [H04R 25/50](#) and its subgroups, if and only if the technical subject in consideration cannot be classified elsewhere under the main group [H04R 25/00](#)

- U H04R 29/00** **Monitoring arrangements; Testing arrangements {(for hearing aids [H04R 25/30](#); detection of loudspeaker connection [H04R 5/04](#); sound-field adaptation dependent on speaker detection [H04S 7/308](#))}**
- H04R 29/007 **· {for public address systems (public address systems ~~per se~~ [per se](#) [H04R 27/00](#))}**
- U H04R 2225/00** **Details of deaf aids covered by [H04R 25/00](#), not provided for in any of its subgroups**
- H04R 2225/49 **· Reducing the effects of electromagnetic noise on the functioning of hearing aids, by, e.g. shielding, signal processing adaptation, selective (de)activation of electronic parts in hearing aid**
- U H04R 2227/00** **Details of public address [PA] systems covered by [H04R 27/00](#) but not provided for in any of its subgroups**
- H04R 2227/003 **· Digital PA systems using, e.g. LAN or internet**
- U H04R 2400/00** **Loudspeakers**
- NOTE
[H04R 2400/00](#) itself is only to be used for those cases where the classification does not allow specification the type of transducer and the type is important, e.g. frequency control circuit ([H04R 3/04](#) and subgroups) may require different circuits for microphones or for loudspeakers
- H04R 2400/03 **· Transducers capable of generating both sound as well as tactile vibration, e.g. as used in cellular phones**

Project: N/A (H04S)

- U H04S 7/00** **Indicating arrangements; Control arrangements, e.g. balance control**
- U H04S 7/30** **· {Control circuits for electronic adaptation of the sound field (non-adaptive circuits, i.e. manually adjustable or static, for enhancing the sound image or the spatial distribution [H04S 1/002](#), [H04S 3/002](#))}**
- H04S 7/307 **· {Frequency adjustment, e.g. tone control ([H04S 7/301](#) takes precedence; circuits for correcting the frequency response of transducers [H04R 3/04](#); tone control circuits in amplifiers ~~per se~~ [per se](#) [H03G 5/00](#))}**

Project: N/A (H04T)

- U 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](#) - [H04T 2001/113](#) codes are used for information relating to the physical aspects, e.g. radio resources, core network resources...
 - [H04T 2001/201](#) - [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**
- H04T 2001/101 **· Radio Resources**
- NOTE
This subgroup ~~covers~~ [covers](#)

- radio access network including the radio interface, the interfaces within the radio access network, and the interfaces to the core network(s).
- H04T 2001/103
- Core Network Resources
- NOTE
This subgroup ~~covers~~ covers
- core networks including the interfaces within the core network and the interfaces to external networks or service nodes.
- H04T 2001/105
- Network/Interface/Protocol Extensions
- NOTE
This subgroup ~~covers~~ covers
- extensions of network resources, interfaces or protocols related to calls/sessions of additional voice and data services, e.g. HSCSD, fax, bearer services, voice group call and voice broadcast services.
- H04T 2001/107
- Overlay Network Resources
- NOTE
This subgroup ~~covers~~ covers
- overlay networks, e.g. IP based Multimedia System (IMS), including interfaces within the overlay network, the related interfaces to the core and radio access network(s), and the interfaces to external networks.
- H04T 2001/109
- Codecs
- NOTE
This subgroup ~~covers~~ covers
- codecs and network and terminal devices or facilities for the coding, compression, and ciphering of voice, data, and multimedia user traffic.
- H04T 2001/111
- Terminal
- NOTE
This subgroup ~~covers~~ covers
- terminals operating as mobile termination point of wireless network protocols and construction details thereof.
- H04T 2001/113
- SIM, USIM
- NOTE
This subgroup ~~covers~~ covers
- Subscriber Identification Modules as well as Smart Cards supporting network termination functions, e.g. for authentication, when attached to a terminal and construction details thereof.
- H04T 2001/201
- Physical layer functions
- NOTE
This subgroup ~~covers~~ covers
- functional aspects relating to the physical transport of information, e.g. modulation, radio propagation, physical channel and frame structuring, synchronisation, as well as antenna characteristics, (e.g. beam steering) and antenna construction details.
- H04T 2001/203
- Traffic; Transport
- NOTE
This subgroup ~~covers~~ covers
- functional aspects relating to user data transport and control of associated resources on the Physical Layer, e.g. logical channel structuring,

Medium Access Control (MAC), Radio Link Control (RLC), power control, multiplexing, switching, transport format conversion and rate adaptation, tunnelling, quality-of-service aspects.

H04T 2001/205

- Signalling; Control

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to the signalling/control associated to basic call, data, and network services and related signalling transport, e.g. RAdio Resource Control (RRC), Base Station System Application Part (BSSAP), Radio Access Network Application Part (RANAP), handoff, call/session control for basic voice and data services, paging, numbering, routing.

H04T 2001/207

- Mobility

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to subscriber roaming, e.g. location registration and updating.

H04T 2001/209

- Applications

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to applications other than the basic network and call/session services.

H04T 2001/211

- Testing and Conformance

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to test and conformity of networks, network nodes or facilities, terminals, and subscriber modules.

H04T 2001/213

- Planning

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to network and network topology planning, e.g. radio network planning.

H04T 2001/215

- Billing; Accounting; Charging

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to billing, charging and accounting.

H04T 2001/217

- Configuration and Fault Management; Operation and Maintenance

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to configuration management, fault management, (e.g. alarm handling), operation and maintenance, performance evaluation, as well as subscriber data and user profile management.

H04T 2001/219

- Interworking

NOTE

This subgroup ~~covers~~ covers

- functional aspects relating to interworking supported by a network, network nodes or facilities, (e.g. Shared Interworking Function(SIWF)), terminals, and subscriber modules.

H04T 2001/221

- Security

NOTE

This subgroup ~~covers~~ *covers*

- functions and aspects relating to authentication, authorisation, cipher key exchange, and ciphering.

H04T 2001/231

- Architecture; Topology; Principles; Requirements

NOTE

This subgroup ~~covers~~ *covers*

- aspects relating to overall network architectures and topologies, general aspects and principles of service and architecture implementation, and requirements to service and architecture implementation.

Project: N/A (H04W)

U 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 4/003

- {Mobile application execution environments for application services, e.g. communicating with application store or appstore servers in the application service network and ~~vice versa~~ *vice versa*, 3GPP SIM Application toolkit [SAT], 3GPP OSA or 3GPP MEXE (processing of user or subscriber data at user equipment or user record carrier [H04W 8/183](#))}

U H04W 8/00

Network data management

H04W 8/02

- Processing of mobility data, e.g. registration information at HLR [Home Location Register] or VLR [Visitor Location Register]; Transfer of mobility data, e.g. between HLR, VLR or external networks

- 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](#))}**
- U 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 52/0203 • • {in the radio access network or backbone network of wireless communication networks}
- H04W 52/0206 • • • {in access points, e.g. base stations (access point devices ~~per se~~ [per se](#) [H04W 88/08](#))}
- H04W 52/0209 • • {in terminal devices (terminal devices ~~per se~~ [per se](#) [H04W 88/02](#))}
- U H04W 52/04 • TPC [Transmission power control]
- U H04W 52/18 • • TPC being performed according to specific parameters
- U H04W 52/26 • • • using transmission rate or quality of service QoS [Quality of Service]
- H04W 52/262 • • • • {taking into account adaptive modulation and coding [AMC] scheme (AMC ~~per se~~ [per se](#) [H04L 1/0001](#))}

Project: N/A (H05B)**H05B**

ELECTRIC HEATING; ELECTRIC LIGHTING NOT OTHERWISE PROVIDED FOR (apparatus for special application, ~~see~~ [see](#) the relevant places, e.g. [A47J](#), [C21](#), [C22](#), [C23](#), [F21](#), [F24](#), [F27](#))

NOTE

Attention is drawn to the Note (paragraph III) following the contents of Section of Section [H](#)[H](#)

- U H05B 3/00** **Ohmic-resistance heating**
- H05B 3/10 • Heater elements characterised by the composition or nature of the materials or by the arrangement of the conductor (compositions ~~per se~~ [see](#) [per se](#) [see](#) the relevant subclasses)
- H05B 3/12 • • characterised by the composition or nature of the conductive material {(electric conductive compositions characterised by PTC or NTC resistance, ~~per se~~ [per se](#) [H01C 7/02](#), [H01C 7/04](#))}
- U H05B 3/68 • Heating arrangements specially adapted for cooking plates or analogous hot-plates
- H05B 3/688 • • {Fabrication of the plates (for single-step processes ~~see~~ [see](#) the appropriate subclass, e.g. in [B23C](#), sub-section metallurgy)}

NOTE

Group [H05B 3/76](#) takes precedence over groups [H05B 3/70](#), [H05B 3/72](#), [H05B 3/74](#).

- U H05B 7/00** **Heating by electric discharge (electron beam or ion beam tubes for localised treatment of objects [H01J 37/30](#); plasma torches [H05H 1/26](#))**
- U H05B 7/02 • Details
- U H05B 7/06 • • Electrodes
- U H05B 7/08 • • • non-consumable
- U H05B 7/085 • • • • mainly consisting of carbon
- H05B 7/09 • • • • • Self-baking electrodes, e.g. Söderberg type electrodes

- H05B 33/00** Electroluminescent light sources (discharge lamps [H01J 61/00](#) - [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~~ ~~per se~~, ~~see~~ ~~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 37/00** Circuit arrangements for electric light sources in general {(vehicle lights [B60L 1/14](#), [B60Q](#); railways light signals [B61L](#); lighting for photographic purposes [G03B 15/02](#), for advertising purposes [G09F](#))}
- U H05B 37/03** • Detecting lamp failure {(monitoring vehicle lamps [B60Q 11/00](#); changing to a reserve source of current [H02J 9/00](#))}
- H05B 37/04** • • Circuits providing for substitution of the light source in case of its failure {, e.g. by switching over to a reserve light source (incandescent lamps with reserve body [H01K](#))}
- H05B 39/00** Circuit arrangements or apparatus for operating incandescent light sources and not adapted to a particular application {(incandescent lamps ~~per se~~ ~~per se~~ [H01K](#))}
- 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~~ ~~per se~~ [H01J 61/00](#) - [H01J 65/00](#); arc lamps with consumable electrodes [H05B 31/00](#); transformers or chokes for supplying discharge lamps [H01F 38/08](#))}

Project: N/A (H05F)

- H05F** **STATIC ELECTRICITY; NATURALLY-OCCURRING ELECTRICITY** (electrostatic machines [H02N](#); uses of electricity in performing operations, e.g. precipitation, ~~see~~ ~~see~~ the relevant subclasses for the operations)
- NOTES
1. This subclass ~~covers~~ ~~covers~~ methods or arrangements for preventing the formation of electrostatic charges on bodies or for carrying-off these charges after their formation.
2. This subclass ~~does not cover~~ ~~does not cover~~ specific applications of the above-mentioned methods or arrangements, e.g. during the manufacture of artificial fibres or films, which are covered by the relevant subclasses.
- U H05F 3/00** Carrying-off electrostatic charges ({from shoes [A43B 7/36](#); from living beings [A61N 1/14](#); {from tyres [B60C 19/08](#); from vehicles [B60R 16/06](#); from aircraft [B64D 45/02](#); from large containers [B65D 90/46](#))}
- H05F 3/04** • by means of spark gaps or other discharge devices (devices providing for corona discharge ~~per se~~ ~~per se~~ [H01T 19/00](#))

Project: N/A (H05H)

- U H05H 1/00** **Generating plasma; Handling plasma**
- U H05H 1/0006** • {Investigating plasma, e.g. degree of ionisation (electron temperature)}
- U H05H 1/0012** • • {by using radiation}
- H05H 1/0037** • • • {by spectrometry (~~see~~ ~~see~~ [G01N 3/00](#))}
- H05H 1/005** • • • {by using X-rays or alpha rays (~~see~~ ~~see~~ [G01N 23/00](#))}
- H05H 1/0056** • • • {by using neutrons (~~see~~ ~~see~~ [G01N 23/00](#))}

H05H 1/0062	• • • {by using microwaves (see see G01N 23/223)}
H05H 1/0068	• • {by thermal means (see see G01N 25/00)}
H05H 1/0081	• • {by electric means (see see G01N 27/00 , G01R)}
H05H 1/0087	• • {by magnetic means (see see G01N 27/00 , G01R)}
H05H 1/0093	• • {by acoustic, e.g. ultrasonic means (see see G01N 29/02)}
U H05H 1/02	• Arrangements for confining plasma by electric or magnetic fields; Arrangements for heating plasma ({ G21B 1/00 takes precedence;} electron optics H01J)
U H05H 1/04	• • using magnetic fields substantially generated by the discharge in the plasma
H05H 1/08	• • • Theta pinch devices {, e.g. SCYLLA}
H05H 1/10	• • using externally-applied magnetic field only {, e.g. Q-machines, Yin-Yang, base-ball}
U H05H 1/16	• • using externally-applied electric and magnetic field
H05H 1/18	• • • wherein the field oscillate at very high frequency, e.g. in the microwave range {, e.g. using cyclotron resonance}
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 7/00	Details of devices of the types covered by groups H05H 9/00, H05H 11/00, H05H 13/00
H05H 7/001	• {Arrangements for beam delivery or irradiation (irradiation systems per se per se G21K 5/00)}
H05H 7/04	• Magnet systems {, e.g. undulators, wigglers (free-electron laser H01S 3/0903); Energisation thereof
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 see](#) the relevant subclasses; processes involving only a single technical art, e.g. heating, spraying, for which provision exists elsewhere, [see see](#) the relevant classes)

NOTES

1. This subclass [covers covers](#):-

- combinations of a radio or television receiver with apparatus having a different main function;
- printed circuits structurally associated with non-printed electric components;

		<ul style="list-style-type: none"> • {printed connectors (non printed connectors H01R)}
	2.	In this subclass, the following expression is used with the meaning indicated: <ul style="list-style-type: none"> • "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.
U	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
U	H05K 1/0213	• • {Electrical arrangements not otherwise provided for (screening H05K 9/00 ; emergency protective circuits H02H)}
U	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}
U	H05K 1/0257	• • • • {Overvoltage protection}
	H05K 1/026	• • • • {Spark gaps (spark gaps per se per se H01T)}
	H05K 1/0277	• • {Bendability or stretchability details (not used, see see subgroups; H05K 1/038 , H05K 3/4691 take precedence)}
U	H05K 3/00	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)
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 3/08	• • the conductive material being removed by electric discharge, e.g. by spark erosion {(working of metal by electro-erosion per se per se B23H)}
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
U	H05K 3/34	• • • by soldering {(soldering or desoldering apparatus H05K 13/04 , B23K 1/00 , B23K 3/00)}
	H05K 3/3457	• • • • {Solder materials or compositions (solder compositions per se per se B23K 35/24); Methods of application thereof}
	H05K 3/38	• Improvement of the adhesion between the insulating substrate and the metal (Laminates per se per se B32B)
U	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
U	H05K 5/0256	• • {of interchangeable modules or receptacles therefor, e.g. cartridge mechanisms}
U	H05K 5/026	• • • {having standardized interfaces (flash memory cards G06K 19/077)}
U	H05K 5/0265	• • • • {of PCMCIA type}

	H05K 5/0269	• • • • {Card housings therefor, e.g. covers, frames, PCB}
	H05K 5/0273	• • • • {having extensions for peripherals, e.g. LAN, antennas (details of antennas H01Q 1/2275)}
	H05K 5/0286	• • • {Receptacles therefor, e.g. card slots, module sockets, card groundings}
U	H05K 5/06	• Hermetically-sealed casings {(specially adapted for small components H05K 5/0095)}
	H05K 5/062	• • {sealed by a material injected between a non-removable cover and a body, e.g. hardening in situ in situ }
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)}
	H05K 7/1462	• • {for programmable logic controllers [PLC] for automation and/or industrial process control (programmable logic controllers per se per se G05B 19/05)}
U	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 7/20954	• • {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 per se H01J 17/49)}
U	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 9/0067	• {Devices for protecting against damage from electrostatic discharge (materials see see H05K 9/0079)}
U	H05K 13/00	Apparatus or processes specially adapted for manufacturing or adjusting assemblages of electric components
	H05K 13/04	• Mounting of components {, e.g. of leadless components}

Project: N/A (Y02)

Y02

TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGENOTES

1. This class ~~covers~~ [covers](#) selected technologies, which control, reduce or prevent anthropogenic emissions of greenhouse gases [GHG], as controlled by the Kyoto Protocol.
2. If appropriate, a document can receive more than one indexing code of this class

Project: N/A (Y02B)

U	Y02B 30/00	Energy efficient heating, ventilation or air conditioning [HVAC]
U	Y02B 30/08	• relating to domestic heating, space heating or domestic hot water heating or supply systems [DHW]

- Y02B 30/20
 - • Heat consumers, i.e. devices to provide the end user with heat
- Y02B 30/22
 - • • Low temperature radiators, i.e. convectors, radiators or a mixture of both with increased heat-exchange surface being suitable for systems working with a low temperature heat transfer medium
- Y02B 30/28
 - • • Direct fired air heaters, i.e. the air being in direct contact with the exhaust gases of the burner

U Y02B 40/00**Technologies aiming at improving the efficiency of home appliances****U Y02B 40/40**

- Relating to dish-washers (not used, see subgroups)

Y02B 40/44

- • Heat recovery, e.g. of washing water

Project: N/A (Y02P)**U Y02P 40/00****Technologies relating to the processing of minerals****U Y02P 40/60**

- Production of ceramic materials or ceramic elements

Y02P 40/61

- • Manufacturing of materials for construction, e.g. beams, bricks or tiles

U Y02P 60/00**Technologies relating to agriculture, livestock or agroalimentary industries****U Y02P 60/10**

- Agricultural machinery or equipment

U Y02P 60/14

- • Measures for saving energy

U Y02P 60/146

- • • in greenhouses

Y02P 60/149

- • • • Efficient lighting, e.g. LED lighting

Project: N/A (Y02T)**U Y02T 10/00****Road transport of goods or passengers****U Y02T 10/10**

- Internal combustion engine [ICE] based vehicles

Y02T 10/50

- • Intelligent control systems, e.g. conjoint control

U Y02T 10/80

- Technologies aiming to reduce green house gasses emissions common to all road transportation technologies

Y02T 10/88

- • Optimized components or subsystems, e.g. lighting, actively controlled glasses

Y02T 10/90

- • Energy harvesting concepts as power supply for auxiliaries' energy consumption, e.g. photovoltaic sun-roof

Project: N/A (Y02W)**U Y02W 30/00****Technologies for solid waste management (heat utilisation in combustion or incineration of waste [Y02E 20/12](#); fuel from waste [Y02E 50/30](#); methane from waste for energy generation [Y02E 50/34](#))****Y02W 30/10**

- Related to waste collection, transportation, transfer or storage, e.g. segregated refuse collecting, electric or hybrid propulsion

U Y02W 30/50

- Reuse, recycling or recovery technologies

U Y02W 30/90

- • Reuse, recycling or recovery technologies cross-cutting to different types of waste

U Y02W 30/91

- • • Use of waste materials as fillers for mortars or concrete

Y02W 30/96

- • • • organic, e.g. rubber, polystyrene

Project: N/A (Y10S)**U Y10S 148/00****Metal treatment****Y10S 148/012**

- Bonding, e.g. electrostatic for strain gauges

Y10S 148/103

- Mask, dual function, e.g. diffusion and oxidation

U	Y10S 174/00	Electricity: conductors and insulators
U	Y10S 174/13	• High voltage cable, e.g. above 10kv, corona prevention
U	Y10S 174/14	• • having a particular cable application, e.g. winding
U	Y10S 174/19	• • • in a dynamo-electric machine
	Y10S 174/22	• • • • Winding per se <u>per se</u>
U	Y10S 424/00	Drug, bio-affecting and body treating compositions
	Y10S 424/90	• In-vivo <u>In vivo</u> diagnostic or in-vivo <u>in vivo</u> test agent which contains an additional ingredient to reduce the toxicity or side effects of the active ingredient
U	Y10S 435/00	Chemistry: molecular biology and microbiology
	Y10S 435/961	• including a step of forming, releasing, or exposing the antigen or forming the hapten-immunogenic carrier complex or the antigen per se <u>per se</u>
U	Y10S 436/00	Chemistry: analytical and immunological testing
	Y10S 436/823	• Immunogenic carrier or carrier per se <u>per se</u>
U	Y10S 505/00	Superconductor technology: apparatus, material, process
U	Y10S 505/775	• High tc, above 30 k, superconducting material
U	Y10S 505/776	• • Containing transition metal oxide with rare earth or alkaline earth
	Y10S 505/779	• • • Other rare earth, i.e. Sc,Y,Ce,Pr,Nd,Pm,Sm,Eu,Gd,Tb,Dy,Ho,Er,Tm,Yb,Lu and alkaline earth, i.e. Ca,Sr,Ba,Ra
	Y10S 505/80	• Material per se <u>per se</u> process of making same
	Y10S 505/815	• • Process of making per se <u>per se</u>
	Y10S 505/825	• Apparatus per se <u>per se</u> , device per se <u>per se</u> , or process of making or operating same
U	Y10S 516/00	Colloid systems and wetting agents; subcombinations thereof; processes of
	Y10S 516/905	• Agent composition per se <u>per se</u> for colloid system making or stabilizing, e.g. foaming, emulsifying, dispersing, or gelling
U	Y10S 516/924	• Significant dispersive or manipulative operation or step in making or stabilizing colloid system
	Y10S 516/927	• • in-situ <u>in situ</u> formation of a colloid system making or stabilizing agent which chemical reaction
U	Y10S 534/00	Organic compounds -- part of the class 532-570 series
	Y10S 534/06	• Azo compounds containing -N[O]-N=, -N=S, or SO2N3 <u>SO2N3</u> groups
U	Y10S 977/00	Nanotechnology
U	Y10S 977/70	• Nanostructure
	Y10S 977/734	• • Fullerenes, i.e. graphene-based structures, such as nanohorns, nanococoons, nanoscrolls or fullerene-like structures, e.g. WS2 <u>WS2</u> or MoS2 <u>MoS2</u> chalcogenide nanotubes, planar C3N4 <u>C3N4</u> , etc.
	Y10S 977/773	• • Nanoparticle, i.e. structure having three dimensions of 100 nm or less

Project: N/A (Y10T)

U	Y10T 16/00	Miscellaneous hardware [e.g., bushing, carpet fastener, caster, door closer, panel hanger, attachable or adjunct handle, hinge, window sash balance, etc.]
	Y10T 16/14	• Carpet stiffener or anti-slip device, per se <u>per se</u>
	Y10T 16/82	• Counterbalance device, per se <u>per se</u>

U	Y10T 82/00	Turning
U	Y10T 82/18	• Lathe for wheel or axle
	Y10T 82/185	• • In situ <i>In situ</i> lathe for railroad wheel
U	Y10T 83/00	Cutting
U	Y10T 83/444	• Tool engages work during dwell of intermittent workfeed
	Y10T 83/4493	• • Tool motion initiates work feed and vice versa <i>vice versa</i>
U	Y10T 156/00	Adhesive bonding and miscellaneous chemical manufacture
	Y10T 156/11	• Methods of delaminating, per se <i>per se</i> ; i.e. , separating at bonding face
U	Y10T 403/00	Joints and connections
U	Y10T 403/39	• Rod to member to side, e.g. , plate, rod side, etc.
U	Y10T 403/3933	• • Intermediate member includes tubular part
	Y10T 403/3941	• • • Side or tubular part deformed in situ <i>in situ</i>
U	Y10T 403/47	• Molded joint
	Y10T 403/475	• • Member cast in situ <i>in situ</i>
	Y10T 403/49	• Member deformed in situ <i>in situ</i>
U	Y10T 407/00	Cutters, for shaping
U	Y10T 407/18	• File or rasp
	Y10T 407/1825	• • Handle or holder, per se <i>per se</i>
U	Y10T 436/00	Chemistry: analytical and immunological testing
	Y10T 436/22	• Hydrogen, per se <i>per se</i>
U	Y10T 442/00	Fabric [woven, knitted, or nonwoven textile or cloth, etc.]
U	Y10T 442/20	• Coated or impregnated woven, knit, or nonwoven fabric which is not [a] associated with another preformed layer or fiber layer or, [b] with respect to woven and knit, characterized, respectively, by a particular or differential weave or knit, wherein the coating or impregnation is neither a foamed material nor a free metal or alloy layer
	Y10T 442/2033	• • Coating or impregnation formed in situ <i>in situ</i> [e.g., by interfacial condensation, coagulation, precipitation, etc.]