

Compilation of Changes to the CPC Scheme Between 2015.05 and 2015.07

Presentation Details

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

Project: MP0104 (C22C)

U 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**

NOTE

This group comprises also dispersion hardened alloys with less than 5% of dispersed compounds

- U C22C 32/001 • {with only oxides}
- M C22C 32/0015 • ~~·~~ {with only single **oxide(s)oxides** as **main** non-metallic **constituent(s)constituents**}
- M C22C 32/0021 • ~~·~~ {**matrixMatrix** based on noble metals, Cu or alloys thereof}
- M C22C 32/0026 • ~~·~~ {**matrixMatrix** based on Ni, Co, Cr₂ or alloys thereof; **Matrix based** on Fe for **only**-ODS steels (matrix based on Fe **for steels** other than ODS **steels C22C 33/00**, by powder metallurgy **C22C 33/02**)}
- M C22C 32/0031 • ~~·~~ {**matrixMatrix** based on refractory metals, W, Mo, Nb, Hf, Ta, Zr, Ti, V₂ or alloys thereof}
- M C22C 32/0036 • ~~·~~ {**matrixMatrix** based on Al, Mg, Be₂ or alloys thereof}
- M C22C 32/0042 • ~~·~~ {**matrixMatrix** based on low melting metals, Pb, Sn, In, Zn, Cd₂ or alloys thereof}
- M C22C 32/0047 • {with **(a)**-carbides**(s)**, nitrides**(s)**, borides**(s)** **and/** or **silicide(s)silicides** as the **main** non-metallic **constituent(s)constituents**}
- M C22C 32/0084 • {carbon or graphite as the **main** non-metallic constituent}
- M C22C 32/0094 • {with organic materials as the **main** non-metallic constituent, e.g. resin}

Project: MP0109 (C07)

M C07 **ORGANIC CHEMISTRY (such compounds as the oxides, sulfides, or oxysulfides of carbon, cyanogen, phosgene, hydrocyanic acid or salts thereof C01; products obtained from layered base-exchange silicates by ion-exchange with organic compounds such as ammonium, phosphonium or sulfonium compounds or by intercalation of organic compounds C01B 33/44; macromolecular compounds C08; dyes C09; fermentation products C12; fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture C12P; production of organic compounds by electrolysis or electrophoresis C25B 3/00, C25B 7/00)**

NOTES

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

- "preparation" covers purification, separation, stabilisation or use of additives, unless a separate place is provided therefor.

2. {This IPC Note does not apply in CPC.}

2-3. In this class subclasses C07C-C07K, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, and with the exception referred to below, a compound is classified in the last appropriate place. For example, e.g. a compound containing 2-butyl-pyridine, which contains an acyclic chain and a heterocyclic ring, is classified only as a heterocyclic compound, and a steroid is classified only as a cyclopentanophenanthrene compound in subclass C07D. In general, and in the absence of an indication to the contrary (such as groups C07C 59/58, C07C 59/70), the terms "acyclic" and "aliphatic" are used to describe compounds in which there is no ring; and, if a ring were present, the compound would be taken by the "last place" rule to a later group for cycloaliphatic or aromatic compounds, if such a groups group exists. Where a compound or an entire group of compounds exists in tautomeric forms, it is classified as though existing in the form which is classified last in the system, unless the other form is specifically mentioned earlier in the system.

4. Chemical compounds and their preparation are classified in the groups for the type of compound prepared. The processes of preparation are also classified in the groups for the types of reaction employed, if of interest. Examples of such places outside this class are:

C12P Fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture

C25B 3/00 Electrolytic production of organic compounds

C25B 7/00 Electrophoretic production of compounds

~~*3-5. Chemical compounds and their preparation are classified in the groups for the type of compound prepared. The processes of preparation are also classified in the groups for the types of reaction employed, if of interest.*~~ General processes for the preparation of a class of compounds falling into more than one main group are classified in the groups for the processes employed, when such groups exist. The compounds prepared are also classified in the groups for the types of compound prepared, if of interest.

~~*4-6.*~~ In this class, in the absence of an indication to the contrary, the compounds containing carboxyl or thiocarboxyl groups are classified as the relevant carboxylic or thiocarboxylic acids, unless the "last place rule" (see Note (23), above) dictates otherwise; a carboxyl group being a carbon atom having three bonds, and no more than three, to hetero atoms, other than nitrogen atoms of nitro or nitroso groups, with at least one multiple bond to the same hetero atom and a thiocarboxyl group being a carboxyl group having at least one bond to a sulfur atom, e.g. amides or nitriles of carboxylic acids, are classified with the corresponding acids *{unless the "last place rule" (see Note (3), above) dictates otherwise}*.

~~*5-7.*~~ *{Anhydrides and halides of carboxylic acids are classified as the relevant acids unless otherwise indicated.}* Salts of a compound, unless specifically provided for, are classified as that compound, e.g. aniline hydrochloride is classified as containing carbon, hydrogen and nitrogen only (in C07C 211/46), sodium malonate is classified as malonic acid (in C07C 55/08), and a mercaptide is classified as the mercaptan. Metal chelates are dealt with in the same way. Similarly, metal alcoholates and metal phenates are *{generally}* classified in subclass C07C and not in subclass C07F, the alcoholates *{for instance}* in groups C07C 31/28 to C07C 31/32 and the phenates as the corresponding phenols in group C07C 39/235 or C07C 39/44. Salts, adducts or complexes formed between two or more organic compounds are classified according to all compounds forming the salts, adducts or complexes.

Project: MP0109 (C07H)

M C07H

SUGARS; DERIVATIVES THEREOF; NUCLEOSIDES; NUCLEOTIDES; DERIVATIVES THEREOF NUCLEIC ACIDS (derivatives of aldonic or saccharic acids [C07C](#) , [C07D](#) ; aldonic acids, saccharic acids [C07C 59/105](#) , [C07C 59/285](#) ; cyanohydrins [C07C 255/16](#) ; glycals [C07D](#) ; compounds of unknown constitution [C07G](#) ; polysaccharides, derivatives thereof [C08B](#) ; **sugar and starch industry C13**; **DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification C12N 15/00** ; **sugar industry C13**)

NOTES

1. This subclass ~~covers~~*covers* compounds containing saccharide radicals: (see the definitions in Note (3:) below).

2. This subclass ~~does not cover~~*does not cover* polysaccharides which for the purpose of this subclass are defined as having more than five saccharide radicals attached to each other by glycosidic linkages.

3. In this subclass, the following expressions are used with the *meaning meanings* indicated:-

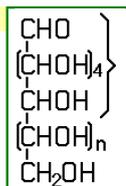
- "saccharide radical" which is derived from acyclic polyhydroxy-aldehydes or acyclic polyhydroxy-ketones, or from their cyclic tautomers, by removing hydrogen atoms or by replacing hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium, in accordance with either of the following definitions:

a. It

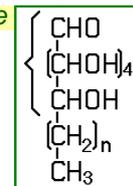
- i. consists of an uninterrupted carbon skeleton and oxygen atoms directly attached thereto, and;
- ii. is considered to be terminated by every bond to a carbon atom of a cyclic structure and by every bond to a carbon atom having three bonds to hetero atoms, e.g. ester or nitrile radicals, and;
- iii. contains within the carbon skeleton an unbranched sequence of at the most six carbon atoms in which at least three carbon atoms — at least two in the case of a skeleton having only four carbon atoms — have one single bond to an oxygen atom as the only hetero bond ~~{but at least three for compounds in which at least one carbon to oxygen bond involved in a) or b) has been replaced by a carbon bond to a hetero atom other than oxygen}~~, and

in a cyclic or acyclic sequence, at least one other carbon atom ~~{that is not doubly bound to a carbon atom, e.g. glycals}~~ has two single bonds to oxygen atoms as the only hetero bonds, or

in an acyclic sequence, at least one other carbon atom ~~{that is not doubly bound~~ *has one double bond to a carbon an oxygen atom}* ~~has as the only hetero bond, the said sequence containing at the most one double bond, i.e. C=C or possibly ketalised C=O), in addition to the hetero bonds mentioned above under (A) or (B), e.g. the compounds~~ an *unbranched sequence of at the*



most six carbon atoms, having bonds to oxygen atom as the only hetero bond defined in this Note



n being an integer, are classified in group C07H 3/02;

- iv. {has in the gamma or delta position in respect to the carbon atom bearing those two single bonds or this double bond to oxygen a carbon atom bearing one single bond to oxygen}
- b. {It is also a radical derived from a radical as defined in (a.) above by replacing at the most four of the specified hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium;}
- "heterocyclic radical" or "hetero ring" is considered to exclude saccharide radicals as defined above

4. Attention is drawn to the notes following the title of class C07-.

5. The conditions 3) a) or 4) have not to be fulfilled in respect to C07H19/00E1

6. Where a compound may exist --- to be written in Kekulé form

7. For the purpose of this subclass, the following definitions apply:

- A "hetero ring" is a ring having at least one halogen, nitrogen, oxygen, sulfur selenium or tellurium atom as a ring member;
- Two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed. The term "bridged" denotes the presence of at least one fusion other than ortho, peri and spiro;
- A "condensed ring system" is a ring system in which all rings are condensed among themselves;
- The "number of relevant rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
- The "relevant rings" in a condensed system are chosen according to the following criteria consecutively:
 - Lowest number of ring members
 - Highest number of hetero atoms as ring members
 - Lowest number of members shared with other rings
 - Last place in the classification scheme

8. In the absence of specific places, hydrogenated or condensed hetero rings are classified with the parent ring

9. 4. In the absence of an indication to Attention is drawn to Note (3) after class C07, which defines the contrary, a compound is classified last place priority rule applied in the last appropriate place range of subclasses C07C-C07K and within these subclasses.

10. Groups C07H 3/04 and C07H 3/06 take precedence over C07H 3/08 to C07H15/18D -with the exception of C07H 13/06, C07H13/12U, C07H15/00F, C07H 15/06, C07H 15/08, C07H15/10D2, C07H 15/16 - and over C07H 15/20 as far as a phenyl radical is involved; the purpose of this inversion of the last place rule is to avoid multiple classification for documents describing compounds, having a complement inhibiting activity or belonging to the "blood-group substances" occurring in tissue fluids, in secretions and at cell and tissue surfaces (e.g. antigen determinants) or forming part of cell membranes.

Documents in which both disaccharides and oligosaccharides of this kind are described are only classified in C07H 3/06.

11. Group C07H 9/00 takes precedence over C07H 11/00 to C07H 15/00 when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides C07H 19/00.

12. Group C07H 15/252 takes precedence over C07H 17/00 when the naphthalene ring is further condensed to a heteroring, and over C07H 15/26 when the carbocyclic ring is substituted by a hetero ring]

- M C07H 3/00** Compounds containing only hydrogen atoms and saccharide radicals having only carbon, hydrogen, and oxygen atoms (preparation by hydrolysis of di- or polysaccharides **C13 and subgroups**; separation **and/or** purification of sucrose, glucose, fructose, lactose or maltose **C13**)
- M C07H 3/04
- Disaccharides
- NOTE**
Attention is drawn to Note 7 after the subclass title
- M C07H 3/06
- Oligosaccharides, i.e. having three to five saccharide radicals attached to each other by glycosidic linkages
- NOTE**
Attention is drawn to Note 7 after the subclass title
- M C07H 3/08
- Deoxysugars; Unsaturated sugars (1,2-dideoxy-1-enoses **C07D**); Osones **{{(C07H 3/04 , C07H 3/06 take precedence)}}**
- M C07H 3/10
- Anhydrosugars, e.g. epoxides **{{(C07H 3/04 , C07H 3/06 take precedence)}}**
- M C07H 5/00** Compounds containing saccharide radicals in which **the** hetero bonds to oxygen have been replaced by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium **{{(when the hetero-atom is substituted C07H 11/00 , C07H 13/00 , C07H 15/00 , C07H 17/00 ; when the hetero-atom(s) form(s) part of a heteroring C07H 9/00 , C07H 19/00 , C07H 21/00 ; C07H 3/04 , C07H 3/06 , take precedence)}}**
- U C07H 5/04
- to nitrogen
- M C07H 5/06
- Aminosugars **{{(NH-acyl C07H 11/00 , C07H 13/00 ; NHR or NR2 C07H 15/00)}}**
- M C07H 7/00** Compounds containing non-saccharide radicals linked to saccharide radicals by a carbon-to-carbon bond **{{(C07H 3/04 , C07H 3/06 take precedence)}}**
- M C07H 7/02
- Acyclic radicals, e.g. glycuronic acids {gamma-lactones of 2- or 3-ketohexanoic or -pentanoic acids and derivatives thereof, (e.g. enol forms C07D 307/62); e.g. ascorbic acid (1); D-galacturono-gamma-lactone (2); D-glucono-gamma-lactone (3); saccharosonic acid (4); D-gulono-gammalactone (5) Images}
- M C07H 7/027
- Keto-aldonic acids {keto-aldonic acids, e.g. 2-keto-gluconic acid (1); D-arabino-2-hexulsonic acid (2); 2-keto-gluco-pyranosic acid (3); xylo-2-furanosic acid (4) Images}
- M C07H 7/033
- Uronic acids {uronic acids, e.g. galacturonic acid (1); galactofuranonic acid (2) Images}
- U C07H 9/00** Compounds containing a hetero ring sharing at least two hetero atoms with a saccharide radical

- M C07H 11/00** Compounds containing saccharide radicals esterified by inorganic acids; Metal salts thereof (halo-sugars [C07H 5/02](#) ; thio-, seleno-, or telluro-sugars [C07H 5/08](#) ; { acetals [C07H9/04D](#) } ; esterified by carbonic acid or derivatives thereof [C07H 13/12](#) ; {[C07H 3/04](#) , [C07H 3/06](#) take precedence; [C07H 9/00](#) takes precedence when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides [C07H 19/00](#))
- M C07H 11/04 • Phosphates; Phosphites; Polyphosphates (~~phosphonates [C07H 13/00](#)~~)
- M C07H 13/00** Compounds containing saccharide radicals esterified by carbonic acid or derivatives thereof, or by organic acids, e.g. phosphonic acids ~~{(acetals [C07H9/04D](#) ; [C07H 3/04](#) , [C07H 3/06](#) , [C07H13/12U](#) take precedence; [C07H 9/00](#) takes precedence when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides [C07H 19/00](#))}~~
- M C07H 13/02 • by carboxylic acids ~~{([C07H 3/04](#) , [C07H 3/06](#) take precedence)}~~
- M C07H 13/04 • • having the esterifying carboxyl radicals attached to acyclic carbon atoms ~~{([C07H 3/04](#) , [C07H 3/06](#) take precedence)}~~
- M C07H 13/08 • • having the esterifying carboxyl radicals directly attached to carbocyclic rings ~~{([C07H 3/04](#) , [C07H 3/06](#) take precedence)}~~
- M C07H 13/10 • • having the esterifying carboxyl radicals directly attached to heterocyclic rings ~~{([C07H 3/04](#) , [C07H 3/06](#) take precedence)}~~
- M C07H 13/12 • by acids having the group -X-C(=X)-X-, or halides thereof, in which each X means nitrogen, oxygen, sulfur, selenium or tellurium, e.g. carbonic acid, carbamic acid ~~{([C07H 3/04](#) , [C07H 3/06](#) take precedence)}~~

- M C07H 15/00** Compounds containing hydrocarbon or substituted hydrocarbon radicals directly attached to hetero atoms of saccharide radicals ~~{(acylated on hetero atoms of the saccharide radical [C07H 13/00](#) ; derivatives of bis methylen dioxy carbohydrates [C07H9/04D](#) ; [C07H 3/04](#) , [C07H 3/06](#) , take precedence; [C07H 9/00](#) takes precedence when at least one ring heteroatom is different from oxygen, however anhydro derivatives of nucleosides and nucleotides [C07H 19/00](#))}~~

NOTE

In this group, acyl radicals directly attached to hetero atoms of the saccharide radicals are not considered as substituted hydrocarbon radicals.

- M C07H 15/02 • Acyclic radicals, not substituted by cyclic structures ~~{([C07H 3/04](#) , [C07H 3/06](#) , [C07H15/00F](#) take precedence)}~~
- M C07H 15/04 • • attached to an oxygen atom of the saccharide radical ~~{([C07H 3/04](#) , [C07H 3/06](#) take precedence)}~~
- M C07H 15/06 • • • being a hydroxyalkyl group esterified by a fatty acid, { i.e. Image }
- M C07H 15/08 • • • Polyoxyalkylene derivatives (polyoxyalkylene derivatives of polyols in general [C07C 41/00](#) , [C07C 43/00](#))
- M C07H 15/10 • • • containing unsaturated carbon-to-carbon bonds ~~{([C07H 3/04](#) , [C07H 3/06](#) take precedence)}~~
- M C07H 15/12 • • attached to a nitrogen atom of the saccharide radical ~~{([C07H 3/04](#) , [C07H 3/06](#) , [C07H15/10D2](#) take precedence)}~~
- M C07H 15/14 • • attached to a sulfur, selenium or tellurium atom of a saccharide radical ~~{([C07H 3/04](#) , [C07H 3/06](#) , [C07H15/10D2](#) take precedence)}~~
- M C07H 15/16 • • • Lincomycin; Derivatives thereof {6-deoxy-6-(possibly substituted)amino derivatives, e.g. lincosamines, celestosamines, clindamycins}

- M C07H 15/18
- Acyclic radicals, substituted by carbocyclic rings ~~{{chalcones and hydrogenated chalcones derived from saccharides substituted by 1-benzopyran-4-one radicals are to be classified in C07H 17/07 ; C07H 3/04 , C07H 3/06 , C07H15/00F , C07H15/10D2 take precedence}}~~
- M C07H 15/20
- Carbocyclic rings ~~{{C07H15/00F , C07H15/10D2 take precedence}}~~
- M C07H 15/203
- Monocyclic carbocyclic rings other than cyclohexane ~~{or cyclohexene or cyclohexadiene}~~ rings; cyclohexene; cyclohexadiene; Bicyclic carbocyclic ring systems
- M C07H 15/207
- Cyclohexane rings ~~{and cyclohexene and cyclohexadiene rings}~~ not substituted by nitrogen atoms, e.g. kasugamycins
- M C07H 15/22
- Cyclohexane rings, substituted by nitrogen atoms
- NOTE**
- ~~— for this two dot subdivision: —————
Image
— for the three dot subdivisions: (~~
- ~~C07H15/22B ————— and ————— C07H 15/222 —————)~~
- M C07H 15/222
- Cyclohexane rings substituted by at least two nitrogen atoms ~~{{at least two guanidine radicals C07H 15/238}}~~
- M C07H 15/226
- {with at least two saccharide radicals directly attached to the cyclohexane rings}
- M C07H 15/228
- {attached to adjacent ring-carbon atoms of the cyclohexane rings}
- M C07H 15/23
- with only two saccharide radicals in the molecule, e.g. ambutyrosin, butyrosin, xylostatin, ribostamycin; butyrosin; xylostatin; ribostamycin; {Antibiotics SF-733, Bu-1975, BB-K-137, BB-K-186}
- M C07H 15/232
- with at least three saccharide radicals in the molecule, e.g. lividomycin, neomycin, paromomycin; neomycin; paromomycin {zygomycin; hybrimycin; quintomycin, fradiomycin; framycetin}
- M C07H 15/234
- attached *Attached* to non-adjacent ring-carbon atoms of the cyclohexane rings, e.g. kanamycins, tobramycin, nebramycin, gentamycin, gentamicin A2
- M C07H 15/236
- a saccharide radical being substituted by an alkylamino radical in position 3 and by two substituents different from hydrogen in position 4, e.g. gentamycin complex, sisomycin, verdamycin; sisomycin; verdamycin; {mutamycin; Antibiotics XK 62-2, 66-40, G-418, G-52}
- M C07H 15/24
- Condensed ring systems having three or more rings ~~{steroid glucosides C07J}~~
- M C07H 15/252
- Naphthacene *Naphthacene* radicals, e.g. daunomycins, adriamycins
- NOTE**
- Attention is drawn to Note 9 after the subclass title
- M C07H 15/256
- Polyterpene radicals, ~~{e.g. aescins; saponins; glycyrrhetic acid derivatives}~~
- M C07H 15/26
- Acyclic or carbocyclic radicals, substituted by hetero rings, ~~{e.g. bleomycins, phleomycins, victomycins, zarbamycins (and C07H15/10D2 take precedence; C07H 15/252 takes precedence when the naphthacene ring is further condensed to a heteroring)}~~
- M C07H 17/00**
- Compounds containing heterocyclic radicals directly attached to hetero atoms of saccharide radicals ~~{{C07H15/10D2 , C07H 15/22 , C07H 15/238 take precedence; C07H 15/252 takes precedence when the naphthacene ring is further condensed to a heteroring}}~~**
- U C07H 17/04
- Heterocyclic radicals containing only oxygen as ring hetero atoms
- M C07H 17/06
- ~~{not condensed}~~ Benzopyran radicals

- M C07H 17/065 . . . Benzo(**[b]**)pyran,{e.g. anthocyanins},**pyrans**
- M C07H 17/07 Benzo(**[b]**)pyran-4-ones,{e.g. quercetins, hesperidins, rutins, and the chalcones and hydrogenated chalcones derived from them}
- M C07H 17/075 Benzo(**[b]**)pyran-2-ones,{e.g. coumermycins, novobiocins, novenamines}
- M C07H 19/00** **Compounds containing a hetero ring sharing {only}one ring hetero atom with thea saccharide radical{the ring-heteroatom of the saccharide radical is not to be taken into consideration}; Nucleosides; Mononucleotides {or mononucleosides}; Anhydro-derivatives thereof {{C07H15/10D2 takes precedence; intermediate for methods of chemical engineering C07H21/00C4}}**
- M C07H 19/01 . Sharing oxygen{sharing no nitrogen atom with the saccharide radical, e.g. glucuronic acid lactone, rubrolone, levoglucosanImages}
- U C07H 19/02 . sharing nitrogen
- M C07H 19/04 . . Heterocyclic radicals containing only nitrogen atoms as ring hetero atoms {atom(C07H19/02B, C07H19/02D take precedence)}
- M C07H 19/044 . . . Pyrrole radicals {{Pyrrolo-pyrimidines C07H 19/14}}
- M C07H 19/048 . . . Pyridine radicals {{Pyridino-pyrimidine C07H19/06F, C07H19/10F}}
- M C07H 19/052 . . . Imidazole radicals {{Purines C07H 19/16}}
- U C07H 19/056 . . . Triazole or tetrazole radicals
- M C07H 19/06 . . . Pyrimidine radicals {{purine C07H 19/16 ; pyrimidino-triazines C07H 19/12 ; pteridines C07H 19/22 ; pyrrolo-pyrimidines C07H 19/24}}
- M C07H 19/067 with ribosyl as the saccharide radical {not used}
- M C07H 19/073 with 2-deoxyribosyl as the saccharide radical {not used}
- M C07H 19/09 with arabinosyl as the saccharide radical {not used}
- M C07H 19/10 with the saccharide radical esterified by phosphoric or polyphosphoric acids {or other phosphorus-containing acids}
- M C07H 19/11 containing cyclic phosphate {not to be used}
- U C07H 19/16 . . . Purine radicals
- M C07H 19/167 with ribosyl as the saccharide radical {not used}
- M C07H 19/173 with 2-deoxyribosyl as the saccharide radical {not used}
- M C07H 19/19 with arabinosyl as the saccharide radical {not used}
- M C07H 19/20 with the saccharide radical esterified by phosphoric or polyphosphoric acids {or other phosphorus-containing acids}
- M C07H 19/207 the phosphoric or polyphosphoric acids being esterified by a further hydroxylic compound, e.g. flavine adenine dinucleotide or nicotinamide-adenine dinucleotide {nicotinamide-adenine dinucleotide phosphate C07H 21/02}
- M C07H 19/213 containing cyclic phosphate {not to be used}
- M C07H 19/23 . . . Heterocyclic radicals containing two or more heterocyclic rings condensed among themselves or condensed with a common carbocyclic ring system, not provided for in groups C07H 19/14 to C07H 19/22 {not to be used}
- M C07H 19/24 . . Heterocyclic radicals containing oxygen or sulfur as ring hetero atoms atom
- M 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(C07H15/10D2 takes precedence)}e.g. nucleic acids**

M C07H 23/00 Compounds containing boron, silicon, or a metal, e.g. chelates, vitamin B12 (esters with inorganic acids; [C07H 11/00](#); metal salts; see parent compounds)

Project: MP0113 (A43B)

- M A43B 13/38 · *Built-in insoles joined to uppers during the manufacturing process, e.g. structural insoles; Insoles glued to shoes during the manufacturing process*
- M A43B 13/383 · · {~~Pieced insoles~~ *pieced*}
- M A43B 13/386 · · {~~Multilayer insoles~~ *multilayered*}
- M A43B 17/00** **Socks** *{Inserted} insoles, e.g. footbeds or inlays, for attachment to the shoe after the upper has been joined* (~~hosiery~~ [A41B 11/00](#); special medical insertions for shoes [A61F 5/14](#))
- M A43B 17/003 · {characterised by the material (~~wooden socks~~ [A43B 17/12](#), ~~made of sponge, rubber or plastic materials~~ [A43B 17/14](#) *made of wood* [A43B 17/12](#), *made of sponge, rubber or plastic materials* [A43B 17/14](#))}
- M A43B 17/006 · · {~~Multilayered~~ *multilayered*}
- M A43B 17/02 · ~~Wedge~~ *wedge*-like or resilient ~~socks or sock parts~~
- M A43B 17/03 · · ~~pneumatic~~ {, filled with a *compressible fluid* *gas*, e.g. air, ~~gas~~ (~~inflatable linings for skiboats~~ [A43B 5/0407](#))}
- M A43B 17/08 · ~~Ventilated~~ *socks* *ventilated*
- M A43B 17/10 · *specially adapted* for sweaty feet; *waterproof*; Waterproof socks
- M A43B 17/107 · · {~~Waterproof~~ *socks* *waterproof*}
- M A43B 17/12 · ~~Wooden~~ *socks* *made of wood*
- M A43B 17/18 · Arrangements for attaching ~~socks~~ *removable insoles* to ~~the~~ footwear

Project: MP0119 (A61B)

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 {(measuring or recording in general subclasses of [G01](#); medical informatics [G06F 19/30](#))}

WARNING

Groups [A61B 5/40](#) - [A61B 5/748](#) do not correspond to former or present IPC groups. Concordance CPC : IPC for these groups is as follows: [A61B 5/40](#) : [A61B 5/00A61B 5/41](#) : [A61B 5/00A61B 5/42](#) : [A61B 5/00A61B 5/43](#) : [A61B 5/00A61B 5/44](#) : [A61B 5/00A61B 5/45](#) : [A61B 5/00A61B 5/48](#) : [A61B 5/00A61B 5/68](#) : [A61B 5/00A61B 5/70](#) : [A61B 5/00A61B 5/72](#) : [A61B 5/00A61B 5/74](#) : [A61B 5/00](#)

- A61B 5/0048 · {Detecting, measuring or recording by applying mechanical forces or stimuli ([A61B 5/021](#) , [A61B 5/4884](#) and [A61B 9/00](#) take precedence)}

WARNING

Group ~~A61B 5/0048~~ and subgroups are not complete pending a reorganisation; see also groups ~~A61B 5/00~~ , ~~A61B 5/022~~ , ~~A61B 5/11~~

- U A61B 5/02 · Detecting, measuring or recording pulse, heart rate, blood pressure or blood flow; Combined pulse/heart-rate/blood pressure determination; Evaluating a cardiovascular condition not otherwise provided for, e.g. using combinations of techniques provided for in this group with electrocardiography or electroauscultation; Heart catheters for measuring blood pressure

- A61B 5/021
- Measuring pressure in heart or blood vessels ([A61B 5/0205](#) takes precedence)
- WARNING**
A61B-5/02108 and subgroups are not complete pending a reorganisation; see also group A61B-5/021
- A61B 5/022
- by applying pressure to close blood vessels, e.g. against the skin; Ophthalmodynamometers
- WARNING**
Subgroups of A61B-5/022 are not complete pending a reorganisation; see also this group
- A61B 5/0507
- {using microwaves or terahertz waves}
- WARNING**
Group A61B-5/0507 is not complete pending a reorganisation.
- U A61B 5/08
- Detecting, measuring or recording devices for evaluating the respiratory organs ([A61B 5/0205](#) takes precedence)
- A61B 5/0823
- {Detecting or evaluating cough events}
- WARNING**
Group A61B-5/0823 is not complete pending a reorganisation, see also group/s A61B-5/08
- A61B 5/0826
- {Detecting or evaluating apnoea events ([A61B 5/4818](#) takes precedence)}
- WARNING**
Group A61B-5/0826 is not complete pending a reorganisation, see also group A61B-5/08
- A61B 5/145
- Measuring characteristics of blood in vivo, e.g. gas concentration, pH value; {Measuring characteristics of body fluids or tissues, e.g. interstitial fluid, cerebral tissue} (measuring of blood pressure or blood flow [A61B 5/02](#) ; non-radiation detecting or locating of foreign bodies in blood [A61B 5/06](#))
- WARNING**
Groups A61B-5/14535, A61B-5/14539 and A61B-5/14546 are not complete pending a reorganisation; see also groups A61B-5/145
- A61B 5/16
- Devices for psychotechnics (testing capability [G09B 1/00](#) to [G09B 5/00](#)); Testing reaction times; [Devices for evaluating the psychological state]
- WARNING**
Groups A61B-5/167 and ~~A61B5/5/16L~~ are not complete pending a reorganisation; see also group A61B-5/16
- U A61B 5/20
- for measuring urological functions {restricted to the evaluation of the urinary system ([A61B 5/4375](#) takes precedence)}
- A61B 5/201
- {Assessing renal or kidney functions}
- WARNING**
Group A61B-5/201 is not complete pending a reorganisation, see also group A61B-5/20
- A61B 5/202
- {Assessing bladder functions, e.g. incontinence assessment}
- WARNING**
Group A61B-5/202 and subgroups are not complete pending a reorganisation, see also group A61B-5/20

- A61B 5/42
- {Detecting, measuring or recording for evaluating the gastrointestinal, the endocrine or the exocrine systems ([A61B 1/00](#) , [A61B 5/4857](#) , [A61B 5/486](#) , [A61B 5/4866](#) , [A61B 5/4869](#) take precedence)}
- WARNING**
Group A61B 5/42 and subgroups are not complete pending a reorganisation; see also groups [A61B 5/00](#) , [A61B 5/02](#) , [A61B 5/0488](#) , [A61B 5/145](#) .
- A61B 5/43
- {Detecting, measuring or recording for evaluating the reproductive systems}
- WARNING**
Group A61B 5/43 and subgroups are not complete pending a reorganisation; see also groups [A61B 5/00](#) , [A61B 5/02](#) , [A61B 5/04](#) , [A61B 5/05](#) , [A61B 5/053](#) , [A61B 5/103](#) , [A61B 5/11](#) , [A61B 5/145](#) .
- A61B 5/44
- {Detecting, measuring or recording for evaluating the integumentary system, e.g. skin, hair or nails ([A61B 5/117](#) takes precedence)}
- WARNING**
Group A61B 5/44 and subgroups are not complete pending a reorganisation; see also groups [A61B 5/00](#) , [A61B 5/05](#) , [A61B 5/053](#) , [A61B 5/103](#) , [A61B 5/145](#) , [A61B 5/68](#) : [A61B 5/00](#) , [A61B 5/01](#) , [A61B 5/02](#) , [A61B 5/03](#) , [A61B 5/04](#) , [A61B 5/05](#) , [A61B 5/06](#) , [A61B 5/07](#) , [A61B 5/08](#) , [A61B 5/103](#) , [A61B 5/12](#) , [A61B 5/145](#) , [A61B 5/20](#) , [A61B 5/22](#)
- A61B 5/68
- {Arrangements of detecting, measuring or recording means, e.g. sensors, in relation to patient}
- WARNING**
Group A61B 5/68 and subgroups are not complete pending a reorganisation; see also groups [A61B 5/00](#) , [A61B 5/01](#) , [A61B 5/02](#) , [A61B 5/03](#) , [A61B 5/04](#) , [A61B 5/05](#) , [A61B 5/06](#) , [A61B 5/07](#) , [A61B 5/08](#) , [A61B 5/103](#) , [A61B 5/12](#) , [A61B 5/145](#) , [A61B 5/20](#) , [A61B 5/22](#)
- A61B 5/70
- {Means for positioning the patient in relation to the detecting, measuring or recording means}
- WARNING**
Group A61B 5/70 and subgroups are not complete pending a reorganisation; see also groups [A61B 5/00](#) , [A61B 5/01](#) , [A61B 5/02](#) , [A61B 5/03](#) , [A61B 5/04](#) , [A61B 5/05](#) , [A61B 5/06](#) , [A61B 5/07](#) , [A61B 5/08](#) , [A61B 5/103](#) , [A61B 5/12](#) , [A61B 5/145](#) , [A61B 5/20](#) , [A61B 5/22](#)
- 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](#))}
- WARNING**
Group A61B 5/72 and subgroups are not complete pending a reorganisation; see also other subgroups of [A61B 5/00](#)
- U A61B 17/7001
- {Screws or hooks combined with longitudinal elements which do not contact vertebrae ([A61B 17/7058](#) takes precedence)}
- A61B 17/7046
- {the screws or hooks being mobile in use relative to the longitudinal element ([A61B 17/7035](#) takes precedence)}
- WARNING**
incomplete see [A61B 17/7001](#)

Project: MP0119 (A61C)

- U A61C 13/10 · Fastening of artificial teeth to denture palates or the like {(A61C 8/0048 takes precedence)}
- U A61C 13/1003 · · {by embedding in base material}
- U A61C 13/1013 · · · {Arch forms}
- A61C 13/1016 · · · · {Methods or apparatus for mounting, holding or positioning a set of teeth}

WARNING~~Not complete, see A61C 13/00, A61C 13/04~~**Project: MP0119 (A61H)**

- U 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 orthopaedic methods or devices, which are covered by group [A61F 5/00](#)

- U A61H 1/02 · Stretching or bending {or torsioning} apparatus for exercising

NOTE

In this group, documents which are of interest for more than one subgroup are classified in the hierarchically higher group only, unless there is a specific group for the combination

- U A61H 1/0237 · · {for the lower limbs}
- U A61H 1/0255 · · · {Both knee and hip of a patient, e.g. in supine or sitting position, the feet being moved in a plane substantially parallel to the body-symmetrical-plane (A61H 1/0214 takes precedence)}
- A61H 1/0262 · · · · {Walking movement; Appliances for aiding disabled persons to walk (A61H 3/00 takes precedence)}

WARNING~~Not complete, pending the completion of a reclassification~~

- 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)}**

WARNING

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

- A61H 19/30 · {Devices for external stimulation of the genitals}

WARNING~~Not complete, pending the completion of a reclassification, see also A61H 19/00~~

- A61H 19/32 · · {for inserting the genitals therein e.g. vibrating rings for males or breast stimulating devices}

WARNING~~Not complete, pending the completion of a reclassification, see also A61H 19/00~~

- A61H 19/40
- {Devices insertable in the genitals}
- WARNING**
Not complete, pending the completion of a reclassification, see also [A61H 19/44](#)
- A61H 33/60
- {Components specifically designed for the therapeutic baths of groups [A61H 33/00](#)(plumbing [E03C 1/00](#))}
- WARNING**
Groups A61H 33/60 to A61H 33/6021 are not complete, pending the completion of a reclassification; see the other groups of A61H 33/00
- U A61H 33/6068
- • {Outlet from the bath}
- A61H 33/6084
- • • {For filling to the border or edge of the bath, i.e. no border to be seen}
- WARNING**
Not complete, pending the completion of a reclassification
- A61H 33/6089
- • {Specific construction features for further massaging means, i.e. not for the nozzles}
- WARNING**
Not complete, pending the completion of a reclassification
- A61H 33/6094
- • • {Extending through the wall of the bathing device}
- WARNING**
Not complete, pending the completion of a reclassification

Project: MP0119 (A63F)

- U A63F 1/00
- Card games (aspects of games using an electronically generated display having two or more dimensions showing representations related to the game [A63F 13/00](#); card games played on a gaming machine [G07F 17/32](#))**
- A63F 1/06
- Card games appurtenances
- WARNING**
The following classes are not complete because of a pending reorganisation:
A63F 1/062: see also A63F 1/06 and A63F 1/062
A63F 1/065: see also A63F 1/06 and A63F 1/065
A63F 1/067: see also A63F 1/06 and A63F 1/067
- 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](#))**
- WARNING**
Reorganisation pending for the following groups: A63F 3/00003, A63F 3/00047, A63F 3/00053, A63F 3/00056, A63F 3/00059, A63F 3/00173, A63F 3/00261, A63F 3/0052, A63F 3/00529, A63F 3/00533, A63F 3/0402, A63F 3/0497, A63F 3/0605, A63F 3/061, A63F 3/0615, A63F 3/062, A63F 3/0635, A63F 3/0655. See also this group and its subgroups
- U A63F 3/06
- Lottos or bingo games; Systems, apparatus or devices for checking such games {(small boxes with balls used for generating random numbers [A63F 7/048](#); lottery apparatus [G07C 15/00](#); lottery gaming stations, online lottery or bingo [G07F 17/329](#); printing processes for lottery tickets [B41M 3/005](#))}

A63F 3/0605	<ul style="list-style-type: none"> • {Lottery games} <p style="color: red; margin-top: 0;"><u>WARNING</u> not complete, reorganisation pending</p>
A63F 7/00	<p>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)</p> <p style="color: red; margin-top: 0;"><u>WARNING</u> Groups not complete pending reclassification: A63F 7/022, A63F 7/0656, A63F 7/0616, A63F 7/062, A63F 7/0624, A63F 7/0632, A63F 7/064, A63F 7/0644, A63F 7/0648, A63F 7/0656, A63F 7/24, A63F 7/2418, A63F 7/2427, A63F 7/249, A63F 7/265, A63F 7/28, A63F 7/30, A63F 7/3055, A63F 7/306, A63F 7/307, A63F 7/34, A63F 7/36, A63F 7/382. See also this group and its subgroups</p>
U A63F 7/06	<ul style="list-style-type: none"> • Games simulating outdoor ball games, e.g. hockey {(or football if physically beneficial for the human body A63B 67/00)}
A63F 7/0604	<ul style="list-style-type: none"> • {Type of ball game (A63F 7/0672 and A63F 7/0684 take precedence)} <p style="color: red; margin-top: 0;"><u>WARNING</u> not complete, reorganisation pending</p>
A63F 9/00	<p>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})</p> <p style="color: red; margin-top: 0;"><u>WARNING</u> Groups incomplete pending reclassification reorganisation: A63F 9/0243, A63F 9/0495, A63F 9/0601, A63F 9/0602, A63F 9/0604, A63F 9/0611, A63F 9/0612, A63F 9/0641, A63F 9/0666, A63F 9/0669, A63F 9/0807, A63F 9/0834, A63F 9/0838, A63F 9/0842, A63F 9/0857, A63F 9/0861, A63F 9/0865, A63F 9/0869, A63F 9/0873, A63F 9/1208, A63F 9/1252, A63F 9/1288. See also this group and its subgroups</p>
U A63F 9/04	<ul style="list-style-type: none"> • Dice (dice tops A63F 5/04{ D}); Dice-boxes; Mechanical dice-throwing devices {(casino or betting games played on boards A63F 3/00157)}
A63F 9/0495	<ul style="list-style-type: none"> • {Dice-boxes or similar storing means} <p style="color: red; margin-top: 0;"><u>WARNING</u> not complete, reorganisation pending</p>
A63F 9/06	<ul style="list-style-type: none"> • Patience; Other games for self-amusement <p style="color: red; margin-top: 0;"><u>WARNING</u> Groups A63F 9/0601 to A63F 9/0604 are not complete pending reclassification; see also this groups and its other subgroups</p>
A63F 11/00	<p>Game accessories of general use { e.g. score counters, boxes}</p> <p><u>NOTE</u> Game accessories specially adapted for a particular type of game are classified in one of the groups A63F 1/00 to A63F 9/00 covering the particular game</p> <p style="color: red; margin-top: 0;"><u>WARNING</u> Groups not complete, pending reclassification: A63F 11/0025; A63F 11/0051; A63F 11/0074. See also this group]</p>

Project: MP0119 (C02F)

- U C02F 1/00** Treatment of water, waste water, or sewage ([C02F 3/00](#) to [C02F 9/00](#) take precedence)
- U C02F 1/30** · by irradiation
- C02F 1/307** · · {with X-rays or gamma radiation}
- WARNING**
Not complete pending the completion of a reclassification, see also [C02F 1/30](#)
- U C02F 1/48** · with magnetic or electric fields ([C02F 1/46](#) takes precedence)
- C02F 1/484** · · {using electromagnets}
- WARNING**
Not complete pending the completion of a reclassification, see also [C02F 1/48](#) and [C02F1/48C](#)
- C02F 1/485** · · · {located on the outer wall of the treatment device, i.e. not in contact with the liquid to be treated, e.g. detachable}
- WARNING**
Not complete pending the completion of a reclassification, see also [C02F 1/48](#)
- C02F 1/487** · · {using high frequency electromagnetic fields, e.g. pulsed electromagnetic fields}
- WARNING**
Not complete pending the completion of a reclassification, see also [C02F 1/48](#)

Project: MP0119 (C12C)

- C12C** BREWING OF BEER (cleaning of raw materials [A23N](#); pitching and depitching machines, cellar tools [C12L](#); propagating yeasts [C12N 1/14](#) ; non-beverage ethanolic fermentation [C12P 7/06](#))
- WARNING**
Some of the groups [C12C 3/00](#) to [C12C 7/28](#) might be incomplete. See Warning after [C12C 9/00](#).
- C12C 9/00** Methods specially adapted for the making of beerwort
- WARNING**
From 1st August 2003 onwards, the IPC5-based groups [C12C 9/00](#) to [C12C 9/025](#) are no longer used for classification of new documents. Patent documents classified in these groups are being continuously reclassified to the corresponding groups [C12C 3/00](#) to [C12C 7/00](#)

Project: MP0119 (C12G)

- C12G** WINE; OTHER ALCOHOLIC BEVERAGES; PREPARATION THEREOF (beer [C12C](#))
- 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:
- | | | | | | |
|------------------------|-----------------------|------------------------|-----------------------|----------------------|--------------|
| C12G 1/022 | covered by | C12G 1/0203 | C12G 1/024 | " | " |
| C12G 1/0209 | C12G 1/026 | " | " | C12G 1/02 | |

~~C12G 1/028 " " C12G 1/0213 C12G 1/032 "~~
~~" C12G 1/0216 "~~
~~C12G 1/036 " " C12G 1/0206 C12G 1/067 "~~
~~" C12G 1/06 C12G 1/073 " " C12G 1/06, C12G 1/064~~
~~C12G 1/09 " " C12G 1/08 "~~
~~C12G 1/10 " " C12G 1/0203, C12H 1/10, C12G1/18~~
~~C12G 1/12 " " C12H "~~
~~C12G 3/07 " " C12G 3/065 "~~
~~C12G 3/14 " " C12G 3/105 "~~

Project: MP0119 (C12H)

C12H

**PASTEURISATION; STERILISATION; PRESERVATION; PURIFICATION;
CLARIFICATION; AGEING**

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 scheme. Subject matter covered by these groups is classified in the following CPC groups:

~~C12H 1/044 covered by C12H 1/0408~~
~~C12H 1/048 " " C12H 1/0408~~
~~C12H 1/052 " " C12H 1/0416~~
~~C12H 1/056 " " C12H 1/0424~~
~~C12H 1/065 " " C12H 1/061~~
~~C12H 1/07 " " C12H 1/063~~
~~C12H 1/075 " " C12H 1/063~~
~~C12H 1/15 " " C12H 1/003~~
~~C12H 3/00 " " C12G 3/08~~
~~C12H 3/02 " " C12G 3/12~~
~~C12H 3/04 " " C12G 3/085~~

Project: MP0119 (C12N)

U C12N 15/8201 {Methods for introducing genetic material into plant cells, e.g. DNA, RNA, stable or transient incorporation, tissue culture methods adapted for transformation}

U C12N 15/8209 {Selection, visualisation of transformants, reporter constructs, e.g. antibiotic resistance markers}

NOTE

Standard selectable markers such as neomycin phosphotransferase (NPT) are not systematically classified in [C12N 15/8209](#)

C12N 15/821 {Non-antibiotic resistance markers, e.g. morphogenetic, metabolic markers}

WARNING

Incomplete, see also C12N 15/8209

C12N 15/8212 {Colour markers, e.g. beta-glucuronidase ([GUS]), green fluorescent protein ([GFP]), carotenoid}

WARNING

Incomplete, see also C12N 15/8209

U	C12N 15/8216	. . . . . {Methods for controlling, regulating or enhancing expression of transgenes in plant cells}
	C12N 15/8217	. . . . . {Gene switch}
		<u>WARNING</u> Incomplete, see also C12N 15/8216
	C12N 15/8218	. . . . . {Antisense, co-suppression, viral induced gene silencing ([VIGS]), post-transcriptional induced gene silencing ([PTGS])}
		<u>WARNING</u> Incomplete, see also C12N 15/8216
	C12N 15/822	. . . . . {Reducing position variability, e.g. by the use of scaffold attachment region/matrix attachment region (SAR/MAR); Use of SAR/MAR to regulate gene expression}
		<u>WARNING</u> Incomplete, see also C12N 15/8216
	C12N 15/8221	. . . . . {Transit peptides}
		<u>WARNING</u> Incomplete, see also C12N 15/8216
U	C12N 15/8222	. . . . . {Developmentally regulated expression systems, tissue, organ specific, temporal or spatial regulation}
	C12N 15/8223	. . . . . {Vegetative tissue-specific promoters}
		<u>WARNING</u> Incomplete, see also C12N 15/8222
	C12N 15/8225	. . . . . {Leaf-specific, e.g. including petioles, stomata}
		<u>WARNING</u> Incomplete, see also C12N 15/8222
	C12N 15/8226	. . . . . {Stem-specific, e.g. including tubers, beets}
		<u>WARNING</u> Incomplete, see also C12N 15/8222
	C12N 15/8227	. . . . . {Root-specific}
		<u>WARNING</u> Incomplete, see also C12N 15/8222
	C12N 15/8229	. . . . . {Meristem-specific, e.g. nodal, apical}
		<u>WARNING</u> Incomplete, see also C12N 15/8222
	C12N 15/823	. . . . . {Reproductive tissue-specific promoters}
		<u>WARNING</u> Incomplete, see also C12N 15/8222
	C12N 15/8231	. . . . . {Male-specific, e.g. anther, tapetum, pollen}
		<u>WARNING</u> Incomplete, see also C12N 15/8222

C12N 15/8233	. . . . . {Female-specific, e.g. pistil, ovule}
	<u>WARNING</u> Incomplete, see also C12N 15/8222
C12N 15/8234	. . . . . {Seed-specific, e.g. embryo, endosperm}
	<u>WARNING</u> Incomplete, see also C12N 15/8222
C12N 15/8235	. . . . . {Fruit-specific}
	<u>WARNING</u> Incomplete, see also C12N 15/8222
U C12N 15/8237	. . . . . {Externally regulated expression systems}
C12N 15/8238	. . . . . {chemically inducible, e.g. tetracycline}
	<u>WARNING</u> Incomplete, see also C12N 15/8237
C12N 15/8239	. . . . . {pathogen inducible}
	<u>WARNING</u> Incomplete, see also C12N 15/8237
U C12N 15/8241	. . . . . {Phenotypically and genetically modified plants via recombinant DNA technology}
U C12N 15/8242	. . . . . {with non-agronomic quality (output) traits, e.g. for industrial processing; Value added, non-agronomic traits}
U C12N 15/8243	. . . . . {involving biosynthetic or metabolic pathways, i.e. metabolic engineering, e.g. nicotine, caffeine}
U C12N 15/8245	. . . . . {involving modified carbohydrate or sugar alcohol metabolism, e.g. starch biosynthesis}
C12N 15/8246	. . . . . {Non-starch polysaccharides, e.g. cellulose, fructans, levans}
	<u>WARNING</u> Incomplete, see also C12N 15/8245
U C12N 15/8251	. . . . . {Amino acid content, e.g. synthetic storage proteins, altering amino acid biosynthesis}
C12N 15/8253	. . . . . {Methionine or cysteine}
	<u>WARNING</u> Incomplete, see also C12N 15/8251
C12N 15/8254	. . . . . {Tryptophan or lysine}
	<u>WARNING</u> Incomplete, see also C12N 15/8251
C12N 15/8255	. . . . . {involving lignin biosynthesis}
	<u>WARNING</u> Incomplete, see also C12N 15/8243
C12N 15/8259	. . . . . {Phytoremediation}
	<u>WARNING</u> Incomplete, see also C12N 15/8242
U C12N 15/8261	. . . . . {with agronomic (input) traits, e.g. crop yield}

U	C12N 15/8262	. . . . .	{involving plant development (not used)}
	C12N 15/8263	. . . . .	{Ablation; Apoptosis}
			<u>WARNING</u> Incomplete, see also C12N 15/8261
	C12N 15/8265	. . . . .	{Transgene containment, e.g. gene dispersal}
			<u>WARNING</u> Incomplete, see also C12N 15/8261
	C12N 15/8266	. . . . .	{Abscission; Dehiscence; Senescence}
			<u>WARNING</u> Incomplete, see also C12N 15/8261
	C12N 15/8267	. . . . .	{Seed dormancy, germination or sprouting}
			<u>WARNING</u> Incomplete, see also C12N 15/8261
	C12N 15/8269	. . . . .	{Photosynthesis}
			<u>WARNING</u> Incomplete, see also C12N 15/8261
	C12N 15/827	. . . . .	{Flower development or morphology, e.g. flowering promoting factor (/FPF/) }
			<u>WARNING</u> Incomplete, see also C12N 15/8261
U	C12N 15/8271	. . . . .	{for stress resistance, e.g. heavy metal resistance}
	C12N 15/8273	. . . . .	{for drought, cold, salt resistance}
			<u>WARNING</u> Incomplete, see also C12N 15/8271
U	C12N 15/8274	. . . . .	{for herbicide resistance}
	C12N 15/8275	. . . . .	{Glyphosate}
			<u>WARNING</u> Incomplete, see also C12N 15/8274
	C12N 15/8277	. . . . .	{Phosphinotricin}
			<u>WARNING</u> Incomplete, see also C12N 15/8274
	C12N 15/8278	. . . . .	{Sulfonylurea}
			<u>WARNING</u> Incomplete, see also C12N 15/8274
U	C12N 15/8279	. . . . .	{for biotic stress resistance, pathogen resistance, disease resistance}
	C12N 15/8281	. . . . .	{for bacterial resistance}
			<u>WARNING</u> Incomplete, see also C12N 15/8279

C12N 15/8282	. . . . . {for fungal resistance}	<u>WARNING</u> Incomplete, see also C12N 15/8279
U C12N 15/8287	. . . . . {for fertility modification, e.g. apomixis}	
C12N 15/8289	. . . . . {Male sterility}	<u>WARNING</u> Incomplete, see also C12N 15/8287
C12N 15/829	. . . . . {Female sterility}	<u>WARNING</u> Incomplete, see also C12N 15/8287
C12N 15/8291	. . . . . {Hormone-influenced development}	<u>WARNING</u> Incomplete, see also C12N 15/8261
C12N 15/8293	. . . . . {Abscisic acid (/ABA)}	<u>WARNING</u> Incomplete, see also C12N 15/8261
C12N 15/8294	. . . . . {Auxins}	<u>WARNING</u> Incomplete, see also C12N 15/8261
C12N 15/8295	. . . . . {Cytokinins}	<u>WARNING</u> Incomplete, see also C12N 15/8261
C12N 15/8297	. . . . . {Gibberellins; GA3}	<u>WARNING</u> Incomplete, see also C12N 15/8261
C12N 15/8298	. . . . . {Brassinosteroids}	<u>WARNING</u> Incomplete, see also C12N 15/8261

Project: MP0119 (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 47/34	. Handling the weft between bulk storage and weft-inserting means
D03D 47/347	. {Yarn brakes (D03D 47/364 takes precedence)}
	<u>WARNING</u> Not complete pending the completion of a reclassification, see also group D03D 47/34
U D03D 47/36	. Measuring and cutting the weft {; Devices for measuring and temporary storing the weft (cutting weft threads D03D 49/70)}
U D03D 47/361	. {Drum-type weft feeding devices}
U D03D 47/364	. {Yarn braking means acting on the drum}

D03D 47/365 {Brushes}

WARNING

~~Not complete pending the completion of a reclassification, see also group D03D 47/364~~

Project: MP0119 (E02B)

E02B

HYDRAULIC ENGINEERING (ship-lifting [E02C](#); dredging [E02F](#))

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:

~~E02B 15/06 covered by E02B 15/08~~

~~E02B 15/08 covered by **E02B15/04B**~~

~~E02B 15/10 covered by **E02B15/04C** to E02B 15/043~~

Project: MP0119 (E05B)

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](#).

WARNING

~~Groups E05B 77/00 to E05B 85/28 do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - E05B 77/00 to E05B 85/28 : E05B 65/12~~

Project: MP0119 (F42D)

F42D

BLASTING (fuses, e.g. fuse cords, [C06C 5/00](#) ; { for obtaining fluid from wells [E21B 43/00](#) ; for mining or quarrying [E21C 37/00](#) ; for making tunnels or galleries [E21D 9/006](#) } ; cartridges [F42B 3/00](#))

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:

~~F42D 7/00 covered by F42D 1/00 , F42D 3/00~~

Project: MP0119 (G01N)

U G01N 21/84

• Systems specially adapted for particular applications

U G01N 21/88

• • Investigating the presence of flaws or contamination

U G01N 21/90

• • • in a container or its contents ([G01N 21/91](#) takes precedence)

U G01N 21/9018

• • • • {Dirt detection in containers}

G01N 21/9027

• • • • • {in containers after filling}

WARNING

~~Not complete, see also G01N 21/90 , G01N 21/9018, G01N 21/9036~~

- G01N 21/9045 · · · {Inspection of ornamented or stippled container walls}

WARNING

Not complete; see also G01N 21/90, G01N 21/9018, G01N 21/9036

Project: MP0119 (G01S)

- 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)
- G01S 5/0252 · {by comparing measured values with pre-stored measured or simulated values}

WARNING

This group is incomplete; see provisionally also group G01S 5/02

Project: MP0119 (G06T)

- U G06T 5/00** **Image enhancement or restoration, e.g. from bit-mapped to bit-mapped creating a similar image**

- U G06T 5/001 · {Image restoration}
- G06T 5/002 · · {Denoising; Smoothing (noise processing or correction adapted to be used in an image pickup device containing an electronic image sensor [H04N 5/217](#) , [H04N 5/357](#) to [H04N 5/365](#))}

WARNING

Not complete pending reclassification; see also group G06T 5/001

- G06T 5/003 · · {Deblurring; Sharpening (vibration or motion blur correction for cameras comprising an electronic image sensor [H04N 5/23264](#))}

WARNING

Not complete pending reclassification; see also group G06T 5/001

- G06T 5/004 · · · {Unsharp masking}

WARNING

Not complete pending reclassification; see also group G06T 5/001

- G06T 5/005 · · {Retouching; Inpainting; Scratch removal (detecting, correction, reducing or removing defects, e.g. non-responsive pixels of solid state image sensors [H04N 5/367](#) , scratch removal for cinematographic films scanned by electronic image sensor [H04N 5/253](#))}

WARNING

Not complete pending reclassification; see also group G06T 5/001

- G06T 5/007 · {Dynamic range modification (applied in cameras using an electronic image sensor [H04N 5/2355](#) , [H04N 5/2356](#))}

WARNING

Not complete pending reclassification; see also groups G06T 5/001 and G06T 5/40

- G06T 5/008 · · {Local, e.g. shadow enhancement}

WARNING

Not complete pending reclassification; see also group G06T 5/001

- G06T 5/009
- {Global, i.e. based on properties of the image as a whole (applied in cameras using an electronic image sensor [H04N 5/23229](#) , [H04N 5/235](#))}
- WARNING**
Not complete pending reclassification; see also group G06T 5/40
- G06T 5/10
- by non-spatial domain filtering {(applied in cameras using an electronic image sensor [H04N 5/23229](#) , [H04N 5/235](#) , [H04N 5/253](#) , [H04N 5/367](#))}
- WARNING**
Not complete pending reclassification; see also group G06T 5/001
- U G06T 7/00** **Image analysis, e.g. from bit-mapped to non bit-mapped**
- G06T 7/0002
- {Inspection of images, e.g. flaw detection ([G06T 7/004](#) takes precedence)}
- WARNING**
This group is being reorganised in the 5 following sub-groups
- G06T 7/0012
- {Biomedical image inspection}
- WARNING**
Groups **G06T/00B2R** and **G06T 7/0016** are not complete pending reclassification. See also this group

Project: MP0119 (H01B)**H01B**

CABLES; CONDUCTORS; INSULATORS; SELECTION OF MATERIALS FOR THEIR CONDUCTIVE, INSULATING OR DIELECTRIC PROPERTIES (selection for magnetic properties [H01F 1/00](#); waveguides [H01P](#); installations of cables or lines [H02G](#); { printed circuits [H05K](#)})

NOTE

Group [H01B 12/00](#) takes precedence over groups [H01B 5/00](#) to [H01B 11/00](#).

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:

~~H01B 7/17 to H01B 7/295 covered by H01B 7/18 to H01B 7/2813, H01B7/34 to H01B7/34B3~~

Project: MP0119 (H01L)**U H01L 24/00**

{Arrangements for connecting or disconnecting semiconductor or solid-state bodies; Methods or apparatus related thereto}

NOTES

1. This group does not cover: - details of semiconductor bodies or of electrodes of devices provided for in group [H01L 29/00](#) , which details are covered by that group; - details peculiar to devices provided for in a single main group of groups [H01L 31/00](#) to [H01L 51/00](#) , which details are covered by those groups. - printed circuits, which are covered by groups [H05K 1/00](#) to [H05K 1/189](#); - apparatus or manufacturing processes for printed circuits, which are covered by groups [H05K 3/00](#) to [H05K 3/4685](#); - manufacture or treatment of parts, which are covered by group [H01L 21/48](#) and subgroups except [H01L 21/4885](#) to [H01L 21/4896](#) ; - assemblies of semiconductor devices, which are covered by groups [H01L 21/50](#) to [H01L 21/568](#); - applying interconnections to be used for carrying current between separate components within a device, which is covered by group [H01L 21/768](#) and subgroups; - containers or seals, which are covered by groups [H01L 23/02](#) to [H01L 23/10](#) ; - mountings, which are covered by groups [H01L 23/12](#) to [H01L 23/15](#) and subgroups; - arrangements

for cooling, heating, ventilating or temperature compensation, which are covered by groups [H01L 23/34](#) to [H01L 23/4735](#); - arrangements for conducting electric current, which are covered by groups [H01L 23/48](#) to [H01L 23/50](#) , and by groups [H01L 23/52](#) to [H01L 23/5389](#); - structural electrical arrangements, which are covered by groups [H01L 23/58](#) to [H01L 23/66](#) ; - assemblies of semiconductor or other solid state devices, which are covered by groups [H01L 25/00](#) to [H01L 25/18](#)

2. In this group the following indexing codes are used : [H01L 24/00](#)[H01L 2224/00](#) , [H01L 2924/00](#) , and subgroups thereof

WARNING

[H01L 21/4885](#) , [H01L 21/58](#) , [H01L 23/48](#) , [H01L 23/482](#) , [H01L 23/485](#) , [H01L 23/488](#)

- U H01L 24/80
- {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}

WARNING

1. Pending reorganisation see provisionally also **H01L21/60** 2. Subgroups of this group are not complete; see also this group and the other subgroups

- H01L 24/81
- - {using a bump connector}

WARNING
H01L 24/81

Project: MP0119 (H03G)

- U H03G 9/00
- Combinations of two or more types of control, e.g. gain control and tone control**

- H03G 9/005
- {of digital or coded signals}

WARNING

Not complete pending reclassification; see provisionally also group H03G 9/00 }

Project: MP0119 (H03K)

- U H03K 23/00
- Pulse counters comprising counting chains; Frequency dividers comprising counting chains ([H03K 29/00](#) takes precedence)**

- H03K 23/004
- {Counters counting in a non-natural counting order, e.g. random counters}

WARNING

Group H03K 23/004 and subgroups are not complete, see also H03K 23/00 and ~~H03K23/02 to H03K23/30~~

Project: RP0081 (B05B)

- U B05B 3/02
- with rotating elements

- U B05B 3/04
- - driven by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet {([B05B 3/023](#) takes precedence)}

- U B05B 3/0409
- - {with moving, e.g. rotating, outlet elements ([B05B 3/0486](#) , [B05B 3/06](#) take precedence)}

- U B05B 3/0472
- - - {the spray jet actuating a movable deflector which is successively moved out of the jet by jet action and brought back into the jet by spring action}

- M B05B 3/0477 {the spray outlet having a reversible rotative movement, e.g. for covering angular sector smaller than 360°}
- WARNING
This subgroup is not complete, due to a pending reclassification. See provisionally also group B05B-3/165
- M B05B 3/0481 {Impact motive means}
- WARNING
This subgroup is not complete, due to a pending reclassification. See provisionally also group B05B-3/165
- U B05B 3/14 . with oscillating elements; with intermittent operation
- U B05B 3/16 . . driven or controlled by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet {{[B05B 3/0431](#) , [B05B 3/0468](#) , [B05B 3/0472](#) take precedence}}
- D B05B 3/165 . . . {by impact motive means, e.g. of hammer type}
- WARNING
This subgroup is no longer used for the classification of new documents from March 1st, 2010. The backlog is continuously reclassified to subgroups B05B-3/0477 and B05B-3/0481

Project: RP0082 (C23C)

- U C23C 16/22 . characterised by the deposition of inorganic material, other than metallic material
- U C23C 16/26 . . Deposition of carbon only
- U C23C 16/27 . . . Diamond only
- D C23C 16/273 {using hot filaments}

Project: RP0083 (H04L)

- M H04L 2212/00 ~~{Details not provided for in other groups~~ **Encapsulation of this subclass} packets**
- D H04L 2212/002 . {Packet embedding}
- D H04L 2212/0025 . . Encapsulation of packets

Project: RP0086 (F23D)

- D F23D 21/00 ~~Burners not otherwise provided for~~
- NOTE
{combinations of spraying or vaporising means covered by sub-groups F23D-5/00 and F23D-21/00 are classified in F23D-11/008}
- D F23D 21/005 . {specially adapted for use in particular heating operations}
- U F23D 23/00 **Assemblies of two or more burners (gas burners with provision for a retention flame [F23D 14/26](#); disposition of burners [F23C](#); for industrial furnaces [F27](#))**
- N F23D 91/00 **{Burners specially adapted for specific applications, not otherwise provided for}**
- NOTE
{Combinations of spraying or vaporising means covered by sub-groups [F23D 5/00](#) and [F23D 91/00](#) are classified in [F23D 11/008](#)}

- N F23D 91/02 · {for use in particular heating operations}
- N F23D 91/04 · · {for heating liquids, e.g. for vaporising or concentrating}

U F23D 99/00 Subject matter not provided for in other groups of this subclass

- D F23D 99/003 · {specially adapted for use in particular heating operations}
- D F23D 99/006 · · {for heating liquids, e.g. for vaporising, for concentrating}

Project: RP0087 (F05D)

U F05D 2270/00 Control

- U F05D 2270/80 · Devices generating input signals, e.g. transducers, sensors, cameras or strain gauges
- U F05D 2270/821 · · Displacement measuring means, e.g. inductive

D F05D 2280/00

D F05D 2290/00

Project: RP0091 (H02P)

U H02P 5/00 Arrangements specially adapted for regulating or controlling the speed or torque of two or more electric motors (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); { synchronous motors or other dynamo-electric motors with electronic commutators in dependence on the rotor position [H02P 6/00](#); motors rotating step by step [H02P 8/00](#);} vector control [H02P 21/00](#))

- D H02P 2005/001 · {Control of angular speed of one shaft by controlling the prime mover}
- D H02P 2005/002 · {Control of angular speed together with angular position or phase}
- D H02P 2005/004 · · {of one shaft without controlling the prime mover}
- D H02P 2005/005 · · {of one shaft by controlling the prime mover}
- D H02P 2005/007 · {Control of acceleration or deceleration}
- D H02P 2005/008 · {Digital speed control using a reference oscillator, a speed proportional pulse rate feedback and a digital comparator}
- D H02P 2005/04 · {for speed regulation of an individual motor by means of a separate brake}
- D H02P 2005/05 · {characterised by the use of reluctance motors}
- D H02P 2005/055 · · {Modifications for increasing the switching speed from one coil to the next one}
- D H02P 2005/06 · {for speed regulation of an individual dc dynamo-electric motor by varying field or armature current}
- D H02P 2005/08 · · {using centrifugal devices, e.g. switch, resistor}
- D H02P 2005/10 · · {using a periodic interrupter, e.g. Tirrill regulator}
- D H02P 2005/12 · · {using discharge tubes or semiconductor devices}
- D H02P 2005/14 · · · {using discharge tubes}
- D H02P 2005/16 · · · {using semiconductor devices}
- D H02P 2005/1603 · · · · {the DC-motor is operated in the four quadrants}
- D H02P 2005/1606 · · · · · {controlling armature and field supply}
- D H02P 2005/1609 · · · · · {controlling field supply only}
- D H02P 2005/1613 · · · · · {controlling armature supply only}
- D H02P 2005/1616 · · · · · {using AC-DC or DC-AC-DC converters}
- D H02P 2005/162 · · · · {controlling field supply only}
- D H02P 2005/165 · · · · {controlling armature supply only}

- D H02P 2005/168 {using variable impedance}
- D H02P 2005/17 {using pulse modulation}
- D H02P 2005/171 {with on-off control between two setpoints}
- D H02P 2005/172 {using static converters, e.g. ac to dc}
- D H02P 2005/1725 {using phase control}
- D H02P 2005/175 {of the kind having one thyristor or the like in series with the power supply and the motor}
- D H02P 2005/178 {controlling armature and field supply}
- D H02P 2005/18 . . {using magnetic devices with controllable degree of saturation, i.e. transducers}
- D H02P 2005/20 . . {using armature reaction excited machines, e.g. metadyne, amplidyne, rototrol}
- D H02P 2005/22 . . {using Ward-Leonard set}
- D H02P 2005/24 . . . {in which only the generator field is controlled}
- D H02P 2005/26 . . . {in which both generator and motor fields are controlled}
- D H02P 2005/28 . {for speed regulation of an individual ac motor by varying stator or rotor current}
- D H02P 2005/30 . . {using centrifugal devices, e.g. switch, resistor}
- D H02P 2005/32 . . {using a periodic interrupter}
- D H02P 2005/34 . . {by varying frequency of supply to rotor or stator}
- D H02P 2005/36 . . {using discharge tubes or semiconductor devices}
- D H02P 2005/38 . . . {using discharge tubes}
- D H02P 2005/40 . . . {using semiconductor devices}
- D H02P 2005/4001 {the AC motor being operated in the four quadrants}
- D H02P 2005/4002 {Polyphase or monophas asynchronous induction motors}
- D H02P 2005/4003 {controlled by variable supply frequency}
- D H02P 2005/4005 {controlled by variable supply voltage}
- D H02P 2005/4006 {controlled by controlling the exchange of slip energy between the motor and the power supply}
- D H02P 2005/4007 {Synchronous motors}
- D H02P 2005/4008 {Polyphase or monophas commutator motors}
- D H02P 2005/401 {Synchronous motors}
- D H02P 2005/4011 {controlled by supply frequency}
- D H02P 2005/4012 {thereby detecting the rotor position}
- D H02P 2005/4013 {with brushless excitation}
- D H02P 2005/4015 {by methods not covered by groups H02P-2005/4016 to H02P-2005/415}
- D H02P 2005/4016 {controlled according to a desired slip setting}
- D H02P 2005/4017 {controlled by superposition of DC current upon the AC supply}
- D H02P 2005/4018 {controlled by the switch frequency of the switches connected a DC supply and the motorphases}
- D H02P 2005/402 {controlling supply voltage}
- D H02P 2005/405 {controlling secondary impedance}
- D H02P 2005/408 {controlling supply frequency}
- D H02P 2005/4083 {thereby changing the voltage according to the frequency}
- D H02P 2005/4086 {thereby changing the current according to the frequency}
- D H02P 2005/41 {using dc to ac converters}

- D H02P 2005/412 {using ac to ac converters without intermediate conversion to dc}
- D H02P 2005/415 {controlling slip energy}
- D H02P 2005/418 {for regulating commutator motors}
- D H02P 2005/4183 {Series motors; Universal motors}
- D H02P 2005/4186 {Repulsion motors}
- D H02P 2005/42 . . {using magnetic devices with controllable degree of saturation, i.e. transducers}
- D H02P 2005/44 . . {using brush shifting arrangements}
- U H02P 7/00** **Arrangements for regulating or controlling the speed or torque of electric DC motors (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); { synchronous motors or other dynamo-electric motors with electronic commutators in dependence on the rotor position [H02P 6/00](#); motors rotating step by step [H02P 8/00](#);} vector control [H02P 21/00](#))**
- D H02P 2007/0005 . {for preventing over- or under speed}
- D H02P 2007/0011 . {for controlling one motor used for different sequential operations}
- D H02P 2007/0016 . {Control of angular speed of one shaft without controlling the prime mover}
- D H02P 2007/0022 . . {Controlling a brake between the prime mover and the load}
- D H02P 2007/0027 . . {Controlling a clutch between the prime mover and the load}
- D H02P 2007/0033 . {Controlling the mechanical load according to the amount of current drawn or delivered by the motor}
- U H02P 7/0038 . {Controlling the direction of rotation of DC motors}
- D H02P 2007/005 . . {of DC motors only}
- D H02P 2007/0055 . . . {by means of a H-bridge circuit}
- D H02P 2007/0061 . . . {by means of electronic switching}
- D H02P 2007/0072 . . {of AC motors only}
- D H02P 2007/0077 . {Control of reciprocating, oscillating or vibrating motors}
- D H02P 2007/0083 . {Control of voice-coil motors}
- D H02P 2007/0088 . {Microprocessor-controlled motors}
- D H02P 2007/01 . {adapted to be connected to two or more voltage or current supplies}
- D H02P 2007/04 . {for controlling an individual motor by means of a separate brake}
- D H02P 2007/05 . {characterised by the use of reluctance motors}
- D H02P 2007/052 . . {Arrangements for reducing torque ripple}
- D H02P 2007/054 . . {Commutation}
- D H02P 2007/056 . . . {Sensorless control}
- D H02P 2007/058 . . {Converters specially adapted for controlling reluctance motors}
- D H02P 2007/36 . {for controlling an individual ac dynamo-electric motor by varying stator or rotor current}
- D H02P 2007/38 . . {by manual control without auxiliary power}
- D H02P 2007/40 . . . {using variable impedance in stator or rotor circuit}
- D H02P 2007/42 . . . {using variable-frequency supply}
- D H02P 2007/44 {wherein only rotor or only stator circuit is supplied with ac}
- D H02P 2007/46 {wherein both rotor and stator circuits are supplied with ac, the frequency of supply to one circuit being variable}
- D H02P 2007/48 . . . {by pole-changing}
- D H02P 2007/50 . . . {by shifting the brushes of a commutator motor}
- D H02P 2007/52 . . {by master control with auxiliary power}

- D H02P 2007/54 . . . {using multi-position switch, e.g. drum, controlling motor circuit by means of relays}
- D H02P 2007/56 . . . {using multi-position switch, e.g. drum, controlling motor circuit by means of pilot-motor-operated multi-position switch or pilot-motor-operated variable resistance}
- D H02P 2007/58 . . . {using discharge tubes or semiconductor devices}
- D H02P 2007/60 {using discharge tubes}
- D H02P 2007/62 {using semiconductor devices}
- D H02P 2007/6202 {the AC-motor being operated in the four quadrants}
- D H02P 2007/6204 {Synchronous motors}
- D H02P 2007/6206 {controlled by supply frequency}
- D H02P 2007/6208 {thereby detecting the rotor position}
- D H02P 2007/6211 {by methods not covered by H02P-2007/6213 to H02P-2007/635}
- D H02P 2007/6213 {controlled according to a desired slip-setting}
- D H02P 2007/6215 {controlled by superposition of DC-current upon the AC-supply}
- D H02P 2007/6217 {controlled by the switch frequency of the switches connected between a DC-supply and the motorphases}
- D H02P 2007/622 {controlling supply voltage}
- D H02P 2007/6223 {power factor control}
- D H02P 2007/6226 {for single-phase motors}
- D H02P 2007/625 {controlling secondary impedance}
- D H02P 2007/628 {controlling supply frequency}
- D H02P 2007/6283 {thereby changing voltage according to frequency}
- D H02P 2007/6286 {thereby changing current according to frequency}
- D H02P 2007/63 {using dc to ac converters}
- D H02P 2007/6305 {with pulse width modulation (PWM)}
- D H02P 2007/631 {with bang-bang controllers}
- D H02P 2007/6315 {with three or more levels}
- D H02P 2007/632 {using ac to ac converters without intermediate conversion to dc}
- D H02P 2007/6325 {varying the frequency by omitting half waves}
- D H02P 2007/635 {controlling slip energy}
- D H02P 2007/638 {for controlling commutator motors}
- D H02P 2007/6383 {Series motors; Universal motors}
- D H02P 2007/6386 {Repulsion motors}
- D H02P 2007/64 {using magnetic devices with controllable degree of saturation, i.e. transducers}
- D H02P 2007/66 {using an ac generator to supply the motor, the motor being controlled by a control effected upon the generator}
- D H02P 2007/67 . . . {for controlling two or more dynamo-electric motors}
- D H02P 2007/68 . . . {for controlling two or more dc dynamo-electric motors}
- D H02P 2007/685 {electrically connected in series, i.e. carrying the same current}
- D H02P 2007/69 {mechanically coupled by gearing}
- D H02P 2007/695 {Differential gearing}
- D H02P 2007/74 {for controlling two or more ac dynamo-electric motors}
- D H02P 2007/747 {mechanically coupled by gearing}
- D H02P 2007/753 {Differential gearing}

- D H02P 2007/78 . . . {for cascade connection between motors, e.g. motors permanently connected in cascade, motors switched from parallel to cascade connection}
- D H02P 2007/80 . . {for controlling combinations of dc and ac dynamo-electric motors}
- U H02P 21/00 Arrangements or methods for the control of electric machines by vector control, e.g. by control of field orientation**
- NOTES
1. Groups [H02P 21/06](#) to [H02P 21/12](#) cover vector control arrangements or methods involving the use of rotor position or speed sensors.
 2. Vector control arrangements or methods not involving the use of rotor position or speed sensors are classified in groups [H02P 21/0039](#) and subgroups
 3. When classifying in this group, it is desirable to also classify in groups [H02P 25/00](#) to [H02P 27/00](#) if the kind of AC motor, structural details, or the kind of supply voltage are of interest.
- U H02P 21/0003 . {Control strategies in general, e.g. linear type e.g. P, PI, PID, using robust control}
- D H02P 2021/0028 . . {Direct torque control (DTC); Field acceleration method (FAM)}
- D H02P 2021/0057 . {Internal or external parameter adaptation; Modelling}
- D H02P 2021/006 . . {Estimation, e.g. observer}
- D H02P 2021/0064 . . . {Flux estimation}
- D H02P 2021/0067 . . . {Sensorless speed estimation}
- D H02P 2021/0071 . {Rotor flux based control}
- D H02P 2021/0075 . . {Direct control of flux}
- D H02P 2021/0078 . . {Indirect control of flux}
- D H02P 2021/0082 . . . {Slip control}

Project: RP0092 (B65H)

- B65H 69/06 . by splicing {(Grommets made by splicing [D07B 1/18](#) , auxiliary apparatus for splicing ropes or cables ~~D07B 7/16~~[D07B 7/169](#))}

Project: RP0092 (D07B)

- U D07B 5/00 Making ropes or cables from special materials or of particular form**
- C D07B 5/005 . {characterised by their outer shape or surface properties}

WARNING

Group [D07B 5/005](#) is impacted by reclassification into group [D07B 5/006](#). Groups [D07B 5/005](#) and [D07B 5/006](#) should be considered in order to perform a complete search.

- N D07B 5/006 . . {by the properties of an outer surface polymeric coating}
- WARNING**
- Group [D07B 5/006](#) is incomplete pending reclassification of documents from group [D07B 5/005](#). Groups [D07B 5/005](#) and [D07B 5/006](#) should be considered in order to perform a complete search.*

- U D07B 7/00 Details of, or auxiliary devices incorporated in, rope- or cable-making machines; Auxiliary apparatus associated with such machines**

- C D07B 7/16
- Auxiliary apparatus
- WARNING**
Group [D07B 7/16](#) is impacted by reclassification into group [D07B 7/169](#). Groups [D07B 7/16](#) and [D07B 7/169](#) should be considered in order to perform a complete search.
- M D07B 7/165
- {~~Apparatus~~ for making slings}
- M D07B 7/167
- {~~Apparatus~~ for joining rope components}
- N D07B 7/169
- {for interconnecting two cable or rope ends, e.g. by splicing or sewing (fixation or holding of the ends prior to or during splicing [D07B 7/162](#); joining the rope or cable components individually or joining the rope ends by permanent means such as welding, gluing or crimp sleeve [D07B 7/167](#); preparing the splice by opening the ends [D07B 7/18](#))}
- WARNING**
Group [D07B 7/169](#) is incomplete pending reclassification of documents from group [D07B 7/16](#). Groups [D07B 7/16](#) and [D07B 7/169](#) should be considered in order to perform a complete search.
- C D07B 7/18
- for spreading or untwisting ropes or cables into constituent parts for treatment or splicing purposes
- WARNING**
Group [D07B 7/18](#) is impacted by reclassification into groups [D07B 7/182](#), [D07B 7/185](#), and [D07B 7/187](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N D07B 7/182
- {for spreading ropes or cables by hand-operated tools for splicing purposes, e.g. needles or spikes}
- WARNING**
Group [D07B 7/182](#) is incomplete pending reclassification of documents from groups [D07B 7/18](#). Groups [D07B 7/18](#) and [D07B 7/182](#) should be considered in order to perform a complete search.
- N D07B 7/185
- {for temporarily untwisting ropes or cables into constituent parts for applying a coating}
- WARNING**
Group [D07B 7/185](#) is incomplete pending reclassification of documents from group [D07B 7/18](#). Groups [D07B 7/18](#) and [D07B 7/185](#) should be considered in order to perform a complete search.
- N D07B 7/187
- {for forming bulbs in ropes or cables}
- WARNING**
Group [D07B 7/187](#) is incomplete pending reclassification of documents from group [D07B 7/18](#). Groups [D07B 7/18](#) and [D07B 7/187](#) should be considered in order to perform a complete search.
- U D07B 2201/00 Ropes or cables**
- U D07B 2201/10
- Rope or cable structures

- C D07B 2201/1012
- • characterised by their internal structure
- WARNING**
*Group [D07B 2201/1012](#) is impacted by reclassification into group [D07B 2201/1014](#).
 Groups [D07B 7/18](#) and [D07B 7/187](#) should be considered in order to perform a complete search.*
- N D07B 2201/1014
- • • characterised by being laid or braided from several sub-ropes or sub-cables, e.g. hawsers
- WARNING**
*Group [D07B 2201/1014](#) is incomplete pending reclassification of documents from group [D07B 2201/1012](#).
 Groups [D07B 2201/1012](#) and [D07B 2201/1014](#) should be considered in order to perform a complete search.*
- U D07B 2201/1028
- • characterised by the number of strands
- M D07B 2201/1032
- • • three to eight strands *respectively forming a single layer*
- M D07B 2201/1036
- • • nine ~~strands~~ or more *strands respectively forming multiple layers*
- U D07B 2201/20
- Rope or cable components
- U D07B 2201/2015
- • Strands
- U D07B 2201/2038
- • • characterised by the number of wires or filaments
- M D07B 2201/2039
- • • • three to eight wires or filaments *respectively forming a single layer*
- M D07B 2201/204
- • • • nine or more wires or filaments *respectively forming multiple layers*
- C D07B 2201/2083
- • Jackets or coverings
- WARNING**
*Group [D07B 2201/2083](#) is impacted by reclassification into groups [D07B 2201/20903](#) and [D07B 2201/20907](#).
 Groups [D07B 2201/2083](#), [D07B 2201/20903](#), and [D07B 2201/20907](#) should be considered in order to perform a complete search.*
- M D07B 2201/2088
- • • • having multiple layers
- U D07B 2201/209
- • • comprising braided structures
- N D07B 2201/20903
- • • comprising woven structures
- WARNING**
*Group [D07B 2201/20903](#) is incomplete pending reclassification of documents from group [D07B 2201/2083](#).
 Groups [D07B 2201/2083](#) and [D07B 2201/20903](#) should be considered in order to perform a complete search.*
- N D07B 2201/20907
- • • comprising knitted structures
- WARNING**
*Group [D07B 2201/20907](#) is incomplete pending reclassification of documents from group [D07B 2201/2083](#).
 Groups [D07B 2201/2083](#) and [D07B 2201/20907](#) should be considered in order to perform a complete search.*

Project: RP0101 (F02M)

- U F02M 35/00
- Combustion-air cleaners, air intakes, intake silencers, or induction systems specially adapted for, or arranged on, internal-combustion engines (air cleaners in general [B01D](#))**
- U F02M 35/02
- Air cleaners

- D F02M 2035/0211 · · {acting by electric discharge; Electrostatic precipitators therefor}
- U 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 [B01D](#); centrifuges [B04B](#))
- D F02M 2037/0005 · {with means for damping pressure pulsations}
- F02M 2700/00 Supplying, feeding or preparing air, fuel, fuel air mixtures or auxiliary fluids for a combustion engine; Use of exhaust gas; Compressors for piston engines
- WARNING**
Groups [F02M 2700/00](#) –[F02M 2700/4397](#) are no longer used for the classification of documents as of January 1, 1975.

Project: RP0102 (A47G)

- M A47G 29/00 Miscellaneous supports, holders, or containers for household use (for drying towels [A47K 10/04](#); stands, racks, or the like for airing beds, garments, or the like, clothes, drying devices [D06F 57/00](#))
- WARNING**
The following IPC group is not used in the CPC scheme. Subject matter covered by this group is classified in the following CPC group:
[A47G 29/02](#) covered by [A47B 97/001](#)
- D A47G 29/02 · {Wall-mounted}(shelves [A47B](#)); Supporting brackets or clamps therefor
- WARNING**
This group is no longer used for classification. Documents are in the process of being reorganised to groups [A47B 97/001](#) or [B43B1/04](#)

Project: RP0104 (H04J)

- U H04J 14/00 Optical multiplex systems (optical coupling, mixing or splitting, per se [G02B](#))
- U H04J 14/02 · Wavelength-division multiplex systems
- M H04J 14/0227 · · {Operation, administration, maintenance or provisioning [OAMP] of WDM ~~network networks~~, e.g. media access, routing or wavelength allocation (~~monitoring of optical transmission parameters in general H04B 10/07~~)}
- M H04J 14/0228 · · · {Wavelength allocation for communications one-to-all, e.g. broadcasting wavelengths}
- E H04J 14/023 · · · · {in WDM passive optical networks [WDM-PON]}
- D H04J 14/0231 · · · · ·
- M H04J 14/0232 · · · · · ▾ {for downstream transmission}
- M H04J 14/0234 · · · · · ▾ {using multiple wavelengths}
- M H04J 14/0235 · · · · · ▾ {for upstream transmission}
- M H04J 14/0236 · · · · · ▾ {using multiple wavelengths}

- M H04J 14/0238 . . . {Wavelength allocation for communications one-to-many, e.g. multicasting wavelengths}
- U H04J 14/0239 {in WDM-PON sharing multiple downstream wavelengths for groups of optical network units [ONU], e.g. multicasting wavelengths}
- M H04J 14/0241 . . . {Wavelength allocation for communications one-to-one, e.g. unicasting wavelengths}
- E H04J 14/0242 {in WDM-PON}
- D H04J 14/0243
- M H04J 14/0245 {for downstream transmission, e.g. optical line terminal [OLT] to ONU}
- M H04J 14/0246 {using one wavelength per ONU}
- M H04J 14/0247 {Sharing one wavelength for at least a group of **ONU's ONUs**}
- M H04J 14/0249 {for upstream transmission, e.g. ONU-to-OLT or ONU-to-ONU}
- M H04J 14/025 {using one wavelength per ONU, e.g. for transmissions from-ONU-to-OLT or from-ONU-to-ONU}
- M H04J 14/0252 {Sharing one wavelength for at least a group of **ONU's ONUs**, e.g. for transmissions from-ONU-to-OLT or from-ONU-to-ONU}
- M H04J 2014/0253 {Allocation of downstream wavelengths for upstream transmission (optical transmission using a single light source for multiple stations [H04B 10/2587](#))}
- U H04J 14/0254 . . . {Optical medium access}
- U H04J 14/0256 {at the optical channel layer}
- U H04J 14/0257 {Wavelength assignment algorithms}
- M H04J 14/0258 {Wavelength identification or **wavelength labeling/labelling**}
- U H04J 14/026 {using WDM channels of different transmission rates}
- U H04J 14/0261 {at the optical multiplex section layer}
- U H04J 14/0263 {Multiplex section layer wavelength assignment algorithms}
- U H04J 14/0264 {Multiplex identification or labelling}
- U H04J 14/0265 {Multiplex arrangements in bidirectional systems, e.g. interleaved allocation of wavelengths or allocation of wavelength groups}
- M H04J 14/0267 {Optical **signalling/signaling** or routing; (**routing in packet switched systems H04L 12/5689 routing or path finding of packets in data switching networks H04L 45/00**)}
- M H04J 14/0268 {Restoration of optical paths, e.g. p-cycles (route fault recovery **of packets in packet-switched systems data switching networks H04L 45/28**)}
- M H04J 14/0269 {using tables for routing (organization of routing tables **of packets in packet-switched systems data switching networks H04L 45/54**)}

Project: RP0106 (C12N)

- D C12N 5/0673 . . . {Cells from bone marrow stroma}
- D C12N 5/0675 {Mesenchymal stem cells}
- D C12N 2502/16 . fibroblasts

WARNING

This group is no longer used for the classification of new documents as from January 1, 2012. The backlog of this group is being continuously reclassified to subgroups of C12N 2502/13

- D C12N 2502/21
- bone marrow stromal cells
- WARNING
This group is no longer used for the classification of new documents as from January 1, 2012. The backlog of this group is being continuously reclassified to subgroups of C12N 2502/13
- D C12N 2506/21
- from bone marrow stromal cells; from mesenchymal stem cells
- WARNING
This group is no longer used for the classification of new documents as from January 1, 2012. The backlog of this group is being continuously reclassified to subgroups of C12N 2502/13

Project: RP0107 (B65D)

- M B65D 83/22
- • with means to disable actuation, ~~{e.g. with actuator locking means that can be manually put in place again after use to prevent, e.g. unintended, actuation until next use}~~ ([B65D 50/00](#) takes precedence; ~~{preventing delivery when the container is incorrectly oriented [B65D83/65](#)}~~)
- C B65D 83/56
- {with means for preventing delivery ~~when the container is incorrectly oriented, e.g.~~ shut-off when inverted ~~{(for disabling actuation [B65D 83/22](#) actuating means with means to disable actuation [B65D 83/22](#))}~~}
- WARNING
Group [B65D 83/56](#) is impacted by reclassification into group [B65D 83/565](#). Groups [B65D 83/56](#) and [B65D 83/565](#) should be considered in order to perform a complete search.
- N B65D 83/565
- • {the delivery-preventing means being responsive to the orientation of the container}
- WARNING
Group [B65D 83/565](#) is incomplete pending reclassification of documents from group [B65D 83/56](#). Groups [B65D 83/56](#) and [B65D 83/565](#) should be considered in order to perform a complete search.

Project: N/A (A01B)

- U A01B 3/00** **Ploughs with fixed plough-shares**
- U A01B 3/04
- Animal-drawn ploughs
- A01B 3/06
- • without alternating possibility, i.e. incapable of making an adjacent furrow on return journey, ~~{i.e. conventional ploughing}~~
- U A01B 3/50
- Self-propelled ploughs
- U A01B 3/52
- • with three or more wheels, or endless tracks
- U A01B 3/56
- • • Alternating ploughs; {Balance ploughs}
- U A01B 3/64
- Cable ploughs; Indicating or signalling devices for cable plough systems ~~{(vehicles towed by cable [B60D](#))}~~
- U A01B 3/68
- • Cable systems with one or two engines; {e.g. electrically-driven or with diesel generating set}
- U A01B 5/00** **Ploughs with rolling non-driven tools, e.g. discs (with rotary driven tools [A01B 9/00](#))**
- U A01B 5/04
- drawn by tractors

- A01B 5/06
- without alternating possibility, {e.g. with rotary counters provided with scrapers}
- U A01B 13/00** **Ploughs or like machines for special purposes (for drainage [E02B 11/02](#)); {Ditch diggers, trench ploughs, forestry ploughs, ploughs for land or marsh reclamation (machines for aerating meadows [A01B 45/02](#) ; making furrows [A01C 5/00](#) ; dredging machines in general [E02F](#))}**
- A01B 13/02
- for making or working ridges, e.g. with symmetrically arranged mouldboards, {e.g. ridging plough}
- U A01B 13/04**
- for working in vineyards, orchards, or the like
- A01B 13/06
- Arrangements for preventing damage to the vines, or the like, {e.g. hydraulic (machines specially adapted for working in vineyards [A01B 39/16](#))}
- U A01B 17/00** **Ploughs with special additional arrangements, e.g. means for putting manure under the soil, clod-crushers ([A01B 49/00](#) takes precedence); {Means for breaking the subsoil}**
- U A01B 23/00** **Elements, tools, or details of harrows**
- U A01B 23/06**
- Discs ([A01B 15/16](#) takes precedence; bearings therefor [A01B 71/04](#)); Scrapers for cleaning discs; Sharpening attachments; {Lubrication of bearings} (sharpening in general [B24](#))
- A01B 33/00** **Tilling implements with rotary driven tools, {e.g. in combination with fertiliser distributors or seeders, with grubbing chains, with sloping axles, with driven discs}**
- U A01B 33/08**
- Tools; Details, e.g. adaptations of transmissions or gears
- U A01B 33/10**
- Structural or functional features of the tools; {Theoretical aspects of the cutting action}
- U A01B 35/00** **Other machines for working soil {not specially adapted for working soil on which crops are growing}([A01B 37/00](#) , [A01B 39/00](#) , [A01B 77/00](#) take precedence; { hand tools [A01B 1/00](#))}**
- U A01B 35/20**
- Tools; Details
- U A01B 35/22**
- non-rotating tools; {Resilient or flexible mounting of rigid tools}
- U A01B 39/00** **Other machines specially adapted for working soil on which crops are growing**
- A01B 39/12
- for special purposes, {e.g. for special culture}
- A01B 39/14
- for working ridges, {e.g. for rows of plants and/or furrows}
- U A01B 39/16**
- for working in vineyards, orchards, or the like; {Arrangements for preventing damage to vines (ploughs adapted for working in vineyards [A01B 13/06](#))}
- U A01B 39/20**
- Tools; Details
- A01B 39/26
- Arrangements for protecting plants, {e.g. fenders}
- A01B 45/00** **Machines for treating meadows or lawns, {e.g. for sports grounds}**
- U A01B 73/00** **Means or arrangements to facilitate transportation of agricultural machines or implements, e.g. folding frames to reduce overall width (arrangements of lifting devices for soil working implements [A01B 63/00](#) ; { carriers for harvesters or mowers [A01D 75/002](#) ; arrangements or carriers for haymakers [A01D 78/1007](#) , [A01D 80/005](#) ; } vehicles adapted for load transportation or to transport, to carry or to comprise special loads or objects [B60P](#) ; motor vehicles, trailers [B62D](#))}**
- U A01B 73/02**
- Folding frames
- U A01B 73/04**
- foldable about a horizontal axis

- A01B 73/044 · · · {the axis being oriented in a longitudinal direction [A01B-73/042 takes precedence](#)}{[A01B 73/042 takes precedence](#)}}
- A01B 73/048 · · · {the axis being oriented in transverse direction [A01B-73/042 takes precedence](#)}{[A01B 73/042 takes precedence](#)}}

Project: N/A (A01D)

- 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 43/08 · with means for cutting up the mown crop, {e.g. forage harvesters (threshing machines having chaff-cutters [A01F 12/40](#) ; cutting apparatus of chaff-cutters or of apparatus for cutting up mown crop [A01F 29/00](#))}
- U A01D 45/00** **Harvesting of standing crops ([A01D 44/00](#) takes precedence; threshing machines adapted for special crops, threshing devices for combines adapted for special crops [A01F 11/00](#))**
- A01D 45/02 · of maize {, i.e. kernel harvesting (for ensilage maize [A01D 43/081](#))}
- U A01D 46/00** **Picking of fruits, vegetables, hops, or the like; Devices for shaking trees or shrubs**
- NOTE
In this group, group [A01D 46/30](#) takes precedence over groups [A01D 46/02](#) to [A01D 46/28](#)
- A01D 46/24 · Devices for picking apples or like fruit ([A01D 46/28](#){ and [A01D 46/005](#)} takes precedence)
- A01D 51/00** **Apparatus for gathering together crops spread on the soil, e.g. apples, beets, nuts, potatoes, {cotton, cane sugar}**
- A01D 80/00** **Parts or details of {, or accessories for,} haymakers (parts or details specific for one type of machine, see the relevant groups for these machines)**
- U A01D 87/00** **Loaders for hay or like field crops (combined with mowers [A01D 43/06](#) ; { loading in forage silos [A01F 25/18](#) ; } ; loading in general [B65G](#) , [B66](#))**
- A01D 87/08 · with sweep rakes, {i.e. buck-rakes, e.g. transporting rakes (gripping or clamping devices [A01D 87/003](#) ; fork loaders [A01D 87/0053](#))}
- U A01D 90/00** **Vehicles for carrying harvested crops with means for self-loading or unloading (combined with mowers [A01D 43/06](#) ; load transporting vehicles modified to facilitate loading in general [B60P](#) ; bucket cars, i.e. having scraper bowls [E02F 3/64](#))**
- U A01D 90/02 · Loading means {(loaders [A01D 87/00](#) ; pick-ups [A01D 89/00](#))}
- U A01D 90/04 · · with additional cutting means
- A01D 90/06 · · · with chaff cutters, {i.e. choppers} used as loading and cutting means ([A01D 43/08](#) takes precedence)

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](#))**
- A01G 13/10 · Devices for affording protection against animals, birds, or other pests ~~{(protective shelters for young plants [A01G-13/0243](#))}~~ ~~{(protective shelters for young plants [A01G 13/0243](#);~~ traps [A01M 23/00](#)~~{scaring or repelling devices [A01M-29/00](#) }~~ ; ~~scaring or repelling devices [A01M 29/00](#);~~ pesticides [A01N](#))

Project: N/A (A01K)

A01K 79/00

Methods or means of catching fish in bulk not provided for in groups [A01K 69/00](#) to [A01K 77/00](#), {e.g. fish pumps; Detection of fish; Whale fishery}

Project: N/A (A01M)

U A01M 1/00
A01M 1/02

Stationary means for catching or killing insects {(for repelling [A01M 29/00](#))}

- with devices {or substances, e.g. food, pheromones} attracting the insects

Project: N/A (A01N)

U A01N 1/00

Preservation of bodies of humans or animals, or parts thereof (preservation of foodstuffs [A23](#); medicinal preparations containing materials from mammals or birds, e.g. blood, sperm, [A61K 35/12](#); cell or tissue culture [C12N 5/00](#))

U A01N 1/02

- Preservation of living parts

WARNING

Subgroups [A01N 1/0205](#)-[A01N 1/0294](#) are not complete, due to a reorganisation in progress

A01N 1/0205

- • {Chemical aspects}

WARNING

This group contains documents to be reclassified into subgroups [A01N 1/021](#)-[A01N/02P6](#)[A01N 1/0294](#)

Project: N/A (A22C)

U A22C 29/00

Processing shellfish {or bivalves}, e.g. oysters, lobsters; {Devices therefor, e.g. claw locks, claw crushers, grading devices; Processing lines}

Project: N/A (A23B)

U A23B 4/00

General methods for preserving meat, sausages, fish or fish products

U A23B 4/06

- Freezing; Subsequent thawing; Cooling

A23B 4/08

- • with addition of chemicals {or treatment with chemicals} before or during cooling, {e.g. in the form of an ice coating or frozen block}

U A23B 7/00

Preservation or chemical ripening of fruit or vegetables

U A23B 7/14

- Preserving or ripening with chemicals not covered by groups [A23B 7/08](#) or [A23B 7/10](#)

U A23B 7/144

- • in the form of gases, e.g. fumigation; Compositions or apparatus therefor {(cooling without control of atmosphere composition [A23B 7/04](#))}

U A23B 7/152

- • • in a controlled atmosphere comprising other gases in addition to CO₂, N₂, O₂ or H₂O; {Elimination of such other gases}

Project: N/A (A23C)

A23C

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

NOTE

This subclass covers:

- the chemical aspects of making dairy products

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

- U A23C 3/00** **Preservation of milk or milk preparations (of cream [A23C 13/08](#) ; of butter [A23C 15/18](#) ; of cheese [A23C 19/097](#))**
- U A23C 3/07 • by irradiation, e.g. by microwaves; {by sonic or ultrasonic waves}
- U A23C 7/00** **Other dairy technology**
- A23C 7/04 • Removing unwanted substances {other than lactose or milk proteins} from milk (by filtering [A01J 9/02](#) , [A01J 11/06](#))
- U A23C 9/00** **Milk preparations; Milk powder or milk powder preparations ([A23C 21/06](#) takes precedence; preservation [A23C 3/00](#) ; chocolate milk [A23G 1/00](#) ; ice-cream, mixtures for preparation of ice-cream [A23G 9/00](#) ; puddings, dry powder puddings [A23L 1/187](#))**
- U A23C 9/152 • containing additives (fermented milk preparations containing additives [A23C 9/13](#))
- U A23C 9/156 • • Flavoured milk preparations; {Addition of fruits, vegetables, sugars, sugar alcohols, sweeteners} ([A23C 9/154](#) takes precedence)
- U A23C 13/00** **Cream; Cream preparations; Making thereof (coffee whitener compositions [A23C 11/00](#) ; cream substitutes [A23L 1/19](#))**
- U A23C 13/12 • Cream preparations (ice-cream [A23G 9/00](#))
- A23C 13/14 • • containing milk products or {non-fat} milk components
- U A23C 15/00** **Butter; Butter preparations; Making thereof (butter substitutes [A23D](#))**
- U A23C 15/02 • Making thereof
- A23C 15/06 • • Treating cream {or milk} prior to phase inversion
- U A23C 15/12 • Butter preparations
- U A23C 15/14 • • Butter powder; Butter oil, i.e. melted butter, e.g. ghee; {Anhydrous butter}
- 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
- A23C 19/05 • • Treating milk before coagulation; Separating whey from curd ([A23C 19/097](#), {[A23C 19/045](#)} take precedence)
- A23C 19/055 • • Addition of non-milk fats or non-milk proteins, {polyol fatty acid polyesters or mineral oils}
- U A23C 19/06 • Treating cheese curd after whey separation; Products obtained thereby ([A23C 19/097](#) takes precedence)
- U A23C 19/09 • • Other cheese preparations; Mixtures of cheese with other foodstuffs (preservation [A23C 19/097](#))
- A23C 19/093 • • • Addition of non-milk fats or non-milk proteins, {polyol fatty acid polyesters or mineral oils}

Project: N/A (A23G)

- U A23G 1/00** **Cocoa; Cocoa products, e.g. chocolate; Substitutes therefor (kitchen equipment for cocoa preparation [A47J](#) , e.g. apparatus for making beverages [A47J 31/00](#))**

NOTE

Attention is drawn to the internal note after the subclass title

- U A23G 1/04
- Apparatus specially adapted for manufacture or treatment of cocoa or cocoa products (machines for roasting cocoa [A23N 12/00](#) ; crushing or grinding apparatus in general [B02C](#))
- A23G 1/14
- • Longitudinal conches, {i.e. rollers being in a backward and forward motion}
- A23G 1/16
- • Circular conches, {i.e. rollers being displaced on a closed or circular rolling circuit}
- U A23G 1/30
- Cocoa products, e.g. chocolate; Substitutes therefor
- U A23G 1/50
- • characterised by shape, structure or physical form, e.g. products with an inedible support (liquid products, solid products in the form of powders, flakes or granules for making liquid products [A23G 1/56](#))
- A23G 1/52
- • • Aerated, foamed, cellular or porous products, {e.g. gas expanded}
- U A23G 3/00**
- Sweetmeats; Confectionery; Marzipan; Coated or filled products (chewing gum [A23G 4/00](#))**
- NOTE
- Attention is drawn to the internal note after the subclass title
- U A23G 3/02
- Apparatus specially adapted for manufacture or treatment of sweetmeats or confectionery; Accessories therefor
- U A23G 3/10
- • Candy-pulling machines; {Processes or apparatus for making cotton candy or candy floss}
- A23G 4/00**
- Chewing gum (medicinal preparations characterised by chewing gum form {[A61K 9/0058](#)})**
- U A23G 4/18
- characterised by shape, structure or physical form, e.g. aerated products
- A23G 4/20
- • Composite products, e.g. centre-filled, {multi-layer, laminated}
- A23G 7/00**
- Other apparatus {or process} specially adapted for the chocolate or confectionery industry**
- U A23G 9/00**
- Frozen sweets, e.g. ice confectionery, ice-cream; Mixtures therefor**
- U A23G 9/04
- Production of frozen sweets, e.g. ice-cream (packages [B65D 85/78](#))
- A23G 9/06
- • characterised by using carbon dioxide or carbon dioxide snow {or other cryogenic agents} as cooling medium
- U A23G 9/44
- characterised by shape, structure or physical form (liquid products, solid products in the form of powders, flakes or granules for making liquid products [A23G 9/52](#))
- A23G 9/48
- • Composite products, e.g. layered, {laminated}, coated, filled
- U A23G 9/52
- Liquid products; Solid products in the form of powders, flakes or granules for making liquid products; {Finished or semi-finished solid products, frozen granules}
- NOTE
- Attention is drawn to the internal note after the subclass title

Project: N/A (A23L)

- U A23L 1/00**
- Foods or foodstuffs; Their preparation or treatment (preservation thereof in general [A23L 3/00](#); {mechanical aspects [A23P](#)})**
- WARNING
- Groups [A23L 1/0002](#) to [A23L 1/0097](#) might be incomplete as a number of documents presently classified in groups [A23P 1/00](#) to [A23P 1/16](#), still needs reclassification to groups [A23L 1/0002](#) to [A23L 1/0097](#)

- U A23L 1/06 · Marmalades; Jams; Jellies; Other similar fruit or vegetable compositions; Simulated fruit products
- A23L 1/064 · · derived from fruit or vegetable solids {(A23L 1/062 and A231/24B A23L 1/243 take precedence)}

Project: N/A (A23N)

A23N 1/00 **Machines or apparatus for extracting juice (preparation of non-alcoholic beverages, e.g. by adding ingredients to fruit or vegetable juices, A23L 2/00; apparatus for making beverages A47J 31/00 {centrifuges B04B}; extracting presses B30B)**

- U A23N 7/00 **Peeling vegetables or fruit (devices for skinning onions A23N 15/08; {peeling by non-mechanical means A23P}; peeling machines of the household type A47J 17/00)**

A23N 7/02 · Peeling potatoes, apples or similarly shaped vegetables or fruit ({A23N 7/005 and} A23N 7/01 take precedence)

A23N 7/04 · Peeling asparagus ({A23N 7/005 and} A23N 7/01 take precedence)

Project: N/A (A23Y)

A23Y **INDEXING SCHEME RELATING TO LACTIC OR PROPIONIC ACID BACTERIA USED IN FOODSTUFFS OR FOOD PREPARATION**

NOTE

This subclass constitutes an internal scheme for indexing only. The indexing codes of K23Y A23Y are used when classifying technical subjects in the food-related subclasses A23B-A23L.

Project: N/A (A41D)

- U A41D 13/00 **Professional, industrial, or sporting protective garments, e.g. garments affording protection against blows or punches, surgeon's gowns (helmets A42B 3/00; clothing affording protection against {heat or harmful} chemical agents or for use at high altitudes A62B 17/00; life-saving garments for use at sea, diving-bell suits B63C; bulletproof or armoured clothing F41H; clothing affording protection against radiation G21F 3/02; electric heating elements H05B)**

A41D 13/05 · protecting only a particular body part (sports brassières A41C 3/00 {crotch reinforcement for sports trousers A41D 1/088})

Project: N/A (A43B)

A43B 13/00 **Soles ({Skating boots characterised by the sole A43B 5/1641,} socks A43B 17/00); Sole and heel units**

Project: N/A (A43D)

- U A43D 25/00 **Devices for gluing shoe parts**

A43D 25/18 · Devices for applying adhesives to shoe parts (A43DF25/20 A43D 25/20 takes precedence; applying liquids or other fluent materials to surfaces in general B05)

Project: N/A (A44B)

- U A44B 1/00 **Buttons (setting on garments A41H 37/10 ; setting on footwear A43D 100/08 ; making buttons: see the relevant groups in the classes for making articles from particular materials)**

- U A44B 1/08 · Constructional characteristics
- A44B 1/14 · · with replaceable {or protective} coverings {(removable fabric coverings [A44B 1/123](#) ; sleeve-links concealing a sewed-on button [A44B 5/007](#))}
- U A44B 19/00 Slide fasteners**
- U A44B 19/24 · Details
- U A44B 19/26 · · Sliders
- U A44B 19/28 · · · constructed to be removable from at least one stringer; {Sliders with movable parts to permit releasing of the slider in the event of jamming or obstruction}
- A44B 19/42 · Making by processes not fully provided for in one other class, e.g. [B21D 53/50](#) , [B21F 45/18](#) , [B22D 17/16](#) , [B29D 5/00](#) {(attaching closure devices, e.g. slide fasteners, to bags [B31B 19/00](#) ; making package opening by applying or incorporating profile strips, e.g. for reclosable bags [B65B 61/188](#))}

Project: N/A (A45B)

A45B 2200/00 Details not otherwise provided for in [K45B A45B](#)

Project: N/A (A45C)

A45C 2200/00 Details not otherwise provided for in [K45C A45C](#)

Project: N/A (A45D)

A45D 2200/00 Details not otherwise provided for in [K45D A45D](#)

Project: N/A (A45F)

A45F 2200/00 Details not otherwise provided for in [K45F A45F](#)

Project: N/A (A47C)

A47C CHAIRS (seats specially adapted for vehicles [B60N 2/00](#); { hunting stands, e.g. hunting seats [A01M 31/02](#); seats adapted for angling, e.g. fisherman's seats [A01K 97/22](#); bath seats [A47K 3/12](#); shower seats [A47K 3/282](#); chairs with toilet means [A47K 11/04](#); seats for surgeons, dentists [A61B 19/28](#); chairs for disabled persons [A61G 5/00](#); operating chairs, dental chairs, physiotherapeutic chairs, gynaecological chairs [A61G 15/00](#); chairs with massage means [A61H 2201/0149](#); ski-lift seats [B61B 12/002](#); rail vehicles seats [B61D 33/00](#); vessel furniture, e.g. boat seats [B63B 29/04](#); aircraft seats [B64D 11/06](#)); SOFAS; BEDS (upholstery in general [B68G](#); { beds specially adapted for nursing [A61G 7/00](#); sleeping accommodation for caravans [B60P 3/38](#), sleeping accommodation for rail vehicles [B61D 31/00](#); sleeping accommodation for load-carrying vehicles [B62D 33/0612](#); berths for vessels [B63B 29/10](#))}

WARNING

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

[A47C 1/038](#) covered by [A47C 1/0355](#)
[A47C 23/053](#) covered by [A47C 23/05](#), [A47C23/05B2](#)[A47C 23/0507](#),
[A47C23/05B3](#)[A47C 23/0515](#)

- U A47C 7/00 Parts, details, or accessories of chairs or stools (attaching to floor [A47B 91/08](#))

- A47C 7/50
- Supports for the feet or the legs { coupled to fixed parts of the chair} (coupled to other adjustable parts { of the chair} [A47C 1/034](#), [A47C 1/037](#); { stand-alone rests or supports for the feet or the legs, e.g.} [footstools A47C 16/02](#))
- A47C 9/00**
- Stools for specified purposes (with rotatable seats [A47C 3/18](#); with vertically adjustable seats [A47C 3/20](#); [footstools A47C 16/02](#); [prayer stools A47C 16/04](#); [platforms or seat-boxes specially adapted for angling A01K 97/22](#) {other seating furniture for specified purposes [A47C 15/004](#)})**
- U A47C 17/00
- Sofas; Couches; Beds (bedsteads [A47C 19/00](#); [spring mattresses A47C 23/00](#); [divan bases A47C 23/00](#); [stuffed mattresses A47C 27/00](#); [beds with special provisions for nursing A61G 7/00](#))**
- U A47C 17/86
- Parts or details for beds, sofas or couches only not fully covered in a single one of the sub-groups [A47C 17/02](#), [A47C 17/04](#), [A47C 17/38](#), [A47C 17/52](#), [A47C 17/64](#), or [A47C 17/84](#); {Drawers in or under beds}

Project: N/A (A47F)

- U A47F 7/00
- Show stands, hangers, or shelves, adapted for particular articles or materials {(A47F 5/0006 takes precedence)}**
- A47F 7/19
- for garments (for hosiery [A47F 7/10](#); for ties or collars [A47F 7/12](#); dummies, busts or the like [A47F 8/00](#); wardrobes with garment-holders [A47B 61/00](#); household implements used in connection with wearing apparel or dress holders, {e.g. garment supporting racks} [A47G 25/00](#))

Project: N/A (A47G)

- U A47G 27/00
- Floor fabrics; Fastenings therefor (woven fabrics [D03D](#); non-woven fabrics [D04H](#); {floor covering on a textile basis [D06N 7/0005](#)})**
- U A47G 27/04
- Carpet fasteners; Carpet-expanding devices; {Laying carpeting; Tools therefor (laying carpeting on stairs [A47G 27/06](#); floor mats for vehicles [B60N 3/04](#); flooring laid as flexible webs [E04F 15/16](#); installation of cables under carpets [H02G 3/00](#))}
- A47G 29/14
- Deposit receptacles for food, e.g. breakfast, milk, { or large parcels}; Similar receptacles for { food or } large parcels with appliances for preventing unauthorised removal of the deposited articles,{ i.e. food or large parcels}
- U A47G 33/00
- Religious or ritual equipment in dwelling or for general use**
- A47G 33/04
- Christmas trees (lighting devices therefor [F21S](#) {electric candles [F21S 10/04](#), string lighting systems [F21S 4/00](#)}, candle holders [F21V 35/00](#), {light guides for lighting systems [G02B 6/00](#)})

Project: N/A (A47J)

- U A47J 27/00
- Cooking-vessels ([A47J 29/00](#) to [A47J 33/00](#) takes precedence)**
- U A47J 27/21
- Water-boiling vessels, e.g. kettles {(for coffee-making machines [A47J 31/54](#))}
- U A47J 27/21008
- • {electrically heated}
- U A47J 27/21058
- • • {Control devices to avoid overheating, i.e. "dry" boiling, or to detect boiling of the water ([A47J 27/21158](#) takes precedence)}
- A47J 27/21133
- • • {using a fusible material or a shape memory effect ([SME](#)) material}
- 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](#))**

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](#))

- U A61B 1/005
 - Flexible endoscopes
- A61B 1/0051
 - • {with controlled bending of insertion part ~~{M1110}~~}
- U A61B 1/06
 - with illuminating arrangements
- U A61B 1/0661
 - • {Endoscope light sources}
- A61B 1/0684
 - • • {using light emitting diodes ~~{LED}~~}
- A61B 1/233
 - for the nose, i.e. nasoscopes, {e.g. testing of patency of Eustachian tubes}
- A61B 1/31
 - for the rectum, e.g. proctoscopes, sigmoidoscopes, {colonoscopes}

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 3/10
 - Objective types, i.e. instruments for examining the eyes independent of the patients` perceptions or reactions
- A61B 3/102
 - • {for optical coherence tomography ~~{OCT}~~}
- U A61B 3/14
 - • Arrangements specially adapted for eye photography {(apparatus or arrangements for taking photographs per se [G03B](#))}
- U A61B 3/15
 - • • with means for aligning, spacing or blocking spurious reflection; {with means for relaxing}
- U A61B 5/01
 - Measuring temperature of body parts; {Diagnostic temperature sensing, e.g. for malignant or inflamed tissue} (clinical thermometers [G01K 5/22](#) ; thermometers for special purposes [G01K 13/00](#))
- U A61B 5/024
 - • Detecting, measuring or recording pulse rate or heart rate ([A61B 5/0205](#) , [A61B 5/021](#) take precedence)
- A61B 5/0245
 - • • by using sensing means generating electric signals, {i.e. ECG signals}
- U A61B 5/03
 - Detecting, measuring or recording fluid pressure within the body other than blood pressure, e.g. cerebral pressure; {Measuring pressure in body tissues or organs ([A61B 5/205](#) takes precedence)}
- U A61B 5/04
 - Detecting, measuring or recording bioelectric signals of the body of parts thereof
- U A61B 5/0402
 - • Electrocardiography, i.e. ECG
- U A61B 5/0452
 - • • Detecting specific parameters of the electrocardiograph cycle
- A61B 5/0468
 - • • • Detecting abnormal ECG interval, {e.g. extrasystoles, ectopic heartbeats}
- A61B 5/0472
 - • • • Detecting abnormal QRS complex, {e.g. widening}

- U A61B 5/05
 - Detecting, measuring or recording for diagnosis by means of electric currents or magnetic fields; {Measuring using microwaves or radiowaves} ([A61B 5/02](#) , [A61B 5/04](#) , [A61B 5/11](#) take precedence)
- U A61B 5/06
 - 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}
- U A61B 5/083
 - • Measuring rate of metabolism by using breath test, e.g. measuring rate of oxygen consumption
- A61B 5/0836
 - • • {Measuring rate of $C02CO_2$ production}
- A61B 5/103
 - Detecting, measuring or recording devices for testing the shape, pattern, {colour,} size or movement of the body or parts thereof, for diagnostic purposes ([A61B 5/08](#) takes precedence; measuring aids for tailors [A41H 1/00](#) ; measuring instruments specially adapted for dentistry [A61C 19/04](#))
- A61B 5/11
 - • Measuring movement of the entire body or parts thereof, e.g. head or hand tremor, mobility of a limb (~~for measuring pulse A61B 5/02~~){(~~for measuring pulse A61B 5/02~~ {;A61B 5/1038 takes precedence; motion detection to correct for motion artifacts in physiological signals [A61B 5/721](#)}})
- A61B 5/15
 - 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~~

- "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}
- A61B 5/150366
 - • • {Blood collection bags, e.g. connected to the patient by a catheter comprising means for removing a small sample of collected blood from the bag (collection bags as such ~~A61J1/00T~~[A61J 1/05](#) , [A61M 1/0209](#))}
- A61B 5/151
 - • {Devices} specially adapted for taking samples of capillary blood, e.g. by lancets {, needles or blades}
- A61B 5/153
 - • {Devices} specially adapted for taking samples of venous or arterial blood, e.g. with syringes
- A61B 5/154
 - • • {Devices} using pre-evacuated means
- A61B 5/155
 - • {Devices} specially adapted for continuous or multiple sampling, e.g. at predetermined intervals {(devices loaded with multiple lancets simultaneously [A61B 5/15146](#))}
- A61B 5/157
 - • {Devices} characterised by integrated means for measuring characteristics of blood

- U A61B 6/00** Apparatus for radiation diagnosis, e.g. combined with radiation therapy equipment (analysis of materials using radiation [G01N 23/00](#) , detecting hidden objects by radiation [G01V 5/0008](#) , radiodiagnostic or X-ray contrast preparations [A61K 49/00](#) ; radiation therapy per se [A61N 5/00](#) ; instruments measuring radiation intensity for application in the field of nuclear medicine, e.g. in vivo counting [G01T 1/161](#) ; apparatus for taking X-ray photographs [G03B 42/02](#) ; X-ray photographic processes [G03C 5/16](#) ; irradiation devices [G21K](#); X-ray apparatus or circuits therefor [H05G 1/00](#))
WARNING
Groups [A61B 6/40](#) to [A61B 6/58](#) do not correspond to former or current IPC groups. Concordance CPC - IPC for these groups is as follows: - [A61B 6/40](#) : [A61B 6/00](#) - [A61B 6/42](#) : [A61B 6/00](#) - [A61B 6/44](#) : [A61B 6/00](#) - [A61B 6/46](#) : [A61B 6/00](#) - [A61B 6/48](#) : [A61B 6/00](#) - [A61B 6/50](#) : [A61B 6/00](#) - [A61B 6/52](#) : [A61B 6/00](#) - [A61B 6/54](#) : [A61B 6/00](#) - [A61B 6/56](#) : [A61B 6/00](#) - [A61B 6/58](#) : [A61B 6/00](#)
- U A61B 6/02** • Devices for diagnosis sequentially in different planes; Stereoscopic radiation diagnosis
- U A61B 6/03** • • Computerised tomographs ({diagnosis by magnetic resonance imaging [A61B 5/055](#) ;} echo-tomography [A61B 8/14](#) ; { medical informatics [G06F 19/30](#)})
- A61B 6/032** • • • {Transmission computed tomography ([CT](#))}
- U A61B 6/46** • {with special arrangements for interfacing with the operator or the patient}
- U A61B 6/467** • • {characterised by special input means}
- A61B 6/469** • • • {for selecting a region of interest ([ROI](#))}
- 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 2017/00017** • {Electrical control of surgical instruments}
- A61B 2017/00115** • • {with audible or visual output (with imaging means [A61B2019/5225](#) [A61B 19/5225](#))}
- U A61B 17/04** • for suturing wounds; Holders or packages for needles or suture materials (suture materials [A61L 17/00](#))
- U A61B 17/0401** • • {Suture anchors, buttons or pledgets, i.e. means for attaching sutures to bone, cartilage or soft tissue; Instruments for applying or removing suture anchors ([A61B 17/0642](#) takes precedence; fixation devices for tendons or ligaments [A61F 2/0811](#))}
- A61B 2017/0408** • • • {Rivets (other bone rivets **17:68**; rivets for connecting prosthetic parts [A61F2002/3044](#)[A61F 2002/30441](#) , [A61F2220/041](#)[A61F 2220/0041](#))}
- U A61B 17/06** • • Needles; {Sutures; Needle-suture combinations}; Holders or packages for needles or suture materials (puncturing needles [A61B 17/34](#) ; nerve needles [A61C 5/02](#) ; hypodermic needles [A61M 5/32](#) ; { sewing needles [D05B 85/00](#)})
- U A61B 17/06166** • • • {Sutures (suture materials [A61L 17/00](#) ; manufacture of artificial threads [D01D](#) ; treatment of threads [D06M](#))}
- A61B 2017/0619** • • • • {thermoplastic, e.g. for bonding, welding, fusing or cutting the suture by melting it (suture cutters [A61B 17/0467](#) ; ultrasonic cutters [A61B 17/320068](#) ; electrically heated instruments [A61B2018/08](#) [A61B 18/08](#))}
- A61B 17/064** • Surgical staples, {i.e. penetrating the tissue}

- A61B 17/10
- for applying or removing wound clamps, {e.g. containing only one clamp or staple ([A61B 17/076](#) takes precedence; containing multiple wound clamps [A61B 17/068](#))}; Wound clamp magazines (containers, packaging elements or packages specially adapted for particular articles or with special means for dispensing contents [B65D 83/00](#) , [B65D 85/00](#))
- U A61B 17/12
- for ligaturing or otherwise compressing tubular parts of the body, e.g. blood vessels, umbilical cord (specially adapted for vas deferens or fallopian tubes [A61F 6/20](#) ; materials for ligaturing blood vessels [A61L 17/00](#))
- A61B 17/122
- • Clamps or clips, {e.g. for the umbilical cord (for the vas deferens [A61F 6/206](#))}
- U A61B 17/14
- Surgical saws ({[A61B 17/1637](#) takes precedence } ; tooth saws [A61C 3/12](#) ; { saws for jaw bone [A61C 8/0089](#) } ; cast-cutting saws [A61F 15/02](#)); {Accessories therefor}
- WARNING
New subgroups of [A61B 17/14](#) are not complete, pending a reorganisation. See provisionally also group [A61B 17/14](#)
- A61B 17/16
- {Bone cutting, breaking or removal means other than saws, e.g.} Osteoclasts; Drills or chisels for bones; Trepanns {(arthroscopic bone cutters [A61B 17/320016](#) ; dental implant drills potentially for other surgical use [A61C 8/0089](#) ; bone grinders [A61F 2/4644](#) , [A22C 17/06](#) ; [A61B 17/1662](#) takes precedence over all other subgroups except [A61B 17/17](#))}
- WARNING
New groups [A61B 17/1679](#) , [A61B 17/1682](#) , [A61B 17/1684](#) , [A61B 17/1686](#) , [A61B 17/1688](#) , [A61B 17/1691](#) and [A61B 17/1693](#) are not complete, pending a reorganisation. See provisionally also group [A61B 17/16](#) and subgroups
- A61B 17/17
- • Guides {or aligning means} for drills, {mills, pins or wires}
- A61B 17/22
- Implements for squeezing-off ulcers or the like on {the inside of} inner organs of the body; Implements for scraping-out cavities of body organs, e.g. bones; Calculus removers; Calculus smashing apparatus; {Apparatus for removing obstructions in blood vessels, not otherwise provided for (dilators [A61M 29/00](#))}
- A61B 17/225
- • for extracorporeal shock wave lithotripsy (~~ESWL~~), e.g. by using ultrasonic waves
- 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 17/3423
- • • • {Access ports, e.g. toroid shape introducers for instruments or hands (access sites for liquids ~~A61M1/00S~~[A61M 39/0247](#))}
- U A61B 17/42
- Gynaecological or obstetrical instruments or methods ({ligaturing clamps or clips for the umbilical cord [A61B 17/122](#) ; curettage [A61B 17/3207](#) ; dilators [A61M 29/00](#))}
- U A61B 17/425
- • for reproduction or fertilisation (specially adapted for use with animals [A61D 19/00](#)){(not used, see subgroups)}
- A61B 17/435
- • • for embryo {or ova} transplantation
- A61B 17/54
- Chiropodists` instruments, {e.g. pedicure (chiropractic devices [A61H 1/008](#))}

- U A61B 17/56
- Surgical instruments or methods for treatment of bones or joints; Devices specially adapted therefor {{(orthopaedic methods or devices for non-surgical treatment of bones or joints [A61F 5/00](#))}}
- NOTES
1. Documents concerning exclusively surgical methods are classified only in this group.
 2. Surgical instruments or devices are classified only in the relevant subgroups
- A61B 17/58
- • for osteosynthesis, e.g. bone plates, screws, {setting implements} or the like ([A61B 17/14](#) , [A61B 17/16](#) take precedence; { splints [A61B 5/01](#) ; traction bandages [A61F 13/10](#))}
- 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}
- A61B 17/72
- • • Intramedullary {pins, nails or other} devices {{([A61B 17/744](#) takes precedence)}
- A61B 17/74
- • • Devices for the head {or neck or trochanter} of the femur {{(trochanteric devices connected to the proximal part of an endoprosthetic femoral shaft [A61F 2/30739](#) ; endoprosthetic internal fixation devices for the head or neck of the femur [A61F 2/3601](#))}}
- U A61B 17/84
- • • Fasteners therefor {or fasteners being internal fixation devices}
- U A61B 17/86
- • • • {Threaded wires}, pins or screws; {Nuts therefor ([A61B 17/72](#) , [A61B 17/74](#) , [A61F 2/4455](#) take precedence)}
- WARNING
- Subgroups [A61B 17/861](#) , [A61B 17/865](#), [A61B 17/8665](#), [A61B 17/869](#) and [A61B 17/8695](#) are not complete pending a reorganisation. See also [A61B 17/68](#) , [A61B 17/86](#) , [A61B 17/8605](#) and [A61B 19/026](#)
- A61B 17/88
- • • {Osteosynthesis instruments;} Methods or means for implanting or extracting internal {or external} fixation devices
- U A61B 18/00**
- Surgical instruments, devices or methods for transferring non-mechanical forms of energy to or from the body (eye surgery [A61F 9/007](#) ; ear surgery [A61F 11/00](#))**
- U A61B 18/04
- by heating (by applying electromagnetic radiation [A61B 18/18](#) ; hyperthermia using electric or magnetic fields, radiation or ultrasound [A61N](#))
- A61B 18/06
- • caused by chemical reaction, {e.g. moxaburners}
- U A61B 18/18
- by applying electromagnetic radiation, e.g. microwaves (radiation therapy [A61N 5/00](#))
- U A61B 18/20
- • using laser
- U A61B 18/22
- • • the beam being directed along or through a flexible conduit, e.g. an optical fibre; {Couplings}, hand-pieces therefor

U A61B 19/00 Instruments, implements or accessories for surgery or diagnosis not covered by any of the groups [A61B 1/00](#) to [A61B 17/00](#), e.g. for stereotaxis, sterile operation, luxation treatment, wound edge protectors (surgeon's or patient's gowns or dresses, surgical masks [A41D 13/00](#)); devices for carrying-off, for treatment of, or for carrying-over, body liquids [A61M 1/00](#))

WARNING

Groups [A61B 19/20](#) - [A61B 19/56](#) do not correspond to former or current IPC groups.

Concordance CPC : IPC for these groups is as follows: - [A61B 19/20](#) - [A61B 19/56](#) : [A61B 19/00](#)

- U A61B 19/52 · {Image-producing devices or illumination devices not otherwise provided for, e.g. operation microscopes; Operation lamp handles}
- U A61B 19/5225 · · {Surgical systems with images on a monitor during operation}
- U A61B 2019/5231 · · · {using light, e.g. by using optical scanners}
- U A61B 2019/5234 · · · · {Optical coherence tomography ~~{OCT}~~}
- U A61B 2019/5238 · · · {X-ray, e.g. fluoroscopy}
- U A61B 2019/524 · · · · {using computed tomography systems ~~{CT}~~}
- U A61B 2562/00** **Details of sensors; Constructional details of sensor housings or probes; Accessories for sensors**
- U A61B 2562/02 · Details of sensors specially adapted for in-vivo measurements
- U A61B 2562/028 · · Micro-scale sensors, e.g. electromechanical sensors ~~{MEMS}~~}

Project: N/A (A61C)

- U A61C 13/00** **Dental prostheses; Making same (tooth crowns for capping teeth [A61C 5/08](#); dental implants [A61C 8/00](#))**
- U A61C 13/0003 · {Making bridge-work, inlays, implants or the like}
- U A61C 13/0006 · · {Production methods}
- U A61C 13/0015 · · · {using electrical discharge machining ~~{EDM}~~}, e.g. spark erosion}

Project: N/A (A61F)

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

WARNING

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

- U A61F 2/02 · Prostheses implantable into the body {(closure means for urethra or rectum or for artificial body openings therefor [A61F 2/0004](#))}
- U A61F 2/04 · · Hollow or tubular parts of organs, e.g. bladders, tracheae, bronchi or bile ducts ([A61F 2/18](#), [A61F 2/20](#) take precedence; devices, other than stent-grafts, providing patency to, or preventing collapsing of, tubular structures of the body other than stent-grafts, e.g. stents [A61F 2/82](#); instruments specially adapted for placement or removal of stents or stent-grafts [A61F 2/95](#))
- U A61F 2/06 · · · Blood vessels

- A61F 2/062
 - . . . {Apparatus for the production of blood vessels made from natural tissue or with layers of living cells (prostheses made from natural tissue or living cells [A61L 27/5007](#) [A61L 27/507](#))}
- U A61F 2/28
 - . . Bones ([A61F 2/42](#) takes precedence); joints [A61F 2/30](#); {means for introducing bone substitute or for implanting bone graft implants [A61F 2/4601](#); devices for grinding or milling bone material [A61F 2/4644](#)}
- A61F 2002/2817
 - . . . {Bone stimulation by chemical reactions or by osteogenic or biological products for enhancing ossification, e.g. by bone morphogenetic or morphogenic proteins ([BMP](#)) or by transforming growth factors ([TGF](#))}
- U A61F 2/30
 - . . Joints
- U A61F 2002/30001
 - . . . {Additional features of subject-matter classified in [A61F 2/28](#), [A61F 2/30](#) and subgroups thereof}
- U A61F 2002/30003
 - {Material related properties of the prosthesis or of a coating on the prosthesis}
- U A61F 2002/3006
 - {Properties of materials and coating materials}
- A61F 2002/30088
 - {Phase change materials ([PCM](#)), e.g. for storing latent heat}
- U A61F 2/3094
 - . . . {Designing or manufacturing processes (not used, see subgroups)}
- A61F 2002/30978
 - {using electrical discharge machining ([EDM](#))}
- A61F 2002/3098
 - {using physical vapour deposition ([PVD](#))}
- A61F 2002/30981
 - {using chemical vapour deposition ([CVD](#))}
- A61F 2002/30983
 - {using electrostatic spray deposition ([ESD](#))}
- A61F 2002/30985
 - {using three dimensional printing ([3DP](#))}
- A61F 2002/30986
 - {using hot isostatic pressing ([HIP](#))}
- 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 2/76
 - . . Means for assembling, fitting or testing prostheses, e.g. for measuring or balancing, {e.g. alignment means}
- U A61F 2002/7615
 - . . . {Measuring means (for implanting artificial joints [A61F 2/4657](#))}
- A61F 2002/763
 - {for measuring spatial position, e.g. global positioning system ([GPS](#))}
- 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 17/03](#) [A61B 17/04](#) to [A61B 17/115](#); dilators [A61M 29/00](#))
- 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
 - . Orthopaedic devices, e.g. splints, casts or braces
- A61F 5/30
 - . . Pressure-pads (corn-pads, corn-rings [A61F 13/06](#); {tourniquets [A61B 17/132](#))}
- U A61F 5/44
 - . Devices worn by the patient for reception of urine, faeces, catamenial or other discharge; {Portable urination aids}{absorbent pads, e.g. sanitary towels, [A61F 13/15](#); drainage appliances for wounds [A61M 27/00](#); {emptying devices for urine bags [B65B 69/0016](#)}; Colostomy devices (adhesives for colostomy devices [A61L 24/00](#); materials for colostomy devices [A61L 28/00](#))}
- U A61F 5/441
 - . . having {venting or} deodorant means, e.g. filters; {having antiseptic means, e.g. bacterial barriers}

- A61F 5/443
- • having {adhesive seals for securing to the body, e.g. of} hydrocolloid type, e.g. gels, starches, karaya gums {(adhesives or sealing pads therefor [A61L 24/00](#))}
- U A61F 5/451
- • Genital {or anal} receptacles ([A61F 5/441](#), [A61F 5/442](#), [A61F 5/443](#) take precedence; {other body securing means [A61F 5/4408](#); devices for taking faeces samples [A61B 10/0038](#); devices for taking urine samples [A61B 10/007](#)})
- U A61F 5/455
- • • for collecting urine or discharge from female member
- A61F 5/4553
- • • • {placed in the vagina, e.g. for catamenial use (pessaries [A61F 6/08](#); absorbent cups [A61F13/24](#)[A61F 13/2045](#))}
- 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 19/22](#)}; 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 9/007
- Methods or devices for eye surgery
- U A61F 9/008
- • using laser
- U A61F 9/00802
- • • {for photoablation}
- A61F 9/00812
- • • • {Inlays; Onlays; Intraocular lenses ([IOL](#))}
- U A61F 9/00825
- • • {for photodisruption}
- A61F 9/00834
- • • • {Inlays; Onlays; Intraocular lenses ([IOL](#))}
- A61F 2009/00842
- • • {Permanent Structural Change ([PSC](#)) in index of refraction; Limit between ablation and plasma ignition}
- U A61F 2009/00844
- • • {Feedback systems}
- A61F 2009/00851
- • • • {Optical coherence topography ([OCT](#))}
- 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 2013/00089
- {Wound bandages ([A61F 2013/00361](#) takes precedence);}
- U A61F 2013/0017
- • {possibility of applying fluid}
- U A61F 2013/00174
- • • {possibility of applying pressure}
- A61F 2013/00178
- • • • {hand-held [CO₂](#) cylinder, e.g. sparklet}
- 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 13/2051
- • • {characterised by the material or the structure of the inner absorbing core}
- A61F 13/2065
- • • • {Tampons folded from sheets of material ([A61F13/22](#)[A61F 13/206](#) takes precedence)}
- A61F 13/2068
- • • • {Tampons made from several layers ([A61F 13/2065](#), [A61F13/22](#) [A61F 13/206](#) take precedence)}

- A61F 13/45
- • characterised by the shape (cup-shaped type tampons [A61F13/24](#) [A61F 13/2045](#))
- 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 13/51113
- • • • {comprising an additive e.g. lotion or odour control [A61F 13/51108](#) takes precedence}{[A61F 13/51108](#) takes precedence)}
- U A61F 2210/00
- Particular material properties of prostheses classified in groups [A61F 2/00](#) to [A61F 2/26](#) or [A61F 2/82](#) or [A61F 9/00](#) or [A61F 11/00](#) or subgroups thereof**
- A61F 2210/008
- Phase change materials ({[PCM](#)}), e.g. for storing latent heat
- A61F 2310/00
- Prostheses classified in [A61F 2/28](#) or [A61F30/00](#) [A61F 2/30](#) to [A61F 2/44](#) being constructed from or coated with a particular material**

Project: N/A (A61G)

- U A61G 5/00
- Chairs or personal conveyances specially adapted for patients or disabled persons, e.g. wheelchairs ({chairs with toilet conveniences [A47K 11/04](#) ; } devices enabling patients or disabled persons to operate an apparatus or device not forming part of the body [A61F 4/00](#) ; {running gear or propulsion features [B60K](#);} bicycles specially adapted for disabled riders [B62K 3/16](#) ; { Invalid chairs having removable seats specially adapted to be transferred with the invalid to a vehicle and support the invalid during use of the vehicle [A61G 3/02](#)})**
- NOTE
- Invalid chairs having removable seats specially adapted to be transferred with the invalid to a vehicle and support the invalid during use of the vehicle are classified in group [A61G 3/00](#)
- A61G 5/06
- with obstacle mounting facilities, e.g. for climbing stairs, {kerbs or steps}
- A61G 7/00**
- Beds specially adapted for nursing; Devices for lifting patients or disabled persons (equipment for beds, treatment tables, floor frames or the like for extending or stretching [A61F5/045](#) {takes precedence} ; stretchers with facilities for picking up patients or disabled persons [A61G 1/003](#))**
- A61G 7/047
- Beds for special sanitary purposes, {e.g. for giving enemas, irrigations, flushings ([A61G 7/02](#) takes precedence; means for bathing bed-ridden persons [A61G 7/0005](#))}
- U A61G 7/05
- Parts, details or accessories of beds (devices for prevention against falling out [A47C 21/08](#) , [A47D 7/00](#) ; { mattresses [A47C 27/00](#))}
- A61G 7/053
- • Aids for getting into, or out of, bed, e.g. steps, chairs, {cane-like supports}
- A61G 10/00**
- Treatment rooms {or enclosures} for medical purposes (baby incubators, couveuses [A61G 11/00](#) ; devices for gas baths with ozone, hydrogen or the like [A61H 33/14](#) ; { for isolating individuals from external stimuli [A61M 21/0094](#) ; containers or portable cabins for affording breathing protection in general [A62B 31/00](#))**
- U A61G 10/04
- Oxygen tents; {Oxygen hoods}

Project: N/A (A61H)

- U A61H 3/00
- Appliances for aiding patients or disabled persons to walk about (apparatus for helping babies to walk [A47D 13/04](#) ;{ orthopaedic devices for correcting deformities of, or supporting, limbs [A61F 5/0102](#)}; exercising apparatus for the feet or toes [A63B 23/10](#) ;{ stairways or ramps [E04F 11/00](#)})**
- A61H 3/06
- Walking {or guiding} aids for blind persons (walking sticks {in general} [A45B](#); replacing direct visual perception by another kind of perception [A61F 9/08](#))

A61H 31/00	Artificial respiration or heart stimulation ({blood pumps A61M 1/10 ;} artificial respiration by treatment with gas or air, e.g. mouth-to-mouth respiration A61M 16/00 ; applying electric currents by contact electrodes for stimulation, e.g. heart pace-makers A61N 1/36 {; teaching or training models, demonstration models for medical purposes G09B 23/288 })
A61H 33/00	Bathing devices for special therapeutic or hygienic purposes (A61H 35/00 takes precedence; {sprays acting on a body or body part not immersed in water A61H 9/00 ; means for washing bed-ridden persons A61G 7/0005 ;} for sub aquatic intestinal cleaning A61M 9/00 ; {isolation chambers A61M 21/0094 ; }electric or magnetic baths, applying ionised fluids A61N 1/44 {; heater for bath tubs F24H 1/0081 })
U A61H 39/00	Devices for locating or stimulating specific reflex points of the body for physical therapy, e.g. acupuncture (chiropractors` instruments A61B 17/54 ; {for radiation therapy A61N 5/0619 })
A61H 39/06	· Devices for heating or cooling such points within cell-life limits (cauterisers, moxaburners, cryogenic apparatus A61B17/36 A61B 18/06 ; heating or cooling appliances for medical treatment of general areas of the human body A61F 7/00)
U A61H 2201/00	Characteristics of apparatus not provided for in the preceding codes
U A61H 2201/02	· heated or cooled
U A61H 2201/0221	· · Mechanism for heating or cooling
U A61H 2201/0228	· · · heated by an electric resistance element
A61H 2201/0235	· · · · Thermistors with Positive Temperature Coefficient (PTC)
A61H 2209/00	Devices for avoiding blood stagnation, e.g. Deep Vein Thrombosis (DVT) devices
U A61H 2230/00	Measuring physical parameters of the user
A61H 2230/60	· Muscle strain, i.e. measured on the user, e.g. Electromyography (EMG)

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

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

NOTES

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

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

- preventing, alleviating, treating or curing abnormal or pathological conditions of the living body by such means as destroying a parasitic organism, or limiting the effect of the disease or abnormality by chemically altering the physiology of the host or parasite (biocides [A01N 25/00](#) to [A01N 65/00](#));
- maintaining, increasing, decreasing, limiting, or destroying a physiological body function, e.g. vitamin compositions, sex sterilants, fertility inhibitors, growth promoters, or the like (sex sterilants for invertebrates, e.g. insects, [A01N](#); plant growth regulators [A01N 25/00](#) to [A01N 65/00](#));

- diagnosing a physiological condition or state by an in vivo test, e.g. X-ray contrast or skin patch test compositions (measuring or testing processes involving enzymes or micro-organisms [C12Q](#); in vitro testing of biological material, e.g. blood, urine, [G01N](#), e.g. [G01N 33/48](#))
 - b. Body treating compositions generally intended for deodorising, protecting, adorning or grooming the body, e.g. cosmetics, dentifrices, tooth filling materials.
2. Attention is drawn to the definitions of groups of chemical elements following the title of section C.
3. Attention is drawn to the notes in class [C07](#) , for example the notes following the title of the subclass [C07D](#) , setting forth the rules for classifying organic compounds in that class, which rules are also applicable, if not otherwise indicated, to the classification of organic compounds in [A61K](#) .
4. In this subclass, with the exception of group [A61K 8/00](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

WARNINGS

1.

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

~~A61K 6/033~~ covered by ~~A61K 6/06A~~
~~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](#)
[A61K 9/0058](#) covered by

[A61K 9/72](#)
[A61K 9/0073](#) covered by

[A61K 45/08](#) covered by [A61K 31/00](#)
, [A61K 47/00](#)

[A61K 47/04](#)
[A61K 47/02](#) covered by

[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 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](#) to [A61K 9/7023](#)).

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

U A61K 9/0012

• {Galenic forms characterised by the site of application}

U A61K 9/007

• • {Pulmonary tract; Aromatherapy}

U A61K 9/0073

• • • {Sprays or powders for inhalation; Aerolised or nebulised preparations generated by other means than thermal energy; (nasal sprays [A61K 9/0043](#) ; inhalation of vapours of volatile or heated drugs, e.g. essential oils or nicotine, [A61K 9/007](#) ; devices [A61M](#))}

A61K 9/0075

• • • • {for inhalation via a dry powder inhaler (~~MDI~~), e.g. comprising micronized drug mixed with lactose carrier particles}

A61K 9/008

• • • • {comprising drug dissolved or suspended in liquid propellant for inhalation via a pressurized metered dose inhaler (~~MDI~~)}

U A61K 9/0087

• {Galenic forms not covered by [A61K 9/02](#) to [A61K 9/7023](#)}

- A61K 9/0097
- {Micromachined devices; Microelectromechanical systems (~~/MEMS~~); Devices obtained by lithographic treatment of silicon; Devices comprising chips (intra-dermal microneedle arrays [A61K 9/0021](#) ; MEMS in general [B81B 7/02](#))}
- U A61K 9/02
- Suppositories; Bougies; Bases therefor; {Ovules} (apparatus for making [A61J 3/08](#) ; devices for introducing into the body [A61M 31/00](#))
- U A61K 9/06
- Ointments; Bases therefor; {Other semi-solid forms, e.g. creams, sticks, gels (composition of ointments, creams or gels [A61K 47/00](#))}
- WARNING
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#)
- 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 9/107
- • Emulsions; {Emulsion pre-concentrates; Micelles (composition of emulsions [A61K 47/00](#))}
- WARNING
incomplete, see also [A61K 9/0012](#), [A61K 47/00](#) , [A61K 9/0095](#)
- A61K 9/14
- Particulate form, e.g. powders, {Processes for size reducing of pure drugs or the resulting products, Pure drug nanoparticles (microspheres [A61K 9/16](#) ; microcapsules [A61K 9/50](#) ; nanocapsules, nanoparticles of the matrix type [A61K 9/51](#))}
- U A61K 9/16
- • Agglomerates; Granulates; Microbeadlets; {Microspheres; Pellets; Solid products obtained by spray drying, spray freeze drying, spray congealing, (multiple) emulsion solvent evaporation or extraction ([A61K 9/20](#) takes precedence if the final form is a tablet; microspheres with drug-free outer coating, microcapsules [A61K 9/50](#) ; mixture of different granules, microcapsules, (coated) microparticles [A61K 9/5084](#); nanoparticles [A61K 9/51](#))}
- A61K 9/19
- • Lyophilised, {i.e. freeze-dried, solutions or dispersions (lyophilised products with subsequent particle size reduction [A61K 9/14](#) ; granules or pellets made by lyophilisation [A61K 9/1682](#); solid oral dosage forms made by lyophilisation [A61K 9/2095](#); lyophilisation additives [A61K 47/00](#))}
- A61K 9/20
- Pills, tablets, {discs, rods ([A61K 9/0004](#) , [A61K 9/0007](#) , [A61K 9/0056](#) , [A61K 9/0065](#) take precedence; for reconstitution of a drink [A61K 9/0095](#))}
- 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](#))}
- U A61K 9/51
- • • Nanocapsules; {Nanoparticles; (nanotubes [A61K 9/0092](#) ; polymeric micelles [A61K 9/1075](#) ; polymersomes [A61K 9/1273](#) ; pure drug nanoparticles [A61K 9/14](#) ; drug nanoparticles with adsorbed surface modifiers [A61K 9/141](#) ; conjugates, e.g. between drug and non-active nanoparticles, [A61K 47/48](#) ; preparations for in vivo diagnosis [A61K 49/00](#) ; with radioactive substances [A61K 51/00](#))}
- U A61K 9/70
- Web, sheet or filament bases; {Films; Fibres of the matrix type containing drug; (hollow drug-filled fibres [A61K 9/0092](#) ; bandages, dressings or absorbent pads [A61F 13/00](#) , chemical aspects thereof [A61L 15/00](#))}

U A61K 31/00

Medicinal preparations containing organic active ingredients**NOTES**

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

U A61K 31/13

- Amines {([A61K 31/04](#) takes precedence)}

A61K 31/15

- Oximes (>C=N-O); Hydrazines (>N-N<); Hydrazones (>N=N=) {Imines (C=N=C)}

U A61K 31/33

- Heterocyclic compounds

U A61K 31/395

- having nitrogen as a ring hetero atom, e.g. guanethidine, rifamycins ([A61K 31/496](#))

A61K 31/495

- having six-membered rings with two {or more} nitrogen atoms as the only ring heteroatoms, e.g. piperazine {or tetrazines}{~~[A61K 31/48](#) takes precedence~~}{([A61K 31/48](#) takes precedence ; with three nitrogen atoms [A61K 31/53](#))}

A61K 31/53

- having six-membered rings with three nitrogens as the only ring hetero atoms, e.g. chlorazaniil, melamine, (~~melarsoprol [A61K 31/555](#)~~){(~~melarsoprol [A61K 31/555](#)~~ ; with four nitrogen atoms [A61K 31/495](#))}

U A61K 31/54

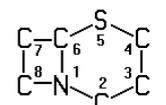
- having six-membered rings with at least one nitrogen and one sulfur as the ring hetero atoms, e.g. sulthiame

U A61K 31/542

- ortho- or peri-condensed with heterocyclic ring systems

A61K 31/545

- Compounds containing 5-thia-1-azabicyclo [4.2.0] octane ring systems, i.e. compounds containing a ring system of the formula:



e.g. cephalosporins, {cefaclor, or cephalaxine}

U A61K 33/00

Medicinal preparations containing inorganic active ingredients

A61K 33/06

- Aluminium, calcium or magnesium; Compounds thereof, {e.g. clay}

U A61K 38/00

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

NOTES

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

- | | |
|----------------|--|
| A61K 38/04 | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • • Peptides having 5 to 11 amino acids {(A61K 38/043 to A61K 38/046 take precedence)} |
| A61K 38/09 | <ul style="list-style-type: none"> • • • Luteinising hormone-releasing hormone (LHRH); (i.e. Gonadotropin-releasing hormone (GnRH)); Related peptides |
| A61K 38/12 | <ul style="list-style-type: none"> • • Cyclic peptides {, e.g. bacitracins; Polymyxins; Gramicidins S, C; Tyrocidins A, B or C (A61K 38/043 to A61K 38/046 take precedence)} |
| U A61K 38/16 | <ul style="list-style-type: none"> • Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof ({enzyme inhibitors A61K 38/005}) |
| U A61K 38/17 | <ul style="list-style-type: none"> • • from animals; from humans {(enzyme inhibitors A61K 38/005)} |
| U A61K 38/1703 | <ul style="list-style-type: none"> • • • {from vertebrates (A61K 38/1767 takes precedence)} |
| U A61K 38/1709 | <ul style="list-style-type: none"> • • • • {from mammals} |
| U A61K 38/1712 | <ul style="list-style-type: none"> • • • • • {Not used, see subgroup} |
| A61K 38/1751 | <ul style="list-style-type: none"> • • • • • • {Bactericidal/permeability-increasing protein (BPI)} |
| A61K 38/1761 | <ul style="list-style-type: none"> • • • • • • • {Apoptosis related proteins, e.g. Apoptotic protease-activating factor-1 (APAF-1), Bax, Bax-inhibitory protein(s)(BI; bax-I), Myeloid cell leukemia associated protein (MCL-1), Inhibitor of apoptosis (IAP), Bcl-2} |
| A61K 38/1764 | <ul style="list-style-type: none"> • • • • • • • {Tumor specific antigens; Tumor rejection antigen precursors (TRAP), e.g. MAGE} |
| U A61K 38/177 | <ul style="list-style-type: none"> • • • {Receptors; Cell surface antigens; Cell surface determinants} |

- A61K 38/1783 {Nuclear receptors, e.g. retinoic acid receptor [\(RAR\)](#), RXR, nuclear orphan receptors}
- U A61K 38/18 . . . Growth factors; Growth regulators
- A61K 38/1808 {Epidermal growth factor [\(EGF\)](#) urogastrone}
- A61K 38/1816 {Erythropoietin [\(EPO\)](#)}
- A61K 38/1825 {Fibroblast growth factor [\(FGF\)](#)}
- A61K 38/1841 {Transforming growth factor [\(TGF\)](#)}
- A61K 38/185 {Nerve growth factor [\(NGF\)](#); Brain derived neurotrophic factor [\(BDNF\)](#); Ciliary neurotrophic factor [\(CNTF\)](#); Glial derived neurotrophic factor [\(GDNF\)](#); Neurotrophins, e.g. NT-3}
- A61K 38/1858 {Platelet-derived growth factor [\(PDGF\)](#)}
- A61K 38/1866 {Vascular endothelial growth factor [\(VEGF\)](#)}
- U A61K 38/19 . . . Cytokines; Lymphokines; Interferons
- U A61K 38/20 Interleukins [IL]
- A61K 38/2093 {Leukaemia inhibitory factor [\(LIF\)](#)}
- A61K 38/21 Interferons [\(IFN\)](#)}
- U A61K 38/22 . . . Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [A61K 38/33](#) , e.g. corticotropin [A61K 38/35](#))
- A61K 38/2228 {Corticotropin releasing factor [\(CRF\)](#) (Urotensin)}
- A61K 38/2242 {Atrial natriuretic factor complex: Atriopeptins, atrial natriuretic protein [\(ANP\)](#); Cardionatin, Cardiodilatin}
- A61K 38/2278 {Vasoactive intestinal peptide [\(VIP\)](#); Related peptides (e.g. Exendin)}
- A61K 38/2285 {Endothelin, vasoactive intestinal contractor [\(VIC\)](#)}
- A61K 38/24 Follicle-stimulating hormone [\(FSH\)](#); Chorionic gonadotropins, e.g. HCG; Luteinising hormone [\(LH\)](#); Thyroid-stimulating hormone [\(TSH\)](#)}
- A61K 38/27 Growth hormone [\(GH\)](#) (Somatotropin)
- U A61K 38/33 . . . derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin
- A61K 38/34 Melanocyte stimulating hormone [\(MSH\)](#), e.g. alpha- or beta-melanotropin
- A61K 38/35 Corticotropin [\(ACTH\)](#)}
- A61K 38/39 . . . Connective tissue peptides, e.g. collagen, elastin, laminin, fibronectin, vitronectin, cold insoluble globulin [\(CIG\)](#)}

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

NOTES

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

[C12N 9/0002](#) according to the antibodies, with the appropriate indexing codes relating to their medical uses.

6. Documents relating to medicinal preparations containing different antibodies as active ingredients are classified in group [C07K 16/00](#) according to the different active antibodies, with the appropriate indexing codes relating to their medical uses. However, documents relating to medicinal preparations containing antibodies and other compounds as active ingredients are classified in groups [A61K 39/395](#) to [A61K 39/42](#) , in association with symbol [A61K 2300/00](#) in Combination Sets.

- U A61K 39/02
 - Bacterial antigens
- A61K 39/104
 - • {Pseudomonadales, e.g.} Pseudomonas
- U A61K 2039/60
 - {characteristics by the carrier linked to the antigen}
- U A61K 2039/6031
 - • {Proteins}
- A61K 2039/6037
 - • • {Bacterial toxins, e.g. diphtheria toxoid ~~{(DT)}~~, tetanus toxoid ~~{(TT)}~~}
- A61K 2039/6081
 - • • {Albumin; Keyhole limpet haemocyanin ~~{(KLH)}~~}
- A61K 2039/6087
 - • {Polysaccharides; Lipopolysaccharides ~~{(LPS)}~~}
- A61K 2039/6093
 - • {Synthetic polymers, e.g. polyethyleneglycol ~~{(PEG)}~~, Polymers or copolymers of (D) glutamate and (D) lysine}

- 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](#))**

- U **A61K 47/00** **Medicinal preparations characterised by the non-active ingredients used, e.g. carriers, inert additives**
 - A61K 47/06
 - Organic compounds, {e.g. mineral oil, petrolatum, synthetic polyolefins}
 - A61K 47/08
 - • containing oxygen, {e.g. ethers, acetals, ketones, quinones, aldehydes, peroxides}
 - A61K 47/10
 - • • Alcohols; Phenols; Salts thereof, {e.g. glycerol; Polyethylene glycol [PEG]; Poloxamers; PEG/POE alkyl ethers (sugar alcohols [A61K 47/26](#) ; copolymers containing polyalkylene glycol or poloxamer [A61K 47/34](#))}
 - A61K 47/16
 - • containing nitrogen, {e.g. nitro-, nitroso-, azo-compounds, nitriles, cyanates}
 - A61K 47/18
 - • • Amines; Quaternary ammonium compounds, {e.g. amides, ureas}
 - A61K 47/20
 - • containing sulfur, {e.g. DMSO, docusate, sodium lauryl sulfate ([A61K 47/183](#) , [A61K 47/186](#) take precedence)}
 - A61K 47/22
 - • Heterocyclic compounds, {e.g. ascorbic acid, tocopherol, pyrrolidones ([A61K 47/183](#) , [A61K 47/186](#) take precedence)}
 - A61K 47/24
 - • containing atoms other than carbon, hydrogen, oxygen, halogen, nitrogen or sulfur, {e.g. cyclomethicone, phospholipids}
 - A61K 47/26
 - • Carbohydrates, {e.g. mono-, di-, oligosaccharides, nucleic acids, sugar alcohols, amino sugars; Derivatives thereof, e.g. polysorbates, sorbitan fatty acid esters, glycyrrhizin ([A61K 47/183](#) , [A61K 47/186](#) take precedence)}
 - A61K 47/28
 - • Steroids, {e.g. cholesterol, bile acids, glycyrrhetic acid ([A61K 47/183](#) , [A61K 47/186](#) take precedence)}
- U A61K 47/30
 - Macromolecular compounds
- A61K 47/32
 - • Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds, {e.g. carbomers, poly(meth)acrylates, polyvinyl pyrrolidone}

- 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 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 47/36
- • Polysaccharides; Derivatives thereof, {e.g. gums, starch, alginate, dextrin, hyaluronic acid, chitosan, inulin, agar, pectin}
- A61K 47/46
- Ingredients of undetermined constitution or reaction products thereof, {e.g. skin, bone, milk, cotton fiber, eggshell, oxgall, plant extracts}
- U A61K 47/48
- the non-active ingredient being chemically bound to the active ingredient, e.g. polymer drug conjugates
- U A61K 47/48007
- • {the pharmacologically- or therapeutically-active agent being covalently bound or complexed to a modifying agent}
- NOTE
- The modifying agent being a macromolecular compound [A61K 47/48169](#), a peptide, protein or polyamino acid [A61K 47/48238](#), an antibody or immunoglobulin [A61K 47/48369](#)
- U A61K 47/48023
- • • {the modifying agent being an organic compound ([A61K 47/48161](#) takes precedence)}
- A61K 47/481
- • • • {the modifying agent being also a pharmacologically or therapeutically active agent, i.e. the entire conjugate being a codrug, i.e. a dimer, oligomer or polymer of pharmacologically or therapeutically active compounds, e.g. a polymer of aspirin}
- NOTE
- a sugar, nucleoside, nucleotide, nucleic acid is classified in [A61K 47/48092](#) ; a polymer of an active agent is not classified in ~~A6K47/48K6~~[A61K 47/48192](#)
- 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

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

NOTE

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

- A61K 47/48284
- • • {the peptide or protein in the drug conjugate being an albumin, e.g. HSA, BSA, ovalbumin, or a Keyhole Limpet Hemocyanin ([\[KHL\]](#))}

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

NOTE

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

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

NOTE

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

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

- U A61K 49/001
- {Preparation for luminescence or biological staining}
- U A61K 49/0013
- • {Luminescence}
- U A61K 49/0017
- • • {Fluorescence in vivo}
- U A61K 49/0019
- • • • {characterised by the fluorescent group}

- U A61K 49/0045 {the fluorescent agent being a peptide or protein used for imaging or diagnosis in vivo}
- A61K 49/0047 {Green fluorescent protein [\(GFP\)](#)}
- A61K 49/06 . Nuclear magnetic resonance [\(NMR\)](#) contrast preparations; Magnetic resonance imaging [\(MRI\)](#) contrast preparations
- NOTE**
characterised only by the (inorganic) MRI-active nucleus, e.g. 129Xe
- U A61K 49/18 . . characterised by a special physical form, e.g. emulsions, microcapsules, liposomes
- NOTE**
Classification being also made according to the molecule complexing or bearing the MRI-active nucleus
- U A61K 49/1818 . . . {particles, e.g. uncoated or non-functionalised microparticles or nanoparticles}
- NOTE**
For nanoparticles, i.e. having a size or diameter smaller than 1 micrometer, the subgroups [B82Y 5/00](#) and [B82Y 15/00](#) are also given
- U A61K 49/1821 {coated or functionalised microparticles or nanoparticles}
- U A61K 49/1824 {coated or functionalised nanoparticles (liposomes [A61K 49/1812](#) ; nano-emulsions [A61K 49/1806](#) ; micelles [A61K 49/1809](#))}
- U A61K 49/1827 {having a (super)(para)magnetic core, being a solid MRI-active material, e.g. magnetite, or composed of a plurality of MRI-active, organic agents e.g. Gd-chelates, or nuclei, e.g. Eu³⁺, encapsulated or entrapped in the core of the coated or functionalised nanoparticle}
- U A61K 49/1851 {having a (super)(para)magnetic core coated or functionalised with an organic macromolecular compound, i.e. oligomeric, polymeric, dendrimeric organic molecule (peptide or protein [A61K 49/1866](#) ; polyamino acid [A61K 49/1872](#) ; antibody [A61K 49/1875](#))}
- NOTE**
In case of block copolymers, the different (large) blocks are classified in the appropriate [A61K 47/48169](#) or [A61K 47/48238](#) subgroups
- U A61K 49/1857 {the organic macromolecular compound being obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds, e.g. PLGA}
- A61K 49/186 {the organic macromolecular compound being polyethyleneglycol [\(PEG\)](#)}
- U A61K 51/00 Preparations containing radioactive substances for use in therapy or testing in vivo**
- A61K 51/02 . characterised by the carrier, {i.e. characterised by the agent or material covalently linked or complexing the radioactive nucleus}
- U A61K 51/04 . . organic compounds
- NOTE**
Organic compounds used as carriers
- A61K 51/06 . . . Macromolecular compounds, {carriers being organic macromolecular compounds, i.e. organic oligomeric, polymeric, dendrimeric molecules (peptides, proteins, polyamino acids [A61K 51/08](#) ; antibodies [A61K 51/10](#))}

- A61K 51/08 . . . Peptides, e.g. proteins, {carriers being peptides, polyamino acids, proteins}
- A61K 51/081 {the protein being an albumin, e.g. human serum albumin ~~{[HSA]}~~, bovine serum albumin ~~{[BSA]}~~, ovalbumin}
- 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 51/12 . 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](#))}

Project: N/A (A61L)

A61L 11/00 **Methods specially adapted for refuse {(desintegrating medical waste [B02C 19/12M](#) [B02C 19/0075](#) ; disposal of medical waste [B09B 3/0075](#))}**

- U A61L 15/00** **Chemical aspects of, or use of materials for, bandages, dressings or absorbent pads (for liquid bandages [A61L 26/00](#) ; radioactive dressings [{A61N 5/1029}](#))}**

NOTES

1. In each set of groups [A61L 15/08](#) to [A61L 15/12](#) and [A61L 15/18](#) to [A61L 15/40](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.
2. When classifying in groups [A61L 15/08](#) to [A61L 15/12](#) , classification is also made in group [A61L 15/14](#) if the use of materials characterised by their function or physical properties is of interest.
3. When classifying in groups [A61L 15/18](#) to [A61L 15/40](#) , classification is also made in groups [A61L 15/42](#) to [A61L 15/64](#) if the use of materials characterised by their function or physical properties is of interest.

- U A61L 15/16 . Bandages, dressings or absorbent pads for physiological fluids such as urine or blood, e.g. sanitary towels, tampons
- A61L 15/40 . . containing ingredients of undetermined constitution or reaction products thereof, {e.g. plant or animal extracts}
- U A61L 15/42 . . Use of materials characterised by their function or physical properties (liquid bandages [A61L 26/00](#))
- A61L 15/62 . . . {Compostable,} hydrosoluble or hydrodegradable materials

- U A61L 17/00** **Materials for surgical sutures or for ligaturing blood vessels (surgical adhesives [A61L 24/00](#) ; surgical instruments, devices or methods for suturing or ligaturing [A61B 17/04](#) , [A61B 17/12](#) ; supports or packages for suture materials [A61B 17/04](#)); {Materials for prostheses or catheters (bone cements or surgical adhesives for soft body tissues [A61L 24/00](#) ; shape or structure of prostheses [A61F 2/00](#) ; shape or structure of catheters [A61M 5/00](#))}**

NOTES

1. In groups [A61L 17/04](#) to [A61L 17/145](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.
2. When classifying in group [A61L 17/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.

A61L 26/00

Chemical aspects of, or use of materials for, {wound dressings or} bandages {in liquid, gel or powder form}

NOTES

1. When classifying in group [A61L 26/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic.
2. In groups [A61L 26/00](#) to [A61L 26/0095](#), the use of specific polymers is indicated using the relevant combination set symbol, adding, after the symbol in [A61L](#) , the correspondent symbol of the polymer in subclass [C08L](#) , e.g. liquid bandages on alginates: [A61L 26/0023](#) , [C08L 5/04](#)

A61L 27/00

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

NOTES

1. In groups [A61L 27/02](#) to [A61L 27/48](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place
2. When classifying in groups [A61L 27/02](#) to [A61L 27/48](#) , classification is also made in groups [A61L 27/50](#) to [A61L 27/60](#) if the use of materials characterised by their function or physical properties is of interest
3. When classifying in group [A61L 27/00](#) , classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic
4. In group [A61L 27/00](#) , the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. prosthesis based on polyvinylchloride [A61L 27/16](#) , [C08L 27/06](#)

- U A61L 27/02 · Inorganic materials
- U A61L 27/08 · · Carbon; {Graphite}
- U A61L 27/14 · Macromolecular materials
- A61L 27/22 · · Polypeptides or derivatives thereof, {e.g. degradation products}
- A61L 27/36 · containing ingredients of undetermined constitution or reaction products thereof, {e.g. transplant tissue, natural bone, extracellular matrix (isolated natural compounds, e.g. collagen [A61L 27/24](#))}
- U A61L 27/3604 · · {characterised by the human or animal origin of the biological material, e.g. hair, fascia, fish scales, silk, shellac, pericardium, pleura, renal tissue, amniotic membrane, parenchymal tissue, fetal tissue, muscle tissue, fat tissue, enamel}
- A61L 27/3633 · · · {Extracellular matrix (ECM)}
- A61L 27/50 · Materials characterised by their function or physical properties, {e.g. injectable or lubricating compositions, shape-memory materials, surface modified materials}
- A61L 27/56 · · Porous materials, {e.g. foams or sponges}

A61L 29/00 **Materials for catheters, {medical tubing, cannulae, or endoscopes} or for coating catheters (shape or structure of catheters [A61M 25/00](#))**

NOTES

1. In groups [A61L 29/02](#) to {[A61L 29/126](#)}, in the absence of an indication to the contrary, classification is made in the last appropriate place
2. When classifying in groups [A61L 29/02](#) to {[A61L 29/126](#)}, classification is also made in groups [A61L 29/14](#) to [A61L 29/18](#) if the use of materials characterised by their function or physical properties is of interest
3. When classifying in group [A61L 29/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic
4. In group [A61L 29/00](#), the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the combination set, e.g. a catheter based on polyvinylchloride [A61L 29/041](#), [C08L 27/06](#)

A61L 29/14 · Materials characterised by their function or physical properties, {e.g. lubricating compositions}

A61L 31/00 **Materials for other surgical articles, {e.g. stents, stent-grafts, shunts, surgical drapes, guide wires, materials for adhesion prevention, occluding devices, surgical gloves, tissue fixation devices (shape or structure of stent-grafts [A61F 2/07](#), of stents [A61F 2/82](#), of surgical gloves [A61B 19/04](#), of surgical drapes [A61B 19/08](#), of occluding devices [A61B 17/12022](#))}**

NOTES

1. In groups [A61L 31/02](#) to {[A61L 31/129](#)}, in the absence of an indication to the contrary, classification is made in the last appropriate place
2. When classifying in groups [A61L 31/02](#) to {[A61L 31/129](#)}, classification is also made in groups [A61L 31/14](#) to [A61L 31/18](#) if the use of materials characterised by their function or physical properties is of interest
3. When classifying in group [A61L 31/00](#), classification is also made in [A61L 33/00](#) if the materials used are antithrombogenic
4. In group [A61L 31/00](#), the use of specific polymers is indicated using the relevant classification symbols of subclass [C08L](#) in the second position of the combination set, e.g. surgical clamp based on polyvinylchloride [A61L 31/048](#), [C08L 27/06](#)

A61L 31/14 · Materials characterised by their function or physical properties, {e.g. injectable or lubricating compositions, shape-memory materials, surface modified materials}

U A61L 33/00 **Antithrombogenic treatment of surgical articles, e.g. sutures, catheters, prostheses, or of articles for the manipulation or conditioning of blood; Materials for such treatment**

NOTES

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

U A61L 33/06 · Use of macromolecular materials (grafting of a monomer onto the substrate [A61L 33/0088](#))

A61L 33/12

- Polypeptides, proteins or derivatives thereof, {e.g. degradation products thereof}

Project: N/A (A61M)**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](#) to [A61M 5/00](#) , [A61M 11/00](#) to [A61M 16/00](#) , [A61M 27/00](#) to [A61M 35/00](#) take precedence } ; catheters [A61M 25/00](#) ; tube connectors, tube couplings, valves or branch units specially adapted for medical use [A61M 39/00](#) ; devices for taking samples of blood [A61B 5/14](#) ; implements for holding wounds open [A61B 17/02](#) ; { saliva removers for dentists [A61C 17/04](#) } ; filters implantable into blood vessels [A61F 2/01](#) ; pumps in general [F04](#))

WARNING

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

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

[A61M 1/3695](#) - [A61M 1/3698](#) should be considered in order to perform a complete search.

- U A61M 1/02
 - Blood transfusion apparatus (blood infusion by syringes [A61M 5/14](#))
 - A61M 1/029
 - · {Separating blood components present in distinct layers in a container, not otherwise provided for (containers for storing blood or blood components ~~A61J1/00T~~[A61J 1/05](#) ; sampling or analysing blood by separating blood components [G01N 33/491](#))}
 - A61M 1/04
 - {Artificial} pneumothorax apparatus
 - U A61M 1/14
 - Dialysis systems; Artificial kidneys; Blood oxygenators; {Reciprocating systems for treatment of body fluids, e.g. single needle systems for haemofiltration, pheris (haemofiltration using non reciprocating systems [A61M 1/34](#) ; extracorporeal blood circuit aspects [A61M 1/36](#))}; (processes of separation using semi-permeable membranes [B01D 61/00](#) ; semi-permeable membranes characterised by the material, manufacturing processes therefor [B01D 71/00](#))
 - U A61M 1/16
 - · with membranes {([A61M 1/30](#) takes precedence; membranes per se [B01D 69/00](#) , [B01D 71/00](#))}
 - A61M 1/26
 - · · {and internal elements} which are moving
 - U A61M 1/28
 - · Peritoneal dialysis; {Other peritoneal treatment, e.g. oxygenation}
 - U A61M 1/36
 - Other treatment of blood in a by-pass of the natural circulatory system, e.g. temperature adaptation, irradiation; {Extra-corporeal blood circuits}
 - A61M 1/38
 - · Removing constituents from donor blood and {storing or} returning remainder to body, {e.g. for transfusion}
 - U **A61M 5/00**
 - Devices for bringing media into the body in a subcutaneous, intra-vascular or intramuscular way; Accessories therefor, e.g. filling or cleaning devices, arm-rests ({vaccination appliances for veterinary use [A61D 1/025](#) } ; tube connectors, tube couplings, valves or branch units specially adapted for medical use [A61M 39/00](#) ; containers specially adapted for medical or pharmaceutical purposes [A61J 1/00](#) ; { combinations of vial and syringe for mixing or transferring their contents [A61J 1/20](#) ; holders for containers for collecting, storing or administering blood or medical fluids [A61J 1/16](#)})**
 - A61M 5/14
 - Infusion devices, e.g. infusing by gravity; Blood infusion; Accessories therefor (suction in pumping blood transfusion [A61M 1/02](#) ; { infusion containers ~~A61J1/00T~~[A61J 1/05](#)})
 - U A61M 2005/1401
 - · {Functional features}
 - A61M 2005/1404
 - · · {Keep vein-open rate (~~[KVO]~~), i.e. low flow rate}
 - A61M 2005/1405
 - · · {Patient controlled analgesia (~~[PCA]~~)}
 - U A61M 5/142
 - · Pressure infusion, e.g. using pumps
- NOTE
- In this group, the following expression is used with the meaning indicated:
- "pressure infusion" includes powered injection working at a controlled rate
- U A61M 5/145
 - · · using pressurised reservoirs, e.g. pressurised by means of pistons
 - A61M 5/148
 - · · flexible, {e.g. independent bags}{[A61M 5/155](#) takes precedence}
 - U A61M 5/162
 - · Needle sets, i.e. connections by puncture between reservoir and tube; {Connections between reservoir and tube (in jet-action syringes [A61M 5/30](#) ; connectors for tubes having sealed ends and a needle for piercing them [A61M 39/14](#))}

- A61M 5/165
- • Filtering accessories, e.g. blood filters, filters for infusion liquids ([A61M 1/14](#)), [A61M 1/34](#), {[A61M 1/3627](#), [A61M 1/3679](#), [A61M 1/3687](#)} take precedence; {needle sets with incorporated air inlet filters [A61M 5/162](#)}
- U A61M 5/168
- • Means for controlling media flow to the body or for metering media to the body, e.g. drip meters, counters; {Monitoring media flow to the body (flow control in general [G05D 7/00](#))}
- U A61M 5/178
- A61M 5/19
- Syringes
 - • having more than one chamber, {e.g. including a manifold coupling two parallelly aligned syringes through separate channels to a common discharge assembly (surgical glue applicators [A61B 17/00491](#))}
- A61M 5/20
- • Automatic syringes, e.g. with automatically actuated piston rod, with automatic needle injection, filling automatically ([A61M 5/142](#){, [A61M 5/46](#)} take precedence; {hypodermic projectiles [F42B 12/54](#))}
- U A61M 5/31
- • Details
- U A61M 5/315
- • • Pistons; Piston-rods; Guiding, blocking or restricting the movement of the rod {or piston}; Appliances on the rod for facilitating dosing; {Dosing mechanisms}
- U A61M 5/32
- • • Needles; Details of needles pertaining to their connection with syringe or hub (infusion needles [A61M 5/158](#)); Accessories for bringing the needle into, or holding the needle on, the body {([A61M 5/42](#), [A61M 5/46](#) take precedence; guide needles for catheters [A61M 25/065](#)); Devices for protection of needles {(apparatus specially adapted for cleaning or sterilising needles [A61M 5/001](#))}
- A61M 5/3205
- • • {Apparatus for removing or disposing of used needles or syringes, e.g. containers; Means for protection against accidental injuries from used needles (for sharps [A61B 19/0288](#); disintegrating apparatus in general [B02C](#), e.g. ~~[B02C 19/42M](#)~~[B02C 19/0075](#), [B23H 9/001](#); disposal of medical waste in general [B09B 3/0075](#); receptacles for refuse disposal in general [B65F 1/00](#))}
- A61M 5/34
- • • Constructions for connecting the needle, {e.g. to syringe nozzle or needle hub (connecting catheter tubes to hubs [A61M 25/0014](#))}
- U **A61M 11/00**
- Sprayers or atomisers specially adapted for therapeutic purposes (in general [B05B](#); {aerosol containers [B65D 83/14](#))}**
- WARNING**
- Groups [A61M 11/001](#) - [A61M 11/008](#), [A61M 11/042](#) - [A61M 11/048](#), [A61M 11/065](#) are incomplete pending reclassification of documents from group [A61M 11/00](#) or respective subgroup.
- Until reclassification is complete, groups [A61M 11/00](#) or respective subgroup and [A61M 11/001](#) - [A61M 11/008](#), [A61M 11/042](#) - [A61M 11/048](#), [A61M 11/065](#) should be considered in order to perform a complete search.
- A61M 11/02
- operated by air {or other gas} pressure applied to the liquid {or other product} to be sprayed or atomised {(sprayers for horticulture [A01G](#), [A01H](#); killing insects [A01M](#); air humidifying by nozzles [F24F 6/14](#), [F24F 6/18](#); cooling by spraying [F28B](#), [F28C](#))}
- A61M 13/00**
- Insufflators for therapeutic or disinfectant purposes, {i.e. devices for blowing a gas, powder or vapour into the body (hand-held units in which gas flow is produced by muscular energy at the moment of use [B05B 11/062](#))}**

- U A61M 15/00 Inhalators {(drug delivery in endotracheal tubes [A61M 16/04](#))}**
- WARNING**
- Groups [A61M 15/0001](#) - [A61M 15/0026](#), [A61M 15/003](#) - [A61M 15/0043](#), [A61M 15/0046](#) - [A61M 15/0063](#), [A61M 15/0066](#) - [A61M 15/0083](#), [A61M 15/0088](#), [A61M 15/0093](#) - [A61M 15/0098](#), [A61M 15/025](#), [A61M 15/085](#) are incomplete pending reclassification of documents from group [A61M 15/00](#) or respective subgroup.
- Until reclassification is complete, groups [A61M 15/00](#) or respective subgroup and [A61M 15/0001](#) - [A61M 15/0026](#), [A61M 15/003](#) - [A61M 15/0043](#), [A61M 15/0046](#) - [A61M 15/0063](#), [A61M 15/0066](#) - [A61M 15/0083](#), [A61M 15/0088](#), [A61M 15/0093](#) - [A61M 15/0098](#), [A61M 15/025](#), [A61M 15/085](#) should be considered in order to perform a complete search.
- A61M 15/02
- with activated or ionised (fluids, e.g. electrohydrodynamic (~~EHD~~) or electrostatic devices); Ozone-inhalators {with radioactive tagged particles}
- U A61M 16/00 Devices for influencing the respiratory system of patients by gas treatment, e.g. mouth-to-mouth respiration; Tracheal tubes (stimulating the respiratory movement by mechanical, pneumatic or electrical means, iron lungs combined with gas breathing means [A61H 31/00](#) ; { supine patient supports therefor [A61H 31/008](#)} ; respiratory apparatus in general [A62B](#); respirators for working under water [B63C 11/00](#))**
- WARNING**
- Groups [A61M 16/0003](#) - [A61M 16/0012](#), [A61M 16/006](#) - [A61M 16/0063](#), [A61M 16/0069](#), [A61M 16/0081](#) - [A61M 16/0084](#), [A61M 16/0093](#), [A61M 16/0402](#) - [A61M 16/0431](#), [A61M 16/0436](#) - [A61M 16/0438](#), [A61M 16/0443](#) - [A61M 16/0459](#), [A61M 16/0475](#) - [A61M 16/0486](#), [A61M 16/049](#) - [A61M 16/0495](#), [A61M 16/0605](#) - [A61M 16/0655](#), [A61M 16/0672](#) - [A61M 16/0677](#), [A61M 16/0688](#) - [A61M 16/0694](#), [A61M 16/0825](#) - [A61M 16/0866](#), [A61M 16/0883](#) - [A61M 16/0891](#), [A61M 16/1005](#) - [A61M 16/1015](#), [A61M 16/106](#) - [A61M 16/107](#), [A61M 16/108](#) - [A61M 16/1095](#), [A61M 16/122](#) - [A61M 16/127](#), [A61M 16/142](#) - [A61M 16/147](#), [A61M 16/161](#), [A61M 16/164](#) - [A61M 16/168](#), [A61M 16/201](#) - [A61M 16/207](#), [A61M 16/209](#) are incomplete pending reclassification of documents from group [A61M 16/00](#) or respective subgroup.
- Until reclassification is complete, groups [A61M 16/00](#) or respective subgroup and [A61M 16/0003](#) - [A61M 16/0012](#), [A61M 16/006](#) - [A61M 16/0063](#), [A61M 16/0069](#), [A61M 16/0081](#) - [A61M 16/0084](#), [A61M 16/0093](#), [A61M 16/0402](#) - [A61M 16/0431](#), [A61M 16/0436](#) - [A61M 16/0438](#), [A61M 16/0443](#) - [A61M 16/0459](#), [A61M 16/0475](#) - [A61M 16/0486](#), [A61M 16/049](#) - [A61M 16/0495](#), [A61M 16/0605](#) - [A61M 16/0655](#), [A61M 16/0672](#) - [A61M 16/0677](#), [A61M 16/0688](#) - [A61M 16/0694](#), [A61M 16/0825](#) - [A61M 16/0866](#), [A61M 16/0883](#) - [A61M 16/0891](#), [A61M 16/1005](#) - [A61M 16/1015](#), [A61M 16/106](#) - [A61M 16/107](#), [A61M 16/108](#) - [A61M 16/1095](#), [A61M 16/122](#) - [A61M 16/127](#), [A61M 16/142](#) - [A61M 16/147](#), [A61M 16/161](#), [A61M 16/164](#) - [A61M 16/168](#), [A61M 16/201](#) - [A61M 16/207](#), [A61M 16/209](#) should be considered in order to perform a complete search.
- U A61M 16/22
- Carbon dioxide-absorbing devices; {Other means for removing carbon dioxide} (cartridges with absorbing substances for respiratory apparatus [A62B 19/00](#))
- U A61M 21/00 Other devices or methods to cause a change in the state of consciousness; Devices for producing or ending sleep by mechanical, optical, or acoustical means, e.g. for hypnosis**

- A61M 21/02
- for inducing sleep or relaxation, e.g. by direct nerve stimulation, hypnosis, analgesia (for massage [A61H](#) ; electrotherapy [A61N](#) , e.g. applying alternating or intermittent electric currents for producing anaesthesia [A61N1/34](#) [A61N 1/36021](#))
- A61M 27/00** **Drainage appliances for wounds or the like, {i.e. wound drains, implanted drains}{implements for holding wounds open [A61B 17/02](#) ; { middle ear drainage [A61F 11/002](#) ; other drainage devices [A61M 1/00](#)}**
- A61M 35/00** **Devices for applying, {e.g. spreading}, media, e.g. remedies, on the human body (devices for handling toilet or cosmetic substances [A45D](#) ; absorbent pads, e.g. swabs, [A61F 13/15](#)); {Introducing media, e.g. remedies, into the body by diffusion through the skin (using salt baths [A61H 33/04](#))}**
- U A61M 39/00** **Tubes, tube connectors, tube couplings, valves, access sites or the like, specially adapted for medical use (for respiratory devices, e.g. tracheal tubes [A61M 16/00](#) ; artificial heart valves [A61F 2/24](#))**
- WARNING**
Not complete, see [A61J 1/14](#)
- U A61M 39/02** • Access sites
- A61M 39/0208** • • {Subcutaneous access sites for injecting or removing fluids (transcutaneous access sites [A61M1/00S](#)[A61M 39/0247](#) ; implantable infusion devices [A61M 5/14276](#))}
- A61M 2202/00** **Special media to be introduced, removed or treated (~~applying radioactive material~~ [A61M36/00](#)~~applying radioactive material~~ [A61N 5/1028](#))**
- NOTE**
- The classification symbols [A61M 2202/0007](#) to [A61M 2202/0092](#) are not listed first when assigned to patent documents. They are used only when associated to other subgroups of [A61M 2202/00](#) in combination sets
Example: [A61M 2202/0417](#) , [A61M 2202/0057](#)
- A61M 2202/02** • Gases (smoke evacuating [A61B2218/0008](#)[A61B 2218/008](#))
- U A61M 2202/0266** • • Nitrogen (N)
- A61M 2202/0275** • • • Nitric oxide (~~[NO]~~)
- U A61M 2205/00** **General characteristics of the apparatus**
- U A61M 2205/02** • characterised by a particular materials
- U A61M 2205/0272** • • Electro-active or magneto-active materials
- A61M 2205/0283** • • • Electro-active polymers (~~[EAP]~~)
- U A61M 2205/50** • with microprocessors or computers
- U A61M 2205/502** • • User interfaces, e.g. screens or keyboards
- A61M 2205/507** • • • Head Mounted Displays (~~[HMD]~~)
- U A61M 2230/00** **Measuring parameters of the user**
- NOTE**
- +A following the symbol means that the parameter is used for controlling an apparatus
The classification symbol [A61M 2230/005](#) is not listed first when assigned to patent documents. It is used

only when associated to other subgroups of [A61M 2230/00](#)
. Example: [A61M 2230/06](#) + [A61M 2230/005](#)

A61M 2230/18 · Rapid eye-movements [\(REM\)](#)

Project: N/A (A61N)

U A61N 1/00 Electrotherapy; Circuits therefor ([A61N 2/00](#) takes precedence; irradiation apparatus [A61N 5/00](#))

- U A61N 1/02 · Details
- U A61N 1/04 · · Electrodes {(electrosurgical electrodes [A61B 18/14](#))}
- U A61N 1/0404 · · · {for external use ([A61N 1/06](#) takes precedence)}
- U A61N 1/0408 · · · · {Use-related aspects}
- A61N 1/0452 · · · · · {Specially adapted for transcutaneous muscle stimulation [\(TMS\)](#)}
- A61N 1/0456 · · · · · {Specially adapted for transcutaneous electrical nerve stimulation [\(TENS\)](#)}

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 5/10 · 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 5/1048 · · {Monitoring, verifying, controlling systems and methods}
- U A61N 5/1049 · · · {for verifying the position of the patient with respect to the radiation beam}
- A61N 2005/1052 · · · · {using positron emission tomography [\(PET\)](#) single photon emission computer tomography [\(SPECT\)](#) imaging}
- A61N 2005/1055 · · · · {using magnetic resonance imaging [\(MRI\)](#)}
- U A61N 2005/1061 · · · · {using an x-ray imaging system having a separate imaging source}
- A61N 2005/1062 · · · · · {using virtual X-ray images, e.g. digitally reconstructed radiographs [\(DRR\)](#)}

Project: N/A (A61Q)

A61Q 7/00 Preparations for affecting hair growth (preparations with therapeutic activity [A61P17/14](#))

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: Preparations with therapeutic activities [A61P 17/14](#)

A61Q 17/00 Barrier preparations; Preparations brought into direct contact with the skin for affording protection against external influences, e.g. sunlight, X-rays or other harmful rays, corrosive materials, bacteria or insect stings (chemical means for combating harmful chemical agents [A62D 3/00](#)) ~~Note: drugs for treating burns [A61P17/02](#)~~

Project: N/A (A62B)

A62B 17/00

Protective clothing affording protection against heat or harmful chemical agents or for use at high altitudes (protective clothing for work or sport [A41D 13/00](#), {e.g. overalls [A41D 13/02](#), surgical gowns [A41D 13/12](#); materials for protecting clothing [A41D 31/0011](#)}; protecting eyes or ears [A61F 9/00](#); composition of materials for protective clothing [A62D 5/00](#); life-saving garments for use at sea [B63C](#); diving suits [B63C 11/02](#); flying suits, {anti-g suits} [B64D 10/00](#); space suits [B64G 6/00](#); bullet-proof clothing [F41H 1/02](#))

Project: N/A (A62C)

A62C 31/00

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

Project: N/A (A63B)

U A63B 5/00

Apparatus for jumping (mats for jumping [A63B 6/00](#) ; for racing or riding sports, e.g. hurdles [A63K](#))

U A63B 5/02

- High-jumping posts

A63B 5/04

- Ropes {or similar devices} therefor

U A63B 5/06

- Vaulting poles; {Take-off boxes therefor}

A63B 5/22

- Foot obstacles for skipping, {e.g. horizontally-rotating obstacles}

A63B 15/00

Clubs, {e.g. for swinging exercises}

WARNING

Documents are being reclassified to [A63B 21/072](#)

U A63B 21/00

Exercising apparatus for developing or strengthening the muscles or joints of the body by working against a counterforce, with or without measuring devices (electric or electronic controls therefor [A63B 24/00](#) ; measuring muscular strength [A61B 5/22](#))

A63B 21/0004

- {Exercise device moving as a whole during exercise, bar bells and dumb bells ~~[A63B 21/072](#) t.p., on wheels [A63B 22/20](#) ([A63B 21/072](#) takes precedence, on wheels [A63B 22/20](#))}~~

A63B 21/00043

- {exercise device consisting of a pair of interfaces with the user connected by flexible elements, e.g. two handles connected by elastic bands, skipping ropes ~~[A63B 5/20](#) t.p., resilient element [A63B 21/02](#) ([A63B 5/20](#) takes precedence, resilient element [A63B 21/02](#))}~~

WARNING

not complete, pending the completion of a reclassification

A63B 21/00047

- Exercise device not moving during use, benches ~~[A63B 21/00087](#) t.p., isometric exercising [A63B 21/0023](#) , step exerciser [A63B 23/0458](#) t.p., walk exerciser [A63B 23/0464](#) t.p.] ([A63B 21/00087](#) takes precedence, isometric exercising [A63B 21/0023](#) , step exerciser [A63B 23/0458](#) takes precedence, walk exerciser [A63B 23/0464](#) takes precedence)~~

U A63B 21/00079

- {details of the interface with the user related to strength training}

WARNING

not complete, pending the completion of a reclassification

- U A63B 21/00083
- {kind of exercise interface; chairs and stools with exercising means [A47C 9/002](#)}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00105
- • {exercise mats with or without hand or foot grips for personal use, e.g. for Yoga or supine floor exercises; mats for absorbing shocks [A63B 6/00 t.p.](#); [\(A63B 6/00 takes precedence\)](#)}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00109
- • {contoured to fit to specific body parts; e.g. back, knee or neck support; attachment on user's body [A63B 21/00138 t.p.](#); [\(A63B 21/00138 takes precedence\)](#); handles, pedals, bar or platform [A63B 21/00094 t.p.](#); [\(A63B 21/00094 takes precedence\)](#)}
- WARNING
not complete, pending the completion of a reclassification
- U A63B 21/00112
- {movement of the interface}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00116
- • {free movement, unrestricted apart from by the resistance [\(A63B 21/072 takes precedence; A63B 21/00043 takes precedence\)](#); [A63B 21/072 t.p.](#); [A63B 21/00043 t.p.](#)}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/0013
- {direct manipulation of the resistance, dumb bells, bar bells or the like [A63B 21/072 t.p.](#); [\(A63B 21/072 takes precedence\)](#)}
- WARNING
not complete, pending the completion of a reclassification
- A63B 21/00134
- • {resisting device worn on the body; weights worn on user's body [A63B 21/065 t.p.](#); [\(A63B 21/065 takes precedence\)](#)}
- A63B 21/00138
- {Attachments of exercising apparatus to the body of the user, e.g. using special belts, shoes or gloves, weights worn on user's body [A63B 21/065 t.p.](#); [exoskeletons B25J 9/0006](#); [\(A63B 21/065 takes precedence, exoskeletons B25J 9/0006\)](#)}
- U A63B 21/012
- using frictional force-resisters {(electromagnetically-controlled brakes [A63B 21/0056](#))}
- A63B 21/018
- • including a rope {or other flexible element} moving relative to the surface of elements
- U A63B 21/02
- using resilient force-resisters
- A63B 21/045
- • having torsion {or bending, flexion} element
- U A63B 21/06
- User-manipulated weights
- A63B 21/072
- • Dumb-bells, bar-bells or the like, {also other free movable weights, e.g. weight discs having an integral peripheral handle}
- U A63B 21/078
- • Devices for bench press exercises; {Supports, guiding means, drop-limiting means for bar-bells, combined or not combined with benches}
- A63B 21/22
- Resisting devices with rotary bodies, {e.g. by overcoming gyroscopic forces [\(A63B 21/0608 takes precedence\)](#)}

- 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 2022/0097 • {for avoiding blood stagnations, e.g. Deep Vein Thrombosis ([DVT](#))}
- A63B 22/04 • with movable {multiple} steps, {i.e. more than one step per limb, e.g. steps mounted on endless loops, endless ladders (steppers with cantilevered support elements pivoting about an axis [A63B 22/0048](#))}
- A63B 22/06 • with {support elements performing a} rotating cycling movement, {i.e. a closed path movement}{support stands for bicycles [A63B 69/16](#) ; unicycles [B62K 1/00](#)}
- A63B 22/08 • - for the legs, {i.e. only for the legs}
- A63B 22/18 • with elements, {i.e. platforms,} having a circulating, {nutating} or rotating movement, generated by oscillating movement of the user, {e.g. platforms wobbling on a centrally arranged spherical support}{hoop exercising apparatus [A63B 19/00](#) ; { eccentric weights put into orbital motion by nutating movement of the user [A63B 21/0608](#) ; pots rotating or rocking by moving the whole body [A63G 23/00](#))}
- A63B 22/20 • using rollers, wheels, castors or the like, {e.g. gliding means,} to be moved over the floor or other surface, {e.g. guide tracks,} during exercising
- U A63B 24/00** **Electric or electronic controls for exercising apparatus of preceding groups; {Controlling or monitoring of exercises, sportive games, training or athletic performances}**
- U A63B 25/00** **Stilts or the like**
- U A63B 25/08 • Hopping-sticks, e.g. pogo sticks; {Hopping apparatus with a single resilient support (devices for balloon jumping [A63B 5/166](#))}
- U A63B 27/00** **Apparatus for climbing poles, trees, or the like ({ropes [A63B 29/02](#)} ; safety belts for climbers [A62B 35/00](#) ; { climbing irons permanently attached to fixed structures [E06C 9/04](#))}**
- A63B 27/02 • Climbing devices for round poles {or trees} attachable to the feet
- A63B 35/00** **Swimming framework, {i.e. apparatus fixed to or held by the swimmer or diver}, with driving mechanisms operated by the swimmer or by a motor (other vessels or like floating structures for pleasure or sport [B63B 35/71](#) , [B63B 35/73](#) ; divers` sleds or like craft [B63C 11/46](#))**
- NOTE**
- References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:
- Effecting propulsion of vessels by muscle power
[B63H 16/00](#)
- U A63B 37/00** **Solid balls; {Rigid hollow balls}; Marbles (heavy throwing balls [A63B 65/06](#))**

- U A63B 37/0003
- {Golf balls (for practising drives [A63B 69/3655](#) , for practising puts [A63B 69/3688](#))}
- WARNING
Subgroups of [A63B 37/0003](#) are not complete pending reclassification; see also this group
- U A63B 37/0023
- · {Covers}
- U A63B 37/0029
- · · {Physical properties}
- A63B 37/0036
- · · · {Melt flow rate ([MFR](#))}
- U A63B 37/0038
- · {Intermediate layers, e.g. inner cover, outer core, mantle}
- U A63B 37/004
- · · {Physical properties}
- A63B 37/0048
- · · · {Melt flow rate ([MFR](#))}
- U A63B 37/007
- · {Characteristics of the ball as a whole}
- U A63B 37/0077
- · · {Physical properties}
- A63B 37/0093
- · · · {Moisture vapour transmission rate ([MVTR](#))}
- A63B 37/12
- Special coverings, {i.e. outer layer material ([A63B 37/0001](#) , [A63B 37/0003](#) take precedence)}
- A63B 39/00**
- Hollow non-inflatable balls, {i.e. having no valves (rigid balls [A63B 37/00](#))}**
- U A63B 39/02
- Arrangements for maintaining the pressure
- U A63B 39/04
- · Pricking-balls; {Tools for blowing them up}
- U A63B 43/00**
- Balls with special arrangements**
- U A63B 43/06
- with illuminating devices; {with reflective surfaces}
- A63B 47/00**
- Devices for handling or treating balls, {e.g. for holding or carrying balls (for maintaining ball pressure [A63B 39/02](#) ; ball holders combined with racket presses [A63B 49/16](#) , with racket covers or cases [A63B 49/18](#) , fitted on golf bags [A63B 55/02](#))}**
- U A63B 49/00**
- Tennis, badminton, or like rackets**
- WARNING
Group [A63B 49/007](#), [A63B 49/06](#) are not complete pending a reclassification. See also this group, its subgroups and other groups of [A63B](#)
- A63B 49/16
- Presses, {e.g. with ball holders (ball holders in general [A63B 47/00](#))}
- U A63B 51/00**
- Stringing tennis rackets {(string guides on frames [A63B 49/002](#) ; clamping strings on frames [A63B 49/005](#))}**
- U A63B 51/02
- Strings; String substitutes; {Products applied on strings, e.g. for protection against humidity or wear (ropes or cables in general [D07B](#); yarns or threads for use in sports applications [D02G 3/444](#) ; mechanical methods or apparatus in the manufacture of artificial filaments, threads, fibres, bristles or ribbons [D01D](#); strings for musical instruments [G10D 3/10](#))}
- A63B 51/14
- Devices for stringing, {e.g. controlling the tension of the string during stringing}
- U A63B 53/00**
- Golf clubs {(cleaning or maintenance [A63B 57/0087](#) ; measuring, verifying or correcting golf-club characteristics [A63B 59/0074](#) ; clubs or attachments on clubs for golf training [A63B 69/3632](#))}**
- A63B 53/10
- {Shafts, e.g.} non-metallic shafts {(metallic [A63B 53/12](#))}
- U A63B 55/00**
- Bags for golf clubs; Stands for golf clubs for use on the course**
- A63B 55/02
- with special {or detachable} receptacles for the balls
- A63B 55/04
- Supports, {e.g.} with devices for anchoring to the ground

- A63B 55/10
- Stands for golf clubs, {e.g.} for use on the course; {Golf club holders, racks or presses}
- U A63B 59/00** **Bats, rackets, or the like, for other games (bats with a ball tethered thereto [A63B 67/20](#)); {Hand-held throwing or catching aids; Details or accessories of bats, rackets or the like, not limited to one of the groups [A63B 49/00](#) to [A63B 57/00](#) , or not otherwise provided for}**
- U A63B 59/02
- for lacrosse, pelota or similar games; {Bats or rackets having means for catching or holding a ball, e.g. pockets, netting, adhesive type surface; Hand-held throwing or catching aids (juggling games with integral catching arrangements [A63B 67/083](#))}
- U A63B 59/10
- for croquet; {Mallet-form bats (polo mallets [A63B 59/16](#))}
- A63B 59/12
- for hockey, {e.g. hurley sticks}
- A63B 59/18
- Circular {or similar planar} bats for other games {(not covered by groups [A63B 59/02](#) to [A63B 59/16](#))}
- A63B 61/00** **Tennis nets or accessories for tennis or like games, {e.g. volley-ball (devices for holding or carrying balls [A63B 47/00](#) ; for table tennis [A63B 67/04](#))}**
- U A63B 61/02
- Posts; Revolvably-mounted posts; {Straining or adjusting devices on the posts, e.g. coin- or time operated}
- A63B 61/04
- Straining or adjusting devices for nets, {e.g. centre strainers, single-double adjusters, net height meters (straining or adjusting devices on the posts [A63B 61/02](#))}
- U A63B 63/00** **Targets or goals for ball games (golf cups [A63B 57/00](#))**
- U A63B 63/06
- Revolving targets; {Moving targets, e.g. moving or revolving on impact}
- A63B 63/08
- with {substantially} horizontal opening for ball, e.g. for basketball {([A63B 57/0056](#) , [A63B 63/06](#) take precedence)}
- U A63B 65/00** **Implements for throwing (throwing toys [A63H 33/18](#) ; throwing weapons [F41B](#)); {Mechanical projectors, e.g. using spring force}**
- U A63B 65/02
- Spears or the like; {Javelins (darts [F42B 6/003](#))}
- A63B 65/06
- Heavy throwing-balls, {i.e. "medicine balls", shots, weights or stones for putting}
- U A63B 65/08
- Boomerangs; {Throwing apparatus therefor}
- U A63B 67/00** **Miscellaneous sporting games**
- A63B 67/02
- Special golf games, e.g. miniature golf, {e.g. golf putting games played on putting tracks; putting practice apparatus having an elongated platform as a putting track (mats for golf practice [A63B 69/3661](#))}
- A63B 67/06
- Ring or disc tossing games, {e.g. quoits; Throwing or tossing games, e.g. using balls; Games for manually rolling balls, e.g. marbles}
- U A63B 67/08
- Juggling or spinning ball games played as games of skill; {Juggling games (games using tethered bodies, e.g. balls [A63B 67/10](#) , [A63B 67/20](#))}
- U A63B 67/10
- Games with thread-suspended or swingably-mounted bodies, e.g. balls, pointed bodies shaped as birds, animals, or the like, for aiming at and hitting targets (games using a bat with a ball tethered thereto [A63B 67/20](#) ; pin games with tethered balls [A63D 7/00](#)); {Games using tethered bodies, e.g. balls, not otherwise provided for}
- A63B 67/12
- Flip games, {i.e. games using playing bodies being flipped or twirled up in the air, e.g. for hitting them with a bat; Games of tip-cat}
- A63B 67/16
- Tethered aerial top or spinner games, {i.e. diabolo games}
- A63B 67/20
- Games using a bat {or racket} with a {body, e.g. a} ball tethered thereto

- A63B 67/22
- the bat {or racket} having one or more holes {or pockets} therein, {e.g. for catching or collecting the ball; the bat comprising a ring or cup having a handle}
- U A63B 69/00 Training appliances or apparatus for special sports (training of parachutists [B64D 23/00](#))**
- A63B 69/02
- for fencing, {e.g. means for indicating hits (fencing foils, sabres or epees [F41B 13/02](#))}
- U A63B 69/12
- Arrangements in swimming pools for teaching swimming {or for training}
- U A63B 69/14
- Teaching frames for swimming; {Swimming boards (life-buoys, life-belts [B63C 9/08](#))}
- A63B 69/16
- for cycling, {i.e. arrangements on or for real bicycles (home-trainers [A63B 23/0476](#))}
- A63B 69/20
- Punching balls, {e.g. for boxing; Other boxing training devices, e.g. bags ([A63B 69/34](#) takes precedence)}
- A63B 69/34
- {Dummies, e.g.} boxing or {American-} football dummies
- U A63B 71/00 Games or sports accessories not covered in groups [A63B 1/00](#) to [A63B 69/00](#)(starting appliances [A63K 3/02](#))**
- A63B 71/06
- Indicating or scoring devices for games or players, {or for other sports activities}
- 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 71/12
- for the body, {e.g. shoulders}, or the legs {([A63B 71/081](#) takes precedence)}
- A63B 71/14
- for the hands e.g. baseball, boxing or golfing gloves (archer`s finger tabs [F41B5/16](#)[F41B 5/1473](#))

Project: N/A (A63F)

- U A63F 3/02
- Chess; Similar board games
- A63F 3/022
- {Recording or reproducing chess games (data processing for game playing [G06F19/00B](#)[G06F 19/00](#); teaching games [G09B 19/22](#))}
- U A63F 7/22
- in which the playing bodies are projected through the air {(not used, see subgroups of [A63F 7/06](#))}
- U A63F 7/36
- Constructional details not covered by groups [A63F 7/24](#) to [A63F 7/34](#), { i.e. constructional details of rolling boards, rims or play tables}, e.g. frame, game boards, guide tracks,
- A63F 7/38
- Playing surfaces movable during play, { i.e. games played on a non-stationary surface, e.g. the ball intended to be in permanent motion (balls to be shaken or rolled in small boxes [A63F 7/04](#); eccentric weights put into orbital motion by nutating movement of the user [A63B 21/0608](#))}
- A63F 9/24
- {Electric games;} Games using electronic circuits not otherwise provided for {(video games [A63F 13/00](#), computers for game playing per se [G06F19/00B](#) [G06F 19/00](#); computerized gaming systems [G07F 17/32](#))}

Project: N/A (A63J)

- A63J 5/00
- Auxiliaries for producing special effects on stages, or in circuses or arenas ([illuminating arrangements therefor F21P5/00](#)[illuminating arrangements therefor F21S](#))**

Project: N/A (B01D)

- U B01D 1/00** Evaporating ({evaporation in general, e.g. of liquids for gas phase reactions [B01B 1/005](#) ; removal of incrustation [B08B](#); preparation of starch [C08B 30/00](#) ; sugar industry [C13](#); prevention of incrustation [C23F](#); drying solid materials or objects by evaporating liquids therefrom [F26](#))
- U B01D 1/06
B01D 1/08
B01D 1/10
B01D 1/14
U B01D 1/30
- Evaporators with vertical tubes
 - • with short tubes ([B01D 1/12](#) {[B01D 1/065](#)} take precedence)
 - • with long tubes, e.g. Kestner evaporators ([B01D 1/12](#) {[B01D 1/065](#)} take precedence)
 - with heated gases or vapours {or liquids} in contact with the liquid
 - Accessories for evaporators; {Constructional details thereof}
- U B01D 11/00** **Solvent extraction**
B01D 11/02
- of solids
- NOTE
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 15/00** **Separating processes involving the treatment of liquids with solid sorbents (using liquid sorbents [B01D 11/00](#) ; ion exchange processes or materials, sorbent materials in general [B01J](#), e.g. sorbents for chromatography [B01J 20/281](#) ; for investigating or analysing materials [G01N 30/00](#)); Apparatus therefor**
- U B01D 15/08
- Selective adsorption, e.g. chromatography
- NOTE
- In order that group [B01D 15/08](#) may provide a basis for a complete search with respect to chromatography in general, all subject matter of general interest is classified in this group even if it is classified primarily in the application-oriented groups, for example dairy products [A23C 9/148](#) , treatment of blood, e.g. [A61M 1/36](#) , optically active organic compounds [C07B 57/00](#) or peptides [C07K 1/16](#)
- U B01D 15/26
U B01D 15/30
B01D 15/305
- • characterised by the separation mechanism
 - • • Partition chromatography
 - • • • {Hydrophilic interaction chromatography ([HILIC](#))}
- B01D 17/00** **Separation of liquids, not provided for elsewhere, e.g. by thermal diffusion (devices for separating or removing fatty or oily substances or similar floating material from water, waste water, or sewage [C02F 1/40](#) ; cleaning or keeping clear the surface of open water from oil or like materials [E02B 15/04](#) ; arrangements for separating lubricants from refrigerants [F25B 43/02](#))**
- NOTE
in this group, documents are classified and arranged according to a combination system limited to the symbols of the group and subgroups of [B01D 17/00](#) . In this system each combination is indicated, also of subgroups depending from the same group, e.g. [B01D 17/041](#) + [B01D 17/042](#)

- U B01D 21/00** **Separation of suspended solid particles from liquids by sedimentation** (**{separation of ores or the like by sedimentation [B03B 5/48](#) to [B03B 5/60](#)** ; **differential sedimentation [B03D 3/00](#) ; {purification of water, waste water, sewage or sludge [C02F](#), e.g.} devices for separating or removing fatty or oily substances or similar floating material from water, waste water or sewage [C02F 1/40](#))**
- WARNING
The following groups are not complete: [B01D 21/0006](#), see also [B01D 21/00B01D 21/0018](#), see also [B01D 21/00B01D 21/0054](#) , see also [B01D 21/00B01D 21/0057](#) , see also [B01D 21/00B01D 21/003](#), see also [B01D 21/00B01D 21/0036](#) , see also [B01D 21/00B01D 21/0087](#), see also [B01D 21/00B01D 21/2416](#) , see also [B01D 21/2405B01D 21/2422](#) , see also [B01D 21/2405B01D 21/2427](#), see also [B01D 21/24B01D 21/2433](#), see also [B01D 21/24B01D 21/262](#), see also [B01D 21/26B01D 21/265](#), see also [B01D 21/26B01D 21/267](#), see also [B01D 21/26B01D 21/28](#) , see also [B01D 21/28B01D 21/302](#) , see also [B01D 21/30B01D21/30B](#), see also [B01D 21/30](#)]
- U B01D 21/30** • Control equipment
- WARNING
Groups [B01D 21/302](#) to [B01D 21/34](#) are not complete, see also [B01D 21/30](#)
- U B01D 21/32** • • Density control of clear liquid or sediment, e.g. optical control; {Control of physical properties}
- U B01D 21/34** • • Regulation of feed distribution; Regulation of liquid level; {Control of process parameters}
- U B01D 25/00** **Filters formed by clamping together several filtering elements or parts of such elements (disc filters [B01D 29/39](#))**
- WARNING
See WARNING after subclass title, particularly items (7), (8), (12), (13) and (14)
- U B01D 25/30** • Feeding devices; {Discharge devices}
- U B01D 25/32** • Removal of the filter cakes
- B01D 25/34** • • by moving, {e.g. rotating,} the filter elements ([B01D 25/172](#) , [B01D 25/19](#) take precedence)}
- U B01D 27/00** **Cartridge filters of the throw-away type**
- WARNING
See WARNING after subclass title, particularly item (14)
- B01D 27/02** • with cartridges made from a mass of loose {granular or fibrous} material
- U B01D 29/00** **Other filters with filtering elements stationary during filtration, e.g. pressure or suction filters, or filtering elements therefor** (**{[B01D 24/00](#) , [B01D 25/00](#) and [B01D 27/00](#) take precedence}**)
- WARNING
See WARNING after subclass title, particularly items (7), (8), (9), (10) ,(12) and (14)
- B01D 29/11** • with bag, cage, hose, tube, sleeve or like filtering elements
- NOTE
If the construction of the filtering element itself is of minor importance the document is classified in the subgroups [B01D 29/11](#) , [B01D 29/114](#) and

[B01D 29/117](#) , otherwise in the subgroups [B01D 29/13](#) to ~~[B01D29/37](#)~~
[B01D 29/356](#)

- U B01D 29/62 · Regenerating the filter material in the filter (devices for taking out of action one or more units of multi-unit filters, e.g. for regeneration, [B01D 35/12](#))
- B01D 29/64 · · by scrapers, brushes, {nozzles}, or the like, acting on the cake side of the filtering element
- 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](#) to [B01D 24/36](#) ; centrifuges [B04B](#))**
- WARNING
See WARNING after subclass title, particularly items (7), (8), (11) and (14)
- U B01D 33/44 · Regenerating the filter material in the filter (devices for taking out of action one or more units of multi-unit filters, e.g. for regeneration, [B01D 35/12](#))
- B01D 33/46 · · by scrapers, brushes {nozzles} or the like acting on the cake-side of the filtering element {([B01D 33/503](#) takes precedence)}
- U B01D 39/00** **Filtering material for liquid or gaseous fluids**
- U B01D 39/14 · Other self-supporting filtering material; {Other filtering material (non-woven fabrics in general [D04H 3/00](#))}
- B01D 39/20 · · of inorganic material, e.g. asbestos paper, metallic filtering material of non-woven wires (porous ceramic material {[C04B 38/00](#)} ; sintering metals [C22C 1/04](#) ; { making porous sintered metal bodies [B22F 3/10](#) , honeycomb filters [B01D 46/2418](#) , materials used for filtering exhaust gases of an internal combustion engine ~~[F01N/022](#)~~[F01N 3/022](#) , ceramic honeycomb structures [C04B 38/0006](#))}
- U B01D 45/00** **Separating dispersed particles from gases or vapours by gravity, inertia, or centrifugal forces**
- U B01D 45/12 · by centrifugal forces (centrifuges [B04B](#) ; cyclones [B04C](#))
- B01D 45/16 · · generated by the winding course of the gas stream, {the centrifugal forces being generated solely or partly by mechanical means, e.g. fixed swirl vanes}
- B01D 46/00** **Filters {i.e. particle separators} or filtering processes specially modified for separating dispersed particles from gases or vapours (filtering elements [B01D 23/00](#) to [B01D 35/00](#) ; filtering material [B01D 39/00](#) ; their regeneration outside the filters [B01D 41/00](#))**
- B01D 46/10 · Particle separators, e.g. dust precipitators, using filter plates, sheets, or pads having plane surfaces, {i.e. axial filtering}
- B01D 46/52 · Particle separators, e.g. dust precipitators, using filters embodying folded {corrugated or wound sheet} material
- U B01D 53/00** **Separation of gases or vapours; Recovering vapours of volatile solvents from gases; Chemical or biological purification of waste gases, e.g. engine exhaust gases, smoke, fumes, flue gases, aerosols, (recovery of volatile solvents by condensation [B01D 5/00](#) ; sublimation [B01D 7/00](#) ; cold traps, cold baffles [B01D 8/00](#) ; working-up undefined gaseous mixtures obtained by cracking hydrocarbon oils [C10G 70/00](#) ; cleaning coal gas [C10K](#) ; working-up of natural gas, or synthetic natural gas, [C10L 3/10](#) ; separation of difficult-to-condense gases or air by liquefaction [F25J](#) ; for investigating materials [G01N 30/00](#))**
- NOTE
Group [B01D 53/34](#) takes precedence over groups [B01D 53/02](#) to [B01D 53/32](#)
- U B01D 53/34 · Chemical or biological purification of waste gases

- B01D 53/92
- • of engine exhaust gases (~~exhaust{or silencing}apparatus{for internal combustion engines, machines or engines in general}~~, having means for purifying, ~~{rendering innocuous}~~ or otherwise treating exhaust gases **F01N 3/00***exhaust {or silencing} apparatus {for internal combustion engines, machines or engines in general}, having means for purifying, {rendering innocuous} or otherwise treating exhaust gases F01N 3/00*)
- U B01D 53/94
- • • by catalytic processes
- U B01D 53/9404
- • • • {Removing only nitrogen compounds}
- U B01D 53/9409
- • • • • {Nitrogen oxides}
- U B01D 53/9413
- • • • • • {Processes characterised by a specific catalyst}
- WARNING
- Groups [B01D 53/9418](#) to [B01D 53/9427](#) are not complete pending a reorganisation. See also [B01D 53/9413](#)
- B01D 53/9418
- • • • • • {for removing nitrogen oxides by selective catalytic reduction (~~{SCR}~~) using a reducing agent in a lean exhaust gas}
- B01D 53/944
- • • • {Simultaneously removing carbon monoxide, hydrocarbons or carbon making use of oxidation catalysts (~~three-way-catalysts (TWC)~~ **B01D 53/9445***three-way-catalysts [TWC] B01D 53/9445*)}
- B01D 53/9445
- • • • {Simultaneously removing carbon monoxide, hydrocarbons or nitrogen oxides making use of three-way catalysts (~~{TWC}~~) or four-way-catalysts (~~{FWC}~~)}
- WARNING
- Groups [B01D 53/945](#) and [B01D 53/9454](#) are not complete pending a reorganisation. See also [B01D 53/9445](#)
- B01D 61/00**
- Processes of separation using semi-permeable membranes, e.g. dialysis, osmosis, ultrafiltration; Apparatus, accessories or auxiliary operations specially adapted therefor**
- NOTE
- In groups [B01D 61/00](#) to [B01D 61/58](#) it is desirable to add the indexing codes relating to process operations and control chosen from groups [B01D 2311/00](#) to **~~B01D2311/26Z~~***B01D 2311/2696*,
to details relating to membrane modules and apparatus indexing codes chosen from [B01D 2313/00](#) to [B01D 2313/90](#) ,
to details relating to the membrane module operation indexing codes chosen from [B01D 2315/00](#) to [B01D 2315/16](#) ,
to details relating to the module arrangement within a plant or an apparatus indexing codes chosen from [B01D 2317/00](#) to [B01D 2317/08](#) and
to details relating to the membrane assembly within one housing indexing codes chosen from [B01D 2319/00](#) to [B01D 2319/06](#)
- U B01D 61/02
- Reverse osmosis; Hyperfiltration; {Nanofiltration}
- U B01D 61/24
- Dialysis; {Membrane extraction (dialysate solution flow [A61M 1/1656](#))}
- U B01D 63/00**
- Apparatus in general for separation processes using semi-permeable membranes**
- NOTE
- In groups [B01D 63/00](#) to [B01D 63/16](#) it is desirable to add the indexing codes relating to membrane modules and apparatus chosen from groups [B01D 2313/00](#) to [B01D 2313/90](#) ,
to details relating to the membrane module operation indexing codes chosen from [B01D 2315/00](#) to [B01D 2315/16](#) ,

to details relating to the module arrangement within a plant or an apparatus indexing codes chosen from [B01D 2317/00](#) to [B01D 2317/08](#) and to details relating to the membrane assembly within one housing indexing codes are chosen from [B01D 2319/00](#) to [B01D 2319/06](#)

- U B01D 63/10 · Spiral-wound membrane modules
B01D 63/106 · · {Anti-Telescopic-Devices ~~([ATD])~~}
- U **B01D 65/00** **Accessories or auxiliary operations, in general, for separation processes or apparatus using semi-permeable membranes**
B01D 65/02 · Membrane cleaning or sterilisation ~~{~~; Membrane regeneration
- NOTE
In group [B01D 65/02](#) it is desirable to add the indexing codes relating to membrane cleaning, regeneration, sterilization and prevention of membrane fouling chosen from groups [B01D 2321/00](#) to [B01D 2321/28](#)
- U **B01D 2323/00** **Details relating to membrane preparation**
B01D 2323/24 · Use of template or surface directing agents ~~([SDA])~~}

Project: N/A (B01F)

- U **B01F 7/00** **Mixers with rotary stirring devices in fixed receptacles, {i.e. movement of the receptacle not being meant to effect the mixing ([B01F 13/08](#) takes precedence)}; Kneaders ([B01F 13/04](#) takes precedence; {devices especially adapted for mixing foundry sand [B22C 5/04](#)})**
- U B01F 7/00658 · {Configuration of the rotating axis}
- U B01F 7/00683 · · {Construction of the axis}
- B01F 7/00691 · · · {The axis being composed of interconnected parts ~~[M1106]~~}
- U B01F 7/16 · with stirrers rotating about a substantially vertical axis
- B01F 7/28 · · with {rotary} cylinders, ~~{~~e.g. having special profile cross-section}
- B01F 9/00** **Mixers with rotating receptacles, {i.e. the rotary motion is imparted to effect the mixing} ([B01F 11/0002](#), [B01F 13/04](#) take precedence); {Mixing the contents of packages or like independent containers by rotating them}**
- U B01F 9/02 · rotating about a horizontal or inclined axis, e.g. drum mixers
- B01F 9/08 · · with {moving, e.g.} rotating stirring devices, ~~{~~i.e. moving with respect to the receptacle}
- U **B01F 11/00** **Mixers with shaking, oscillating, or vibrating mechanisms ([B01F 13/04](#) takes precedence)**
B01F 11/02 · Mixing by means of {high-frequency, e.g.} ultrasonic vibrations, ~~{~~e.g. jets impinging against a vibrating plate}
- U **B01F 13/00** **Other mixers; Mixing plant, including combinations of {mixers, e.g. of} dissimilar mixers**
- U B01F 13/0059 · {Micromixers}
- U B01F 13/0074 · · {using mixing means not otherwise provided for ([B01F 5/00](#), [B01F 7/00](#), [B01F 9/00](#), [B01F 11/00](#), [B01F 13/02](#) and [B01F 13/08](#) take precedence)}
- B01F 13/0076 · · · {using electrohydrodynamic ~~([EHD])~~ or electrokinetic ~~([EKI])~~ phenomena to mix or move the fluids}
- B01F 13/0077 · · · {using magnetohydrodynamic ~~([MHD])~~ phenomena to mix or move the fluids}
- B01F 13/0089 · · · {using coupled electrorotation ~~([CER])~~ phenomena to mix or move fluids, or to sense properties of the mixture}

- U B01F 15/00 Accessories for mixers; { Auxiliary operations or auxiliary devices; Parts or details of general application}**
- B01F 15/04 · Forming a predetermined ratio of the substances to be mixed (controlling ratio of two or more flows of fluid or fluent material [G05D 11/02](#) {; [G05D 11/00](#) takes precedence})~~{(G05D 11/00 takes precedence)}~~
- U B01F 15/06 Heating or cooling systems**
- B01F 15/063 · · {using gas or liquid injected into the material, e.g. using liquefied [C02CO₂](#) or steam}

Project: N/A (B01J)

- B01J 2/00 Processes or devices for granulating materials, {e.g. fertilisers} in general (granulating metals [B22F 9/00](#) , { granulating slag [C21B 3/06](#) } , ores or scrap [C22B 1/14](#) ; mechanical aspects of working of plastics or substances in a plastic state to make granules [B29B 9/00](#) ; processes for granulating fertilisers characterised by their chemical constitution, see the relevant groups in [C05B](#) to [C05G](#) ; chemical aspects of powdering or granulating of macromolecular substances [C08J 3/12](#)); Rendering particulate materials free flowing in general, e.g. making them hydrophobic**
- 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](#))**
- U B01J 3/06 · Processes using ultra high pressure, e.g. for the formation of diamonds; Apparatus therefor, e.g. moulds, dies ([B01J 3/04](#) takes precedence; presses in general [B30B](#))**
- B01J 3/08 · · Application of shock-waves for chemical reactions or for modifying the crystal structure of substances, {e.g. reactions carried out by explosions or in a combustion engine-type reactor}(blasting [F42D](#))
- 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 6/00 {Heat treatments such as} Calcining; Fusing {Pyrolysis (furnaces [F27D](#))}**
- U B01J 20/00 Solid sorbent compositions or filter aid compositions; Sorbents for chromatography; Processes for preparing, regenerating or reactivating thereof (use of sorbent compositions in liquid separation [B01D 15/00](#) , use of filter aid compositions [B01D 37/02](#) ; use of sorbent compositions in gas separation [B01D 53/02](#) , [B01D 53/14](#))**
- U B01J 20/22 · 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 [C07F](#))

- U B01J 20/30
- Processes for preparing, regenerating, or reactivating
- WARNING
Groups [B01J 20/3007](#) to [B01J 20/3092](#) are not complete, pending a reorganisation. See also [B01J 20/30](#)
- U B01J 20/32
- Impregnating or coating; {Solid sorbent compositions obtained from processes involving impregnating or coating}
- WARNING
Groups [B01J 20/3202](#) to [B01J 20/3297](#) are not complete, pending a reorganization. See also [B01J 20/32](#)
- U B01J 23/00
- Catalysts comprising metals or metal oxides or hydroxides, not provided for in group [B01J 21/00](#)([B01J 21/16](#) takes precedence)**
- B01J 23/002
- {Mixed oxides other than spinels, e.g. perovskite}
- NOTE
In group [B01J 23/002](#), elements constituting the exemplified mixed oxide are further indexed with [B01J 2523/00](#) as base symbol using the relevant classification symbols of [B01J 2523/00](#) to **[B01J2523/84F](#)**[B01J 2523/847](#), in numerical order without **[L01J523](#) and preceded by the sign "+", e.g. Moa Vb Tec Ox is classified as [B01J 2523/00](#) and preceded by the sign "+", e.g. Moa Vb Tec Ox is classified as [B01J 2523/00+/55+/64+/68](#)**
- U B01J 29/00
- Catalysts comprising molecular sieves {(molecular sieves 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](#) to [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](#) to [B01J 29/89](#) to identify the individual constituents of these mixtures
- U B01J 29/03
- not having base-exchange properties {([B01J 29/005](#) takes precedence)}
- B01J 29/035
- {Microporous crystalline materials not having base exchange properties, such as} silica polymorphs, e.g. silicalites
- B01J 31/00
- Catalysts comprising hydrides, coordination complexes or organic compounds (catalyst compositions used only in polymerisation reactions [C08](#); {catalytic antibodies [C12N 9/0002](#))}**
- NOTES
- Group [B01J 31/003](#) takes precedence over groups [B01J 31/02](#) to [B01J 31/24](#) (catalytic antibodies [C12N 9/0002](#))
 - In this group, the following terms or expressions are used with the meanings indicated:
 - "Organic compound" a compound in which carbon is bonded to (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 (H₂NCN), cyanogen halide (HalCN), hydrocyanic acid (HCN) isocyanic acid (HNCO) fulminic acid (HCNO) and metal carbides (MCCM) (catalysts comprising any of these exceptions or their salts B01J 27/20 to B01J 27/26):

(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 (H₂NCN), cyanogen halide (HalCN), hydrocyanic acid (HCN) isocyanic acid (HNCO) fulminic acid (HCNO) and metal carbides (MCCM) (catalysts comprising any of these exceptions or their salts B01J 27/20 to B01J 27/26).

- "Organometallic compounds" includes all organic compounds wherein a metal or metalloid atom is bonded directly to a carbon fragment, the latter being formally anionic, no further neutral ligands being coordinated to the metal and the compound requiring no further cations for charge balance; e.g. M(1-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](#) to [B01J 31/0254](#); unsaturated carbon fragments in combination with transition metals [B01J 31/2282](#)).
 - "Coordination complexes" includes any donor-acceptor compounds or complex ions comprising organic or inorganic, anionic or neutral Lewis basic ligands, attached to a Lewis acid central metal or metal ion through one or several complexing donor atoms with at least one lone-pair of electrons, e.g. N, O, S, P, to provide at least a Sigma-bond. Typically the maximum number of same or different ligands according to the coordination number, spatial requirements of the ligand and electronic configuration of the metal is bound in a predictable geometry. Complexes of neutral, cationic or anionic hydrocarbon ligands with delocalised charge and/or bonding site, e.g. Pd-olefin complexes or metallocenes, are also included (the following groups take precedence: simple hydrocarbyl metal compounds, e.g. of main group metal(loids) [B01J 31/12](#); oxoacid salts [B01J 31/04](#) to [B01J 31/10](#); other compounds comprising anionic organonitrogen, organooxygen and organosulfur fragments with a metal bonded to these heteroatoms [B01J 31/02](#) to [B01J 31/0254](#)).
 - "Organometallic complexes" includes all coordination complexes comprising a M-C bond, e.g. metal carbonyls (complex cyanides such as 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](#) to [B01J 31/1895](#) take precedence).
 - "Polymer" includes any macromolecular substance (typically M>10000 g/mol), which comprises repeating units made up of one or several kinds of atoms or groups of atoms, which are identically connected to one another. Oligomers, i.e. more than two identical repeating units connected to one another and typically 500<M<10000 g/mol, are grouped with the respective polymers (polymers per se [C08](#)).
3. In this group, if two or more aspects are of equal importance, these are each classified, e.g. two components in a catalyst system such as:
- support and pendant or otherwise immobilised coordination complex; or
 - coordination complex and essential additive.

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

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

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

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

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

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

- U B01J 31/02
 - containing organic compounds or metal hydrides
- U B01J 31/12
 - • containing organo-metallic compounds or metal hydrides
- U B01J 31/123
 - • • {Organometallic polymers, e.g. comprising C-Si bonds in the main chain or in subunits grafted to the main chain ([B01J 31/064](#) , [B01J 31/066](#) , [B01J 31/067](#) , [B01J 31/08](#) and [B01J 31/10](#) take precedence; polymer-bound organometallic complexes [B01J 31/165](#) ; coordination polymers [B01J 31/1691](#) ; catalysts for the preparation of polysiloxanes, e.g. Karstedt catalysts [C08G 77/08](#)}}
- U B01J 31/124
 - • • • {Silicones or siloxanes or comprising such units}
- B01J 31/126
 - • • • • {the siloxanes or siloxane units, cyclic or not, comprising an additional Si-H bond, e.g. polyhydromethylsiloxane [\(PHMS\)](#)}
- U B01J 37/00
 - **Processes, in general, for preparing catalysts; Processes, in general, for activation of catalysts**
- U B01J 37/34
 - Irradiation by, or application of, electric, magnetic or wave energy, e.g. ultrasonic waves; {Ionic sputtering; Flame or plasma spraying; Particle radiation}
- U B01J 2219/00
 - **Chemical, physical or physico-chemical processes in general; Their relevant apparatus**
- U B01J 2219/00274
 - Sequential or parallel reactions; Apparatus and devices for combinatorial chemistry or for making arrays; Chemical library technology
- U B01J 2219/00718
 - • Type of compounds synthesised
- U B01J 2219/0072
 - • • Organic compounds
- B01J 2219/00729
 - • • • Peptide nucleic acids [\(PNA\)](#)}

Project: N/A (B01L)

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 3/08

• Flasks (specially adapted for distillation [B01D](#) {[B01D 3/10](#)})

U B01L 2200/00 Solutions for specific problems relating to chemical or physical laboratory apparatus

- U B01L 2200/06
- B01L 2200/0631
 - Fluid handling related problems
 - · Purification arrangements, e.g. solid phase extraction **{(SPE)}**

U B01L 2300/00 Additional constructional details

- U B01L 2300/08
- U B01L 2300/0803
- B01L 2300/0806
 - Geometry, shape and general structure
 - · Disc shape
 - · · Standardised forms, e.g. compact disc **{(CD)}** format

U B01L 2400/00 Moving or stopping fluids

- U B01L 2400/04
- U B01L 2400/0403
- U B01L 2400/0415
- B01L 2400/0418
- U B01L 2400/0433
- B01L 2400/0436
 - Moving fluids with specific forces or mechanical means
 - · specific forces
 - · · electrical forces, e.g. electrokinetic
 - · · · electro-osmotic flow **{(EOF)}**
 - · · vibrational forces
 - · · · acoustic forces, e.g. surface acoustic waves **{(SAW)}**

Project: N/A (B03B)**U B03B 4/00 Separating by pneumatic tables or by pneumatic jigs (sink-float separation using dry heavy media [B03B 5/46](#))**NOTE

Group [B03B 4/005](#) takes precedence over groups [B03B 4/02](#) to [B03B 4/065](#)

- U B03B 4/06
 - using fixed and inclined tables; {using stationary pneumatic tables, e.g. fluidised beds}

Project: N/A (B03C)**U B03C 5/00 Separating dispersed particles from liquids by electrostatic effect ({flocculation or agglomeration of electric particles induced by electric field [B01D 21/0009](#); microreactors [B01J 19/0093](#)}; combined with centrifuges [B04B 5/10](#); {treatment of microorganisms and apparatus therefor [C12M 1/42](#), [C12N 13/00](#), [C12Q 1/24](#); analysis of biomaterial by electrical means [G01N 33/48707](#)})**NOTE

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

- "separating" means dimensional modifications of particle-liquid distributions, e.g. particle immobilisation, caging, translational or rotational motion

- U B03C 5/02
- U B03C 5/022
- B03C 5/026
- B03C 5/028
 - Separators
 - · {Non-uniform field separators}
 - · · {using open-gradient differential dielectric separation, i.e. using electrodes of special shapes for non-uniform field creation, e.g. Fluid Integrated Circuit **{(FIC)}**}
 - · · {using travelling electric fields, i.e. travelling wave dielectrophoresis **{(TWD)}**}

Project: N/A (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](#))**
- B05B 1/005 · {Nozzles or other outlets specially adapted for discharging one or more gases} nnn
- B05B 1/02 · designed to produce a jet, spray, or other discharge of particular shape or nature, e.g. in single drops, {or having an outlet of particular shape}{[B05B 1/26](#) , [B05B 1/28](#) , [B05B 1/34](#) take precedence)
- U B05B 1/08** · of pulsating nature, e.g. delivering liquid in successive separate quantities; {Fluidic oscillators}
- U B05B 1/14** · with multiple outlet openings ([B05B 1/02](#) , [B05B 1/26](#) take precedence); with strainers in or outside the outlet opening
- B05B 1/20 · {Arrangements of several outlets along elongated bodies, e.g.} perforated pipes or troughs, e.g. spray booms {(spray booms for agricultural uses [A01M 7/0071](#) ; spray bars for treating roads [E01C 19/176](#))}; Outlet elements therefor
- U B05B 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}**
- B05B 3/06 · · by jet reaction, {i.e. creating a spinning torque due to a tangential component of the jet}
- 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)}
- U B05B 5/00** **Electrostatic spraying apparatus; Spraying apparatus with means for charging the spray electrically; Apparatus for spraying liquids or other fluent materials by other electric means**
- U B05B 5/025** · Discharge apparatus, e.g. electrostatic spray guns
- B05B 5/03 · · characterised by the use of gas, {e.g. electrostatically assisted pneumatic spraying ([B05B 5/04](#) , [B05B 5/043](#) , [B05B 5/047](#) take precedence)}
- B05B 5/035 · · characterised by gasless spraying, {e.g. electrostatically assisted airless spraying ([B05B 5/04](#) , [B05B 5/043](#) , [B05B 5/047](#) take precedence)}
- B05B 5/04 · · characterised by having rotary outlet or deflecting elements, {i.e. spraying being also effected by centrifugal forces}
- U B05B 5/053** · · Arrangements for supplying power, e.g. charging power
- B05B 5/0537 · · · {comprising a charge return path between the target and the spraying apparatus which is not the "true" earth, i.e. using a direct charge return path like a wire or the like, e.g. "floating earth"}"
- B05B 7/00** **Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas ([B05B 3/00](#) , [B05B 5/00](#) {[B05B 11/06](#)} take precedence; outlets not specially modified for two media [B05B 1/00](#))**
- U B05B 7/02** · Spray pistols; Apparatus for discharge ([B05B 7/14](#) , [B05B 7/16](#) , [B05B 7/24](#) take precedence)

- B05B 7/06
 - with {at least} one outlet orifice surrounding another approximately in the same plane
- B05B 7/08
 - with separate outlet orifices, e.g. to form parallel jets, {i.e. the axis of the jets being parallel}, to form intersecting jets, {i.e. the axis of the jets converging but not necessarily intersecting at a point}
- B05B 7/16
 - incorporating means for heating {or cooling} the material to be sprayed {(spraying by means of explosions [B05B 7/0006](#))}
- B05B 7/22
 - electrically, {magnetically or electromagnetically}, e.g. by arc {([B05B 7/20](#) takes precedence)}
- U B05B 9/00** **Spraying apparatus for discharge of liquids or other fluent material, without essentially mixing with gas or vapour ([B05B 11/00](#) takes precedence)**
- B05B 9/01
 - Spray pistols, {discharge devices}([B05B 9/03](#) takes precedence)
- U B05B 9/03
 - characterised by means for supplying liquid or other fluent material {([B05B 9/002](#) takes precedence)}
- U B05B 9/04
 - with pressurised or compressible container (aerosol containers [B65D 83/14](#)); with pump
- B05B 9/047
 - supply being effected by follower in container, e.g. membrane or floating piston, {or by deformation of container ([B05B 9/0838](#) takes precedence)}
- B05B 11/00** **Single-unit, i.e. unitary, hand-held apparatus {comprising a container and a discharge nozzle attached thereto}, in which flow of liquid or other fluent material is produced by {the muscular energy of} the operator at the moment of use {or by an equivalent manipulator independent from the apparatus (apparatus with an external source or the possibility of permanent accumulation of pressure for discharging the liquid or fluid material [B05B 7/00](#) , [B05B 9/00](#))}**
- B05B 11/06
 - the spray being effected by a gas or vapour flow {from a source where the gas or vapour is not in contact with the liquid or other fluent material to be sprayed}, e.g. from a compressible bulb, {an air pump or an enclosure surrounding the container ([B05B 11/046](#) and [B05B 11/3087](#) take precedence)}
- 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)}**
- B05B 12/08
 - responsive to condition of liquid or other fluent material discharged, of ambient medium or of target {; responsive to condition of spray device or of supply means, e.g. pipes, pumps, their drive}
- B05B 12/14
 - for supplying a selected one of a plurality of liquids or other fluent materials {or several in selected proportions} to a {spray apparatus, e.g. to a} single spray outlet
- U B05B 13/00** **Machines or plants for applying liquids or other fluent materials to surfaces of objects or other work by spraying, not covered by groups [B05B 1/00](#) to [B05B 11/00](#){([B05B 5/08](#) takes precedence) ; means for supplying or discharging liquid or other fluent material for this purpose, see the relevant preceding groups; processes for applying liquids or other fluent materials to surfaces in general [B05D](#)}**
- U B05B 13/02
 - Means for supporting work; Arrangement or mounting of spray heads; Adaptation or arrangement of means for feeding work ([B05B 13/06](#) takes precedence)
- B05B 13/04
 - the spray heads being moved during {spraying} operation
- 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](#))**

- B05B 15/02
- Arrangements or devices for cleaning discharge openings, {nozzles, spraying heads or spraying apparatus; Arrangements or devices for preventing discharge openings, nozzles, spraying heads or spraying apparatus from becoming dirty or clogged; Devices for detecting presence of foreign matter in discharge openings}
- B05B 15/06
- Mountings, supporting or holding means, or rests for spray heads or other outlets {or for the whole spraying apparatus} when in use or out of use {(B05B 13/005 , B05B 15/1225 take precedence)}
- U B05B 17/00
- Apparatus for spraying or atomising liquids or other fluent materials, not covered by the preceding groups (dropping or releasing powdered, liquid or gaseous matter in flight B64D 1/16)**
- U B05B 17/04
- operating with special methods
- B05B 17/06
- using ultrasonic {or other kinds of} vibrations

Project: N/A (B05D)

- U B05D 5/00
- Processes for applying liquids or other fluent materials to surfaces to obtain special surface effects, finishes or structures**
- B05D 5/04
- to obtain a surface receptive to ink or other liquid (B05D 5/02 , {B41M 5/52} take precedence)
- B05D 2500/00
- Indexation scheme for the composition of layers**
- NOTE
- L05D5**/**** codes may be combined with one or more codes of the series **L05D4**/**** B05D 2400/00 with a + sign. Example : B05D 2503/00 + B05D 2420/01 + B05D 2420/02
- U B05D 2520/00
- Water-based dispersions**
- B05D 2520/10
- PVC (Plastisol)

Project: N/A (B06B)

- B06B
- METHODS OR APPARATUS FOR GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS OF INFRASONIC, SONIC, OR ULTRASONIC FREQUENCY, { e.g.} FOR PERFORMING MECHANICAL WORK IN GENERAL (for particular applications, see the relevant subclasses, e.g. B07B 1/40, B23Q 17/12, B24B 31/06; measurement of mechanical vibrations G01H; in direction finding, locating, distance or velocity measuring G01S; { generating seismic energy G01V 1/02}; control of mechanical vibrations in general G05D; sound-producing devices, e.g. bells, sirens, whistles G10K, { e.g. methods or devices for transmitting, conducting, or directing sound in general G10K 11/00}; generation of electrical oscillations H03B; electromechanical resonators in general H03H; electromechanical transducers { for communication techniques, e.g. microphones, speakers} H04R)**

Project: N/A (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 the relevant classes)**

Project: N/A (B08B)

B08B

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

NOTE

This subclass covers only inventions relating to cleaning which are usually classified according to one (or more) of the aspects mentioned below if they are not fully classifiable in a subclass a subclass providing for any of the following aspects: ~~the articles cleaned, e.g. bed-pans, urinal or other sanitary devices for bed-ridden persons [A61G 9/02](#) , filters, semi-permeable membranes [B01D](#) , castings and moulds [B22D 29/00](#) , vehicles [B60S](#), coke ovens [C10B 43/00](#) , building forms [E04G](#), boilers [F22](#), combustion apparatus [F23](#), furnaces [F27](#); the general nature of the cleaning, e.g. preparing for sugar manufacture [A23N](#), domestic cleaning [A47L](#), treatment of textiles [D06](#), laundry [D06F](#), air-conditioning [F24F](#); the particular operation performed, e.g. filtering [B01D](#), separating of solids [B03](#), [B07](#), sand-blasting [B24C](#); the particular apparatus or device, e.g. brushes [A46B](#), mops [A47L](#), centrifuges [B04](#), hand tools [B25](#) { devices for cleaning paint-applying hand tools after use [B44D 3/006](#) } ; the substance cleaned, e.g. metals [B21C](#), [C23](#), water [C02](#), glass [C03B](#), leather [C14B](#), textile fibres [D01](#); the substance removed (or prevented from depositing or forming) e.g. { removing paint [B44D 3/00](#) , e.g. } implements or apparatus for removing dry paint from surfaces [B44D 3/16](#) ; chemical paint-removers [C09D 9/00](#) ; preventing rust [C23F](#); the substance used, e.g. macromolecular compounds or compositions [C08](#), anti-icing materials [C09K](#), detergents [C11D](#) ; the operation in connection with which cleaning is done, e.g. metal rolling [B21B](#), metal boring [B23B](#), soldering [B23K](#), textile fabrication [D01G](#), [D01H](#), [D03J](#), [D04B](#) ; the surroundings of a surface to be cleaned or kept clean, e.g. water in a boiler [C02F](#), air in a room [F24F](#).~~

*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
 - Cleaning involving contact with liquid
 - U B08B 3/10
 - • with additional treatment of the liquid or of the object being cleaned, e.g. by heat, by electricity, by vibration
 - U B08B 3/14
 - • • Removing waste, e.g. labels, from cleaning liquid; {Regenerating cleaning liquids} (treatment of water in general [C02F](#))
- 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 9/045
 - • • • • the cleaning devices being rotated while moved {, e.g. flexible rotating shaft or "snake"}([B08B 9/047](#) takes precedence)
 - B08B 9/047
 - • • • • the cleaning devices having {internal} motors [e.g. turbines] for powering cleaning tools
 - U 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 [F16L 55/26](#) ; their launching and detection [F16L 55/46](#) ; separating pigs in pipelines [F17D 3/00](#))}

Project: N/A (B09B)

B09B

DISPOSAL OF SOLID WASTE

NOTES

1. This subclass 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 1/06](#) Animal feeding-stuffs from distillers` or brewers` waste

[A23K 1/08](#) Animal feeding-stuffs from waste products of dairy plants

[A23K 1/10](#) 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 18/40](#)~~[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 3/00 Destroying solid waste or transforming solid waste {or contaminated solids} into something useful or harmless

- B09B 3/0075
- {Disposal of medical waste (casings for used articles, e.g. sharps [A61B 19/0288](#); sterilisation of refuse [A61L 11/00](#); disposal of used needles or syringes [A61M 5/3205](#); disintegrating medical waste [B02C19/42M](#) [B02C 19/0075](#))}

Project: N/A (B09C)

U B09C 1/00 Reclamation of contaminated soil

- B09C 1/02
- B09C 1/10
- Extraction using liquids, e.g. washing, leaching, {flotation}
 - microbiologically, {biologically} or by using enzymes

Project: N/A (B21B)

U B21B 1/00 Metal-rolling methods or mills for making semi-finished products of solid or profiled cross-section ([B21B 17/00](#) to [B21B 23/00](#) take precedence; with respect to composition of material to be rolled [B21B 3/00](#) ; extending closed shapes of metal bands by simultaneous rolling at two or more zones [B21B 5/00](#) ; metal-rolling stands as units [B21B 13/00](#) ; continuous casting into moulds having walls formed by moving rolls [B22D 11/06](#)); Sequence of operations in milling trains; Layout of rolling-mill plant, e.g. grouping of stands; Succession of passes or of sectional pass alternations

- B21B 1/02
- B21B 1/06
- B21B 1/08
- B21B 1/12
- B21B 1/14
- for rolling heavy work, e.g. ingots, slabs, {blooms} billets, in which the cross-sectional form is unimportant {Rolling combined with forging or pressing}
 - in a non-continuous process, {e.g. triplet mill, reversing mill}
 - for rolling {structural sections, i.e.} work of special cross-section, e.g. angle steel (rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects [B21H 8/00](#))
 - in a continuous process, {i.e. without reversing stands ([B21B 1/085](#) to [B21B 1/098](#) take precedence)}
 - in a non-continuous process, {i.e. at least one reversing stand ([B21B 1/085](#) to [B21B 1/098](#) take precedence)}

- B21B 1/16 · for rolling {wire rods, bars, merchant bars, rounds} wire or material of like small cross-section
- B21B 1/22 · for rolling {plates, strips,} bands or sheets of indefinite length ([B21B 1/42](#) takes precedence)
- B21B 1/24 · · in a continuous {or semi-continuous} process {([B21B 1/224](#) takes precedence)}
- B21B 1/26 · · · by hot-rolling, {e.g. Steckel hot mill}
- B21B 1/28 · · · by cold-rolling, {e.g. Steckel cold mill}
- U B21B 1/30 · · in a non-continuous process {([B21B 1/224](#) takes precedence)}
- B21B 1/32 · · · in reversing {single stand} mills, e.g. with intermediate storage reels for accumulating work
- B21B 1/38 · for rolling sheets of limited length, e.g. folded sheets, superimposed sheets, {pack rolling}([B21B 1/40](#) takes precedence; folding sheets before, or separating layers after, rolling [B21B 47/00](#))
- U **B21B 3/00** **Rolling materials of special alloys so far as the composition of the alloy requires or permits special rolling methods or sequences {Rolling of aluminium, copper, zinc or other non-ferrous metals}(altering special metallurgical properties of alloys, other than structure consolidation or mechanical properties resulting therefrom [C21D](#) , [C22F](#))**
- B21B 3/02 · Rolling special iron alloys, {e.g. stainless steel}
- B21B 11/00** **Subsidising the rolling process by subjecting rollers or work to vibrations, {e.g. ultrasonic vibrations}**
- U **B21B 13/00** **Metal-rolling stands, i.e. an assembly composed of a stand frame, rolls, and accessories ([B21B 17/00](#) to [B21B 23/00](#) take precedence; details, component parts, accessories, auxiliary means, procedures in connection with metal rolling, see the relevant groups)**
- B21B 13/06 · with axes of rolls arranged vertically, {e.g. edgers}
- U B21B 13/14 · having counter-pressure devices acting on rolls to inhibit deflection of same under load; {Back-up rolls} (counter-pressure devices as such [B21B 29/00](#))
- B21B 13/16 · with alternatively operative rolls, {e.g. revolver stands, turret mills}
- U B21B 13/18 · for step-by-step or planetary rolling; {pendulum mills} (methods [B21B 1/42](#) ; making tubes by pilgrim-step rolling [B21B 21/00](#))
- B21B 13/22 · for rolling metal immediately subsequent to continuous casting, {i.e. in-line rolling of steel}(methods therefor [B21B 1/46](#) ; continuous casting [B22D 11/00](#) , e.g. into moulds with rolls [B22D 11/06](#))
- U **B21B 17/00** **Tube-rolling by rollers of which the axes are arranged essentially perpendicular to the axis of the work, e.g. "axial" tube-rolling**
- B21B 17/02 · with mandrel, {i.e. the mandrel rod contacts the rolled tube over the rod length} ([B21B 17/08](#) takes precedence)
- B21B 17/08 · with mandrel having one or more protrusions, {i.e. only the mandrel plugs contact the rolled tube; Press-piercing mills}
- B21B 17/12 · · in a discontinuous process, {e.g. plug-rolling mills}
- B21B 17/14 · without mandrel, {e.g. stretch-reducing mills}
- U **B21B 19/00** **Tube-rolling by rollers arranged outside the work and having their axes not perpendicular to the axis of the work (straightening by rollers [B21D](#))**
- U B21B 19/02 · the axes of the rollers being arranged essentially diagonally to the axis of the work, e.g. "cross" tube-rolling {Diescher mills, Stiefel disc piercers, Stiefel rotary piercers}

- B21B 19/04
- • Rolling basic material of solid, i.e. non-hollow, structure; Piercing, {e.g. rotary piercing mills}
- B21B 19/06
- • Rolling hollow basic material, {e.g. Assel mills}{(B21B 19/04 takes precedence; separating work from mandrel B21C 45/00)}
- B21B 19/10
- • • Finishing, e.g. smoothing, sizing, {reeling}
- B21B 21/00** **Pilgrim-step tube-rolling, {i.e. pilger mills}**
- U B21B 25/00** **Mandrels for metal tube rolling mills, e.g. mandrels of the types used in the methods covered by group B21B 17/00; Accessories or auxiliary means therefor; {Construction of, or alloys for, mandrels or plugs}**
- B21B 25/06
- Interchanging mandrels, {fixing plugs on mandrel rods or cooling during interchanging mandrels (separating tubes from mandrels B21C 45/00)}
- B21B 27/00** **Rolls, {roll alloys or roll fabrication}{shape of working surfaces required by special processes B21B 1/00}; Lubricating, cooling or heating rolls while in use**
- B21B 27/02
- Shape or construction of rolls (for rolling metal of indefinite length in repetitive shapes specially designed for the manufacture of particular objects B21H 8/02 {; B21B 27/005 takes precedence}){(B21B 27/005 takes precedence)}
- U B21B 29/00** **Counter-pressure devices acting on rolls to inhibit deflection of same under load, e.g. backing rolls; {Roll bending devices, e.g. hydraulic actuators acting on roll shaft ends (control devices responsive to roll bending B21B 37/38)}**
- U B21B 31/00** **Rolling stand structures; Mounting, adjusting, or interchanging rolls, roll mountings, or stand frames**
- U B21B 31/02**
- Rolling stand frames {or housings}; Roll mountings; {Roll chocks}
- B21B 31/07
- Adaptation of roll {neck} bearings (bearings in general F16C)
- B21B 31/08
- Interchanging rolls, roll mountings, or stand frames, {e.g. using C-hooks; Replacing roll chocks on roll shafts}
- B21B 31/10
- • by horizontally displacing, {i.e. horizontal roll changing}
- B21B 31/16
- Adjusting {or positioning} rolls (control devices B21B 37/00)
- U B21B 31/20**
- • by moving rolls perpendicularly to roll axis
- B21B 31/22
- • • mechanically, {e.g. by thrust blocks, inserts for removal}
- B21B 31/32
- • • by liquid pressure, {e.g. hydromechanical adjusting}
- B21B 35/00** **Drives for metal-rolling mills, {e.g. hydraulic drives}**
- B21B 38/00** **Methods or devices for measuring, {detecting or monitoring} specially adapted for metal-rolling mills, e.g. position detection, inspection of the product {(Control devices or methods B21B 37/00)}**
- U B21B 39/00** **Arrangements for moving, supporting, or positioning work, or controlling its movement, combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills (guiding, conveying, or accumulating easily-flexible work in loops or curves B21B 41/00 ; specially associated with cooling-beds B21B 43/00 ; conveying or transporting in general B65G)**
- B21B 39/02
- Feeding or supporting work; Braking or tensioning arrangements, {e.g. threading arrangements}
- B21B 39/20
- Revolving, turning-over, or like manipulation of work, {e.g. revolving in trio stands}(guides in which work is subjected to permanent internal twisting B21B 15/02)

- U B21B 41/00** **Guiding, conveying, or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves; Loop lifters**
- B21B 41/06 · in which the direction of movement of the work is turned through approximately 180 degrees, {e.g. repeaters, i.e. from one stand to another}
- U B21B 43/00** **Cooling beds, whether stationary or moving; Means specially associated with cooling beds, e.g. for braking work or for transferring it to or from the bed (conveying means in general B65G)**
- B21B 43/02 · Cooling beds comprising rakes {racks, walking beams} or bars (B21B 43/10 takes precedence)
- B21B 43/12 · Devices for positioning workpieces "flushed", i.e. with all their axial ends arranged in line on cooling beds or on co-operating conveyers, {e.g. before cutting}
- B21B 45/00** **Devices for surface {or other} treatment of work, specially combined with or arranged in, or specially adapted for use in connection with, metal-rolling mills (B21B 15/00, {B21B 1/227 and B21B 27/005} take precedence; technical features of scaling-off devices B21C 43/00)**
- B21B 45/04 · for de-scaling, {e.g. by brushing (descaling of rod or wire B21C 43/04)}

Project: N/A (B21C)

- U 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 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)
- B21C 37/08 · Making tubes with welded or soldered seams (involving only a soldering or welding operation B23K {with helically arranged seams B21C 37/122})

Project: N/A (B21D)

- U B21D 28/00** **Shaping by press-cutting; Perforating**
- U B21D 28/02 · Punching blanks or articles with or without obtaining scrap (cutting nails or pins from strips or sheet material B21G 3/26); Notching
- B21D 28/16 · Shoulder or burr prevention, {e.g. fine-blanking}
- U B21D 37/00** **Tools as parts of machines covered by this subclass (forms or constructions of tools uniquely adapted for particular operations, see the relevant groups for the operations)**
- U B21D 37/10 · Die sets; Pillar guides
- B21D 37/12 · Particular guiding equipment, {e.g. pliers}; Special arrangements for interconnection or co-operation of dies
- B21D 37/18 · Lubricating, {e.g. lubricating tool and workpiece simultaneously (lubricating workpieces for deep-drawing B21D 22/201)}

Project: N/A (B22D)

B22D 37/00

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

Project: N/A (B23B)**U B23B 5/00**

Turning-machines or devices specially adapted for particular work; Accessories specially adapted therefor

B23B 5/14

- Cutting-off lathes ([B23D 21/00](#) takes precedence) shearing [B23D](#))

U B23B 2226/00

Materials of tools or workpieces not comprising a metal

U B23B 2226/12

- Boron nitride

B23B 2226/125

- • cubic ([C](#)[B](#)[N](#))

U B23B 2226/31

- Diamond

B23B 2226/315

- • polycrystalline ([P](#)[C](#)[D](#))

U B23B 2228/00

Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner

B23B 2228/04

- applied by chemical vapour deposition ([C](#)[V](#)[D](#))

B23B 2228/08

- applied by physical vapour deposition ([P](#)[V](#)[D](#))

U B23B 2231/00

Details of chucks, toolholder shanks or tool shanks

U B23B 2231/20

- Collet chucks

U B23B 2231/201

- • Operating surfaces of collets, i.e. the surface of the collet acted on by the operating means

B23B 2231/2013

- • • Non-cylindrical ([poly](#)[g](#)[o](#)[n](#)[a](#)[l](#) [L](#)[2](#)[3](#)[1](#)[/](#)[2](#)[0](#)[H](#)[3](#)[,](#)[poly](#)[g](#)[o](#)[n](#)[a](#)[l](#) [B](#)[2](#)[3](#)[B](#) [2](#)[2](#)[3](#)[1](#)[/](#)[2](#)[0](#)[1](#)[6](#))

U B23B 2260/00

Details of constructional elements

B23B 2260/058

- Dust covers (dust covers in chucks [B](#)[2](#)[3](#)[B](#) [2](#)[2](#)[3](#)[1](#)[/](#)[2](#)[8](#), nose pieces in chucks [L](#)[2](#)[3](#)[1](#)[/](#)[4](#)[4](#)[,](#)[B](#)[2](#)[3](#)[B](#) [2](#)[2](#)[3](#)[1](#)[/](#)[4](#)[4](#))

Project: N/A (B23C)**U B23C 2226/00**

Materials of tools or workpieces not comprising a metal

U B23C 2226/12

- Boron nitride

B23C 2226/125

- • cubic ([C](#)[B](#)[N](#))

U B23C 2226/31

- Diamond

B23C 2226/315

- • polycrystalline ([P](#)[C](#)[D](#))

U B23C 2228/00

Properties of materials of tools or workpieces, materials of tools or workpieces applied in a specific manner

B23C 2228/04

- applied by chemical vapour deposition ([C](#)[V](#)[D](#))

B23C 2228/08

- applied by physical vapour deposition ([P](#)[V](#)[D](#))

Project: N/A (B23D)**U B23D 2277/00**

Reaming tools

U B23D 2277/24

- Materials of the tool or the intended workpiece, methods of applying these materials

B23D 2277/2407

- • Applied by chemical vapour deposition ([C](#)[V](#)[D](#)) processes (coating by chemical vapour deposition in general [C](#)[2](#)[3](#)[C](#) [1](#)[6](#)[/](#)[0](#)[0](#))

- B23D 2277/2414
 - • Applied by physical vapour deposition ({PVD}) processes (coating by physical vapour deposition in general [C23C 14/00](#))
- B23D 2277/2435
 - • Cubic boron nitride ({CBN})
- U B23D 2277/2442
 - • Diamond
- B23D 2277/245
 - • • polycrystalline ({PCD})

Project: N/A (B23K)

- U B23K 20/00 **Non-electric welding by applying impact or other pressure, with or without the application of heat, e.g. cladding or plating**
- U B23K 20/02
 - by means of a press; {Diffusion bonding ([B23K 20/001](#) , [B23K 20/04](#) take precedence)}
- U B23K 26/00 **Working by laser beam, e.g. welding, cutting, boring (lasers per se [H01S 3/00](#) ; { laser assisted deposition [C23C](#); laser inspection or alignment [G01B](#); laser sintering of metallic powder [B22F 3/105](#) , of plastics [B29C 67/00](#) , of glass [C03B 19/06](#) , of ceramics [C04B 35/64](#) ; applying identification marks by laser [B41M 5/24](#))}**
- U B23K 26/02
 - Positioning or observing the workpiece, e.g. with respect to the point of impact; Aligning, aiming or focusing the laser beam
- B23K 26/03
 - • Observing, {e.g. monitoring,} the workpiece {(protective devices for the eye, carried on the body or in the hand [A61F 9/02](#) , [A61F 9/04](#))}
- U B23K 26/08
 - Devices involving relative movement between laser beam and workpiece
- B23K 26/10
 - • using a fixed support, {i.e. involving moving the laser beam}
- U B23K 26/14
 - using a flow, e.g. a jet of gas, in conjunction with the laser beam; {Nozzles therefor} ([B23K 26/12](#) takes precedence)

Project: N/A (B23Q)

- 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](#), [B23B47/02](#)[B23B 47/00](#); {numerical programme-control of machine tools [G05B 19/18](#))}**
- U B23Q 7/00 **Arrangements for handling work specially combined with or arranged in, or specially adapted for use in connection with, machine tools, e.g. for conveying, loading, positioning, discharging, sorting (incorporated in working-spindles [B23B 13/00](#))**
- B23Q 7/03
 - by means of endless chain conveyers ({[B23Q 7/1447](#),} [B23Q 7/16](#) take precedence)
- B23Q 7/05
 - by means of roller-ways ({[B23Q 7/1468](#),} [B23Q 7/16](#) take precedence)
- B23Q 9/00 **Arrangements for supporting or guiding portable metal-working machines or apparatus (for tapping pipes [B23B41/08](#)[B23B 41/00](#) {[F16L 41/04](#)}; specially designed for drilling [B23B45/14](#)[B23B 45/00](#) {[B25H 1/0021](#))}**
- B23Q 33/00 -
B23Q 35/00 **Copying**
NOTE
In groups [B23Q 33/00](#) or [B23Q 35/00](#), the following term is used with the meaning indicated: **"copying" covers the derivation of a required shape from a pattern, of the same or a different shape or scale, by a mechanism or equivalent means controlled by a member following the pattern. The pattern may be a model or drawing, or an element such as a cam incorporated in the operating mechanism of a machine. This term does not cover the derivation of a required shape from simple geometrical shapes, e.g. generating a cycloid by a rolling circle, which in general is provided for in group [B23Q 27/00](#)**

- "copying" covers the derivation of a required shape from a pattern, of the same or a different shape or scale, by a mechanism or equivalent means controlled by a member following the pattern. The pattern may be a model or drawing, or an element such as a cam incorporated in the operating mechanism of a machine. This term does not cover the derivation of a required shape from simple geometrical shapes, e.g. generating a cycloid by a rolling circle, which in general is provided for in group [B23Q 27/00](#)

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 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](#))

Project: N/A (B25B)

U B25B 13/00

Spanners; Wrenches (hand-driven gear-operated [B25B 17/00](#); impact wrenches [B25B 19/00](#); portable power-driven [B25B 21/00](#); {spanners or wrenches pecially adapted for osteosynthesis [A61B 17/8875](#)}; machines for fitting together or separating metal parts [B23P 19/00](#); {for mounting or dismantling wheels [B60B 29/003](#)})

B25B 13/10

• with adjustable jaws ([B25B 13/46](#), [B25B 13/48](#) {[B25B 13/5041](#)} take precedence)

B25B 17/00

Hand-driven gear-operated wrenches or screwdrivers (ratchet-operated [B25B 13/46](#) {[B25B 13/467](#)}, [B25B 15/04](#); {for mounting or dismantling wheels [B60B 29/005](#)})

Project: N/A (B25D)

B25D

PERCUSSIVE TOOLS {(percussive machines for forging [B21J](#); hand-held drilling machines, in general [B23B 45/00](#), for wood [B27C 3/08](#) ; drilling machines, used for mining or quarrying, with reciprocating tool which is turned intermittently when out of contact with the working face [E21B 1/00](#)) ~~{M1204}~~}

WARNING

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

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

B25D 9/00

Portable percussive tools with fluid-pressure drive, { i.e. driven directly by fluids}, e.g. having several percussive tool bits operated simultaneously ~~{(B25D15/00 ;~~ portable non-percussive drilling tools driven by fluid pressure or pneumatic power [B23B 45/04](#))}

Project: N/A (B25H)

U B25H 1/00

Work benches; Portable stands or supports for positioning portable tools or work to be operated on thereby

B25H 1/0021

- {Stands, supports or guiding devices for positioning portable tools or for securing them to the work ([B23B41/08](#)[B23B 41/00](#) takes precedence)}

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 [C13H](#); for sugar [C13B 45/00](#); for textile materials [D06H](#); civil engineering, building, mining, see Section E; for light guides [G02B 6/25](#); cutting processed photographic material [G03D 15/04](#))

NOTES

1. This subclass covers:

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

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

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

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

Project: N/A (B27B)

B27B 21/00

Hand saws without power drive ({hand saws with oscillating saw blades,} [B27B 19/14](#) takes precedence); Equipment for hand sawing, e.g. saw horses {(work benches [B25H 1/00](#); saw guides [B27B 11/02](#))}

Project: N/A (B27D)

B27D 3/00

Veneer presses; Press plates; Plywood presses (presses in general [B30B](#) {presses for wood fibre sheets [B27N 3/08](#), [B27N 3/24](#), [B27N 3/26](#)})

B27D 5/00

Other working of veneer or plywood specially adapted to veneer or plywood (working of strips in the same way as cane [B27J](#) {repairing tears on veneer blanks [B27D 1/10](#); [B27G 1/00](#) takes precedence})

Project: N/A (B27G)

B27G 5/00

Machines or devices for working mitre joints with even abutting ends (with tenon or like connections [B27F](#) {making mitre joints with uneven abutting ends [B27F 1/005](#)})

Project: N/A (B27K)

U B27K 3/00

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

U B27K 3/02

- Processes; Apparatus

B27K 3/15

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

NOTES

- When classifying in group [B27K 3/15](#), classification is additionally made in the groups of subclass ~~M08L~~[C08L](#) for defining the chemical polymeric structure
- In groups [B27K 3/16](#) to [B27K 3/50](#), in the absence of an indication to the contrary, impregnating agents are classified in the last appropriate place

Project: N/A (B27M)

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](#)})

Project: N/A (B28B)

B28B 1/00

Producing shaped {prefabricated} articles from the material (using presses [B28B 3/00](#) ; shaping on moving conveyers [B28B 5/00](#) ; producing tubular articles [B28B 21/00](#) ; { producing articles with embedded elements [B28B 23/00](#)})

U B28B 1/08

- by vibrating or jolting {(of moulding sand [B22C 15/10](#) ; of concrete in general [E04G 21/063](#)})

U B28B 1/087

- by means acting on the mould; {Fixation thereof to the mould}

U B28B 1/26

- by slip-casting, i.e. by casting a suspension or dispersion of the material in a liquid-absorbent or porous mould, the liquid being allowed to soak into or pass through the walls of the mould; Moulds therefor ([B28B 1/52](#) takes precedence); {specially for manufacturing articles starting from a ceramic slip; Moulds therefor (of tubular articles [B28B 21/08](#)})

B28B 1/50

- specially adapted for producing articles of expanded material, e.g. cellular concrete (chemical aspects{or making expanded aggregate}[C04B](#)chemical aspects {or making expanded aggregate} [C04B](#))

B28B 1/52

- specially adapted for producing articles from mixtures containing fibres, {e.g. asbestos cement}(by wrapping on +o mandrels [B28B 1/42](#))

- U B28B 7/00** **Moulds; Cores; Mandrels (specially adapted for the production of the tubular articles [B28B 21/00](#) ; { for casting metals [B22C 9/00](#) ; moulds for plastic materials in general [B29C 33/00](#) ; falsework, forms or shutterings for forming buildings or parts thereof in situ [E04G 9/00](#) to [E04G 15/00](#)})**
- B28B 7/10 · Moulds with means incorporated therein, or carried thereby, for ejecting {or detaching} the moulded article ({flexible moulds bent open for ejecting [B28B 7/06](#) ; ejecting by tilting or inverting the mould [B28B 7/08](#) ; } devices, not forming part of the mould, for ejecting the moulded article [B28B 13/06](#))
- B28B 7/12 · · by fluid pressure, {e.g. acting through flexible wall parts or linings of the moulds}
- B28B 7/16 · Moulds for making shaped articles with cavities or holes open to the surface, {e.g. with blind holes}
- B28B 7/24 · Unitary mould structures with a plurality of moulding spaces, {e.g. moulds divided into multiple moulding spaces by integratable partitions, mould part structures providing a number of moulding spaces in mutual co-operation (assemblies of individually complete moulds [B28B 7/26](#))}
- B28B 7/36 · Linings or coatings, {e.g. removable, absorbent linings, permanent anti-stick coatings; Linings becoming a non-permanent layer of the moulded article} (lubricating surfaces of moulds, cores or mandrels [B28B 7/38](#))
- U B28B 7/40** · characterised by means for modifying the properties of the moulding material
- B28B 7/42 · · for heating or cooling, e.g. steam jackets, {by means of treating agents acting directly on the moulding material}
- B28B 11/00** **Apparatus or processes for treating or working the shaped {or preshaped} articles (specially adapted for tubular articles [B28B 21/92](#) ; decoration or surface treatment in general [B05](#) , [B44](#) ; compacting concrete in situ in connection with building [E04G 21/06](#) ; drying [F26](#))**
- U B28B 11/04** · for coating {or applying engobing layers}(glazing, engobing [C04B](#))
- B28B 11/06 · · with powdered or granular material, {e.g. sanding of shaped articles}
- U B28B 21/00** **Methods or machines specially adapted for the production of tubular articles**
- U B28B 21/02** · by casting into moulds
- U B28B 21/10** · · using compacting means
- U B28B 21/36** · · · applying fluid pressure or vacuum to the material (combined with slip-casting [B28B 21/08](#))
- U B28B 21/38** · · · · introducing the material wholly or partly under pressure; {Injection-moulding machines}
- U B28B 21/40** · · · · by evacuating one or more of the mould parts; {Vacuum machines}
- B28B 21/90 · Methods or apparatus for {demoulding or} discharging after shaping
- U B28B 23/00** **Arrangements specially adapted for the production of shaped articles with elements wholly or partly embedded in the moulding material; {Production of reinforced objects} ([B28B 21/00](#) takes precedence; in units for prefabricated buildings [B28B 7/22](#))**

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](#))**
- B28C 1/02 · for producing or processing clay suspensions, {e.g. slip}(producing or processing suspensions in general [B01](#))
- U B28C 1/06** · · Processing suspensions {i.e. after mixing}

- U B28C 1/08
 - • • Separating suspensions, e.g. for obtaining clay, for removing stones; {Cleaning clay slurries}
- U B28C 1/10
 - for processing clay-containing substances in non-fluid condition (clay slurries [B28C 1/02](#)); {Plants}
- U B28C 1/12
 - • Storing and conditioning in storage; Specially adapted storage spaces or devices for their filling or emptying; {Tower structures for the storage of clay} (feeding clay to shaping apparatus [B28B 13/00](#))
- U B28C 1/14
 - • specially adapted for homogenising, comminuting or conditioning clay in non-fluid condition or for separating undesired admixtures therefrom (processes involving conversion to a slurry [B28C 1/02](#) ; conditioning in storage [B28C 1/12](#) ; comminuting in general [B02C](#) ; chemical features in eliminating iron or lime [C04B](#))
- U B28C 1/16
 - • • for homogenising, e.g. by mixing, kneading; {forcing through slots}
- B28C 1/20
 - • • for separating undesired admixed bodies, {e.g. stones}
- B28C 1/22
 - • • combined with means for conditioning by heating, humidifying, or vacuum treatment, {by cooling, by sub-atmospheric pressure treatment}
- 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}
- U B28C 5/18
 - • Mixing in containers to which motion is imparted to effect the mixing
- U B28C 5/20
 - • • rotating about a horizontal or substantially horizontal axis during mixing, e.g. without independent stirrers
- B28C 5/22
 - • • • with stirrers held stationary, {e.g. the material forming a ring zone by centrifugal force}
- B28C 5/26
 - • • rotating about a vertical or steeply inclined axis during the mixing, {e.g. comprising a flat bottomplate rotating about a vertical axis, co-operating with blades or stirrers}
- U B28C 5/38
 - wherein the mixing is effected both by the action of a fluid and by directly-acting driven mechanical means, e.g. stirring means; {Producing cellular concrete}
- B28C 5/46
 - Arrangements for applying super- or sub-atmospheric pressure during mixing; Arrangements for cooling or heating during mixing, {e.g. by introducing vapour}
- 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 conveyers or jiggling conveyers
- B28C 7/10
 - • • by means of rotary members {e.g. inclinable screws}
- B28C 7/16
 - Discharge means, {e.g. with intermediate storage of fresh concrete}

U B28C 9/00 General arrangement or layout of plant {([B28C 7/0061](#) , [B28C 7/0481](#) take precedence)}

B28C 9/04 · the plant being mobile, {e.g. mounted on a carriage or a set of carriages} ([B28C 5/42](#) , {[B28C 9/004](#) , [B28C 9/006](#)} take precedence)

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 section C, 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](#), [FD01F](#); manufacture of articles from cellulosic fibrous suspensions or from papier-mâché [D21J](#))

NOTES

1. This class 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 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 7/74 · using other mixers or combinations of {mixers, e.g. of} dissimilar mixers; {Plant}

B29B 13/00 **Conditioning or physical treatment of the material to be shaped** (chemical aspects [C08J 3/00](#) {heating, cooling or curing during shaping [B29C 35/00](#); Thermal after-treatment [B29C 71/02](#)})

Project: N/A (B29C)

B29C 31/00 **Handling, e.g. feeding of the material to be shaped, {storage of plastics material before moulding; Automation, i.e. automated handling lines in plastics processing plants, e.g. using manipulators or robots (discharging moulded articles from the mould [B29C 37/0003](#) ; storage of prepregs or SMC after impregnation or during ageing [B29C 70/54](#) ; baling of rubber [B29B 15/02](#) ; in general [B65G](#))} }**

U B29C 31/04 · Feeding {of the material to be moulded}, e.g. into a mould cavity ({[B29C 39/08](#) takes precedence; using a material distribution system to two or more fixed injection moulds [B29C 45/125](#) } ; to presses in general [B30B 15/30](#))

- B29C 31/06
- in measured doses, {e.g. by weighting (feeding mixers with measured doses [B01F 15/0216](#) , [B01F 15/0454](#) , [B29B 7/24](#) , [B29B 7/603](#) ; in general [G01F](#))}
- U B29C 33/00** **Moulds or cores; Details thereof or accessories therefor**
- U B29C 33/02
- with incorporated heating or cooling means
- B29C 33/06
- using radiation, {e.g. electro-magnetic waves, induction heating}
- B29C 33/56
- Coatings, {e.g. enamelled, galvanised}; Releasing, lubricating or separating agents {(in-mould coating [B29C 37/0028](#) ; using or applying separating agents [B29C 37/0067](#))}
- B29C 33/76
- Cores ([B29C 33/02](#) to [B29C 33/70](#) , {[B29C 41/40](#) , [B29C 53/74](#) , [B29C 53/82](#)} take precedence)
- U B29C 37/00** **Component parts, details, accessories or auxiliary operations, not covered by group [B29C 33/00](#) or [B29C 35/00](#)**
- B29C 37/02
- Deburring or deflashing (~~by grinding or polishing [B24B](#)~~){(*by grinding or polishing [B24B](#)* {; thermal deburring in general [B23D 79/005](#))}
- U B29C 44/00** **Shaping by internal pressure generated in the material, e.g. swelling, foaming; {Producing porous or cellular expanded plastics articles}**
- WARNING
Group [B29C 44/00](#) and subgroups are not complete, see also [B29C 67/22](#) and subgroups
- U B29C 44/02
- for articles of definite length, i.e. discrete articles
- B29C 44/08
- using several expanding {or moulding} steps
- 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 45/0005
- {using fibre reinforcements}
- B29C 2045/001
- {Bulk moulding compounds (~~BMC~~)}
- 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 45/16
- Making multilayered or multicoloured articles {([B29C 45/0062](#) takes precedence; feeding colouring materials into the injection unit [B29C 45/1816](#))}
- B29C 45/1679
- {applying surface layers onto injection-moulded substrates inside the mould cavity, e.g. in-mould coating (~~IMC~~) (applying surface layers after ejection [B29C 45/0053](#))}
- U B29C 45/17
- Component parts, details or accessories; Auxiliary operations
- B29C 45/18
- Feeding the material into the injection moulding apparatus, {i.e. feeding the non-plastified material into the injection unit}
- U B29C 45/26
- Moulds
- B29C 45/32
- having several axially spaced mould cavities, {i.e. for making several separated articles}
- B29C 45/37
- Mould cavity walls, {i.e. the inner surface forming the mould cavity, e.g. linings}
- U B29C 45/40
- Removing or ejecting moulded articles
- B29C 45/42
- using means movable from outside the mould between mould parts, {e.g. robots}

- U B29C 45/76
- • Measuring, controlling or regulating {(measuring in general [G01](#); controlling or regulating in general [G05](#))}
- NOTE
In groups [B29C 45/76](#) to [B29C 45/80](#) it is desirable to add the indexing codes of [B29C 2945/76](#) relating to measuring, controlling or regulating in injection moulding
- B29C 45/82
- • • Hydraulic {or pneumatic} circuits
- 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 47/0038
- {Combined shaping operations}
- B29C 47/0057
- • {Extrusion moulding combined with shaping by orienting, stretching or shrinking, e.g. film blowing (~~B29C 47/0054 takes precedence~~)([B29C 47/0054 takes precedence](#); shaping by stretching in general [B29C 55/00](#) ; shaping by liberation of internal stresses in general [B29C 61/00](#))}
- B29C 47/04
- of multilayered {or multi-component, e.g. co-extruded layers or components} or multicoloured articles {or coloured articles} {(adapter blocks [B29C 47/56](#))}
- U B29C 47/08
- Component parts, details or accessories; Auxiliary operations
- 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 47/40
- • • • using at least two {parallel} intermeshing screws {or at least two parallel non-intermeshing screws}
- U B29C 47/58
- • • Details
- U B29C 47/60
- • • • {Screws} {screws characterized by the material or by their manufacturing process [B29C 47/0844](#)}
- B29C 47/62
- • • • • having more than one screw-thread {, i.e. the screw cross section showing at least two threads}
- U B29C 47/68
- • • • Filters; {Screens}
- B29C 47/76
- • • • Venting, {drying} or degassing means
- U B29C 47/78
- • Heating or cooling the material to be extruded or the stream of extruded material {or of a preformed part}
- B29C 47/80
- • • at plasticising zone {, e.g. from the feed section until the die entrance}
- B29C 47/82
- • • • Heating {or cooling} the cylinders
- B29C 47/84
- • • • Heating {or cooling} the screws
- B29C 47/88
- • • Heating or cooling the stream of extruded material ~~{Attention is drawn to Note (3) following the subclass title}~~
- NOTE
{Attention is drawn to Note (3) following the subclass title}
- B29C 47/94
- • Lubricating {, e.g. adding lubrication to the melt}

- 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 49/20
- of articles having inserts or reinforcements; {Handling of inserts or reinforcements}
- 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 51/36
- • • specially adapted for vacuum forming **{, Manufacture thereof}**
- 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
- B29C 53/76
- • • about more than one axis, **{e.g. T-pieces, balls}**
- B29C 57/00** Shaping of tube ends, e.g. flanging, beelling, closing; Apparatus therefor, **{e.g. collapsible mandrels}**
- B29C 59/00** Surface shaping **{of articles}**; e.g. embossing; Apparatus therefor **{(in-mould printing [B29C 37/0025](#) ; by using liquids [B29C 71/0009](#) ; by using gases without chemical reaction [B29C 71/009](#) ; for decorating in general [B44](#) ; abrasive blasting [B24C](#) ; chemical aspects [C08J 7/00](#))}**
- B29C 59/005
- {characterised by the choice of material}
- NOTE
- Documents in which moulding materials are mentioned are indexed using indexing codes of subclass **~~L29C~~[B29K](#)** . However, when, for example, documents concerning the choice of moulding material having a particular influence on the moulding technique cannot be satisfactorily indexed, the documents may be classified in this group if of interest
- U B29C 59/08
- by flame treatment; {using hot gases}
- B29C 59/14
- by plasma treatment **(~~in general H05H~~){([in general H05H](#) {; plasma tubes per se [H01J](#)})}**
- B29C 59/16
- by wave energy or particle radiation, **{e.g. infra-red heating ([B29C 59/007](#) takes precedence)}**
- B29C 61/00** Shaping by liberation of internal stresses; Making preforms having internal stresses; Apparatus therefor **(~~for surface shaping [B29C 59/18](#) ; for lining articles [B29C 63/38](#) ; for joining preformed parts [B29C 65/66](#))}~~****{(for surface shaping [B29C 59/18](#) ; for lining articles [B29C 63/38](#) ; for joining preformed parts [B29C 65/66](#) {; for packaging [B65B 53/00](#) ; connecting arrangements or other fittings for plastics pipes using shrink-down material [F16L 47/22](#) , electrical connections insulated using heat shrinking insulating sleeves [H01R 4/72](#) ; cable junctions protected by sleeves [H02G 15/18](#)})}**
- U B29C 63/00** Lining or sheathing, i.e. applying preformed layers or sheathing of plastics; Apparatus therefor **([B29C 73/00](#) takes precedence; by blowing [B29C 49/00](#) ; by thermoforming [B29C 51/00](#))}**
- B29C 63/02
- using sheet or web-like material ([B29C 63/26](#){ and [B29C 63/38](#)} take precedence)

- B29C 63/18
- using tubular layers or sheathings ([B29C 63/26](#){ and [B29C 63/38](#)}; take precedence;{ placing tubular labels around rigid containers [B65C 3/065](#)})
- B29C 63/22
- using layers or sheathings having a shape adapted to the shape of the article ([B29C 63/26](#){ and [B29C 63/38](#)}; take precedence)
- B29C 65/00**
- Joining {or sealing} of preformed parts, {e.g. welding of plastics materials}; Apparatus therefor ({general aspects of processes or apparatus for joining preformed parts [B29C 66/00](#) ; using porous material formed by internal pressure generated therein for joining preformed parts [B29C 44/1228](#) , [B29C 44/326](#) ; } for making boxes, cartons, envelopes or bags [B31B](#); for sealing or securing package folds or closures [B65B 51/00](#) ; joining constructional elements in general [F16B](#); splicing of light guides [G02B 6/255](#))**
- WARNING
- Groups [B29C 65/00](#) to [B29C 65/70](#) are not complete, mainly for documents published before the year 1995, pending reclassification; see also [B29C 65/74](#) and its subgroups
- U B29C 65/02
- by heating, with or without pressure
- WARNING
- Group [B29C 65/02](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/48](#) and its subgroups
- B29C 65/14
- • using wave energy {, i.e. electromagnetic radiation,} or particle radiation {(using mechanical waves [B29C 65/06](#) ; using ultrasonic waves [B29C 65/08](#) ; pressing means transparent to electromagnetic radiation [B29C 66/81267](#))}
- WARNING
- Subgroups [B29C 65/1403](#) to [B29C 65/1496](#) are not complete pending a reorganisation; see also this group and its subgroups
- U B29C 65/34
- • using heated elements which remain in the joint, e.g. "verlorenes Schweisselement"
- WARNING
- Subgroups [B29C 65/3404](#) to [B29C 65/3472](#) are not complete, pending a reorganisation; see also [B29C 65/34](#)
- U B29C 65/36
- • • heated by induction
- WARNING
- Subgroups of [B29C 65/36](#) are not complete, pending a reorganisation; see also [B29C 65/36](#)
- U B29C 65/3604
- • • • {characterised by the type of elements heated by induction which remain in the joint}
- U B29C 65/362
- • • • • {comprising at least a single wire, e.g. in the form of a winding}
- B29C 65/3632
- • • • • {comprising several wires, e.g. in the form of several independent windings [B29C 65/364](#) takes precedence}{[B29C 65/364](#) takes precedence}}
- B29C 65/40
- • Applying molten plastics, e.g. hot melt (using welding bar {combined with hot gases} [B29C 65/12](#) ; by moulding [B29C 65/70](#))

- B29C 65/48
- using adhesives {, i.e. using supplementary joining material}~~(heat-activated{to be additionally classified in}B29C 65/02{and subgroups};~~ *heat-activated {to be additionally classified in} B29C 65/02 {and subgroups};* {applying molten plastics, e.g.} hot melts {to be additionally classified in} [B29C 65/40](#) ; non-mechanical parts of adhesive processes, in general [C09J 5/00](#)); {solvent bonding}
- NOTE
When classifying in this group, heat-activated adhesives are further classified in group [B29C 65/02](#) . When classifying in this group, applying molten plastics is further classified in group [B29C 65/40](#) .
- WARNING
Subgroups [B29C 65/4805](#) to [B29C 65/4895](#) are not complete, pending a reorganisation; see also this group and [B29C 65/4895](#)
- B29C 65/74
- by welding and severing, {or by joining and severing, the severing being performed in the area to be joined, next to the area to be joined, in the joint area or next to the joint area}
- NOTE
When classifying in this group, joining techniques are additionally classified in the relevant groups, e.g. in [B29C 65/02](#) and subgroups
- 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](#))}**
- WARNING
Groups [B29C 66/00](#) - [B29C 66/98](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [B29C 66/00](#) - [B29C 66/98](#) : [B29C 65/00](#)]
- U B29C 66/70**
- {characterised by the composition, physical properties or the structure of the material of the parts to be joined; Joining with non-plastics material (chemical aspects [C08J 5/12](#) , [C09J](#))}
- WARNING
Group [B29C 66/70](#) and subgroups are not complete, pending a reorganisation; see also [B29C 65/00](#) and its subgroups
- B29C 66/71
- • {characterised by the composition of the plastics material of the parts to be joined (welding bar compositions [B29C 65/125](#))}
- WARNING
Group [B29C 66/71](#) and subgroups are not complete, pending a reorganisation; ~~see also [B29K1/00](#) to [B29K95/00](#)~~
- U B29C 66/72**
- • {characterised by the structure of the material of the parts to be joined}
- U B29C 66/721**
- • • {Fibre-reinforced materials ([B29C 66/729](#) takes precedence)}
- WARNING
Subgroups of [B29C 66/721](#) are not complete, pending a reorganisation; see also this group
- B29C 66/7212
- • • • {characterised by the composition of the fibres}
- WARNING
Not complete, pending a reorganisation; ~~see also [B29K201/00](#) to [B29K311/14](#)~~

- U B29C 67/00** **Shaping techniques not covered by groups [B29C 39/00](#) to [B29C 65/00](#) , [B29C 70/00](#) or [B29C 73/00](#)**
- U B29C 67/24
B29C 67/246
- characterised by the choice of material
 - {Moulding high reactive monomers or prepolymers, e.g. by reaction injection moulding ([RIM](#)), liquid injection moulding ([LIM](#)) (casting monomers [B29C 39/006](#) , mixing construction [B29B 7/74](#))}
- 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.
- B29C 70/02
- comprising combinations of reinforcements, {e.g. non-specified reinforcements, fibrous reinforcing inserts} and fillers, {e.g. particulate fillers}, incorporated in matrix material, forming one or more layers and with or without non-reinforced or non-filled layers {(combinations of fibrous reinforcement only [B29C 70/04](#); combinations of fillers only [B29C 70/58](#); combinations with non reinforcing inserts, e.g. foam blocks, [B29C 70/68](#))}
- U B29C 70/04
- comprising reinforcements only, e.g. self-reinforcing plastics
- U B29C 70/06
- Fibrous reinforcements only
- B29C 70/10
- · characterised by the structure of fibrous reinforcements, {e.g. hollow fibres}
- U B29C 70/16
- · · using fibres of substantial or continuous length {(non-woven fabrics per se [D04H 3/00](#))}
- B29C 70/18
- · · · in the form of a mat, e.g. sheet moulding compound ([SMC](#))
- U B29C 70/20
- · · · oriented in a single direction, e.g. roofing or other parallel fibres {([B29C 70/083](#) , [B29C 70/226](#) take precedence)}
- B29C 70/202
- · · · {arranged in parallel planes or structures of fibres crossing at substantial angles, e.g. cross-moulding compound ([XMC](#)) ([B29C 70/207](#) takes precedence)}
- U B29C 70/28
- Shaping operations therefor

NOTES

1. This group covers:

- the shaping of a coherent fibrous reinforcements which are pre-impregnated or without binder; or of non-coherent reinforcements of fibres in a mould or on a support;
- the impregnation or introduction of a plastics matrix in reinforcements during shaping;

2. This group does not cover:

- the moulding by a single technique of plastics matrix material mixed with and containing reinforcing fibres of short length, which is covered by the appropriate place for that technique;

- the pretreatment, e.g. impregnation, of reinforcements per se, i.e. independently of their shaping, which is covered by group [B29B 15/08](#)
- U B29C 70/30
- • Shaping by lay-up, i.e. applying fibres, tape or broadsheet on a mould, former or core; Shaping by spray-up, i.e. spraying of fibres on a mould, former or core {(by winding and joining, e.g. filament winding [B29C 53/56](#) ; for building tyres [B29D 30/08](#))}
- U B29C 70/38
- • • Automated lay-up, e.g. using robots, laying filaments according to predetermined patterns {(application heads for tyres [B29D 30/28](#))}
- B29C 70/382
- • • • {Automated fiber placement (~~AFP~~)}
- B29C 70/386
- • • • {Automated tape laying (~~ATL~~)}
- U B29C 70/40
- • Shaping or impregnating by compression ([B29C 70/34](#) takes precedence) {not applied}
- U B29C 70/42
- • • for producing articles of definite length, i.e. discrete articles
- B29C 70/46
- • • • using matched moulds, e.g. for deforming sheet moulding compound (~~SMC~~), prepregs
- B29C 70/48
- • • • and impregnating the reinforcements in the closed mould, e.g. resin transfer moulding (~~RTM~~), {e.g. by vacuum}
- B29C 70/50
- • • for producing articles of indefinite length, e.g. prepregs, sheet moulding compounds (~~SMC~~), cross moulding compounds (~~XMC~~)
- B29C 70/54
- • Component parts, details or accessories; Auxiliary operations, {e.g. feeding or storage of prepregs or SMC after impregnation or during ageing (pretreatment, e.g. impregnation, of reinforcements [B29B 15/08](#))}
- B29C 70/58
- comprising fillers only, {e.g. particles, powder, beads, flakes, spheres ([B29C 70/025](#) takes precedence, agglomerating hollow spheres to produce synthetic foam [B29C 70/66](#) ; compounding ingredients per se [C08K](#))}
- NOTE**
Moulding of plastics matrix material mixed with fillers by a single technique is classified in the appropriate place for that technique.
- B29C 70/68
- by incorporating or moulding on preformed parts, e.g. inserts, layers, {e.g. foam blocks (mould constructions therefor [B29C 33/12](#) ; joining preformed parts by moulding [B29C 65/70](#))}
- NOTE**
This group does not cover:
- incorporating, or moulding on, preformed parts by a single technique, which is covered by the appropriate place for that technique;
 - pretreatment of preformed parts per se, i.e. independently of their shaping, which is covered by group [B29B 15/00](#)
- B29C 70/86
- • Incorporated in coherent impregnated reinforcing layers, {e.g. by winding}
- 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](#))**
- B29C 71/04
- by wave energy or particle radiation, {e.g. for curing or vulcanising preformed articles (during moulding, e.g. in a mould [B29C 35/08](#))}

U 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 section C, e.g. [C09K 3/10](#)~~){(*sealing compositions, see section C, e.g. [C09K 3/10](#) {;* incorporating auto-repairing or self-sealing arrangements or agents on or into tyres [B29D 30/0685](#))} }

Project: N/A (B29K)

B29K

INDEXING SCHEME ASSOCIATED WITH SUBCLASSES [B29B](#), [B29C](#) OR [B29D](#), RELATING TO MOULDING MATERIALSNOTES

1. This subclass constitutes an indexing scheme associated with subclasses [B29B](#), [B29C](#) or [B29D](#).
2. In this subclass, the following term is used with the meaning indicated: ~~"rubber" covers: natural or conjugated diene rubbers; rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for such macromolecular compounds~~
 - *"rubber" covers:*
 - 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 such macromolecular compounds*
3. Documents relating to compositions or properties of the materials to be shaped, said compositions having a particular influence on the shaping technique, should be classified in the shaping technique, e.g. [B29C 39/003](#) , [B29C 41/003](#) , [B29C 43/003](#) , [B29C 45/0001](#) , [B29C 47/0004](#) , [B29C 49/0005](#) , [B29C 51/002](#) , [B29C 53/005](#) , [B29C 55/005](#) , [B29C 61/003](#) , [B29C 63/0017](#) and **B2965/00S**

Copolymers are indexed with the same indexing code as the majority polymers

WARNINGS

1. The following IPC indexing codes are not being used: [B29K 105/02](#) , [B29K 105/22](#) , [B29K 105/28](#) , [B29K 105/30](#) , [B29K 105/32](#) and [B29K 105/34](#)
The aspect of [B29K 105/02](#) is covered by [B29K 2995/0064](#) The aspect of [B29K 105/22](#) is covered by [B29K 705/00](#) The aspect of [B29K 105/28](#) is covered by [B29K 2995/0025](#) The aspect of [B29K 105/30](#) is covered by [B29K 2995/003](#) The aspect of [B29K 105/32](#) is covered by [B29K 2995/0026](#)
The aspects of [B29K 105/34](#) are covered by [B29K 2995/002](#) , [B29K 2995/0007](#) and [B29K 2995/0015](#) Subclass indexes Compositions for moulding materials, condition, form or state of moulded material: **B29K1/00** - **B29K105/00**
Compositions for reinforcements: **B29K201/00** - **B29K313/00** Compositions for fillers: **B29K401/00** - **B29K511/00** Compositions for preformed parts: **B29K601/00** - **B29K713/00** Compositions for moulds: **B29K801/00** - **B29K913/00** Properties of moulding materials, reinforcements, fillers, preformed

parts or moulds: **B29K995/00** Compositions for moulding materials; Condition, form or state of moulded material

2. From the date indicated below, the following groups have been deleted from the classification scheme. The documents of these groups have been transferred to the new groups as follows :

[B29K 105/28](#) transferred to [B29K 2995/0025](#)

[B29K 105/30](#) transferred to [B29K 2995/003](#)

[B29K 105/32](#) transferred to [B29K 2995/0026](#)

[B29K 105/34](#) transferred to [B29K 2995/002](#) , [B29K 2995/0007](#) , **B29K00D4**

- B29K 2023/00** Use of polyalkenes {or derivatives thereof} as moulding material {(as such [C08L 23/00](#))}
- B29K 2025/00** Use of polymers of vinyl-aromatic compounds {or derivatives thereof} as moulding material {(as such [C08L 25/00](#))}
- B29K 2027/00** Use of polyvinylhalogenides {or derivatives thereof} as moulding material {(as such [C08L 27/00](#))}
- B29K 2029/00** Use of polyvinylalcohols, polyvinylethers, polyvinylaldehydes, polyvinylketones or polyvinylketals {or derivatives thereof} as moulding material {(as such [C08L 29/00](#))}
- B29K 2031/00** Use of polyvinylesters {or derivatives thereof} as moulding material {(as such [C08L 31/00](#))}
- B29K 2033/00** Use of polymers of unsaturated acids or derivatives thereof as moulding material {(as such [C08L 33/00](#);} **B29K35/00 takes precedence**)} (~~B29K35/00 takes precedence~~)
- B29K 2035/00** Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof} as moulding material {(as such [C08L 35/00](#))}
- B29K 2061/00** Use of condensation polymers of aldehydes or ketones {or derivatives thereof} as moulding material {(as such [C08L 61/00](#))}
- B29K 2063/00** Use of {EP, i.e.} epoxy resins {or derivatives thereof} as moulding material {(as such [C08L 63/00](#))}
- B29K 2067/00** Use of polyesters {or derivatives thereof} as moulding material {(as such [C08L 67/00](#))}
- B29K 2069/00** Use of {PC, i.e.} polycarbonates {or derivatives thereof} as moulding material {(as such [C08L 69/00](#))}
- B29K 2071/00** Use of polyethers, {e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof} as moulding material {(as such [C08L 71/00](#))}
- B29K 2075/00** Use of {PU, i.e.} polyureas or polyurethanes {or derivatives thereof} as moulding material {(as such [C08L 75/00](#))}
- B29K 2077/00** Use of {PA, i.e.} polyamides, e.g. polyesteramides {or derivatives thereof} as moulding material {(as such [C08L 77/00](#))}
- U B29K 2079/00** Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups **B29K61/00** to **B29K77/00**}, as moulding material {(as such [C08L 79/00](#))}
- U B29K 2079/08** · {PI, i.e. polyimides or derivatives thereof (as such [C08L 79/08](#))}
- B29K 2079/085** · · {Thermoplastic polyimides, e.g. polyesterimides, polyetherimides (~~[PEI]~~), polyamideimides; Derivatives thereof}

- U B29K 2083/00** Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as moulding material {(as such [C08L 83/00](#))}
- B29K 2083/005 · {Liquid Silicone Rubbers ~~{(LSR)}~~ or derivatives thereof}
- B29K 2085/00** Use of polymers having other elements {than silicon, sulfur, nitrogen, oxygen, and carbon} in the main chain, as moulding material {(as such [C08L 85/00](#))}
- U B29K 2105/00** Condition, form or state of moulded material {or of the material to be shaped}
- U B29K 2105/06 · containing reinforcements, fillers or inserts
- U B29K 2105/08 · · of continuous length, e.g. cords, rovings, mats, fabrics, strands, yarns
- U B29K 2105/0854 · · · {in the form of a non-woven mat}
- B29K 2105/0863 · · · · {Sheet moulding compound ~~{(SMC)}~~}
- B29K 2105/10 · · · {Cords, strands or rovings, e.g.} oriented {cords, strands or rovings}
- B29K 2223/00** Use of polyalkenes {or derivatives thereof} as reinforcement {(as such [C08L 23/00](#))}
- B29K 2225/00** Use of polymers of vinyl-aromatic compounds {or derivatives thereof} as reinforcement {(as such [C08L 25/00](#))}
- B29K 2227/00** Use of polyvinylhalogenides {or derivatives thereof} as reinforcement {(as such [C08L 27/00](#))}
- B29K 2231/00** Use of polyvinylesters {or derivatives thereof} as reinforcement {(as such [C08L 31/00](#))}
- B29K 2235/00** Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof} as reinforcement {(as such [C08L 35/00](#))}
- B29K 2263/00** Use of {EP, i.e.} epoxy resins {or derivatives thereof} as reinforcement {(as such [C08L 63/00](#))}
- B29K 2267/00** Use of polyesters {or derivatives thereof} as reinforcement {(as such [C08L 67/00](#))}
- B29K 2269/00** Use of {PC, i.e.} polycarbonates {or derivatives thereof} as reinforcement {(as such [C08L 69/00](#))}
- B29K 2271/00** Use of polyethers, {e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}, as reinforcement {(as such [C08L 71/00](#))}
- B29K 2275/00** Use of {PU, i.e.} polyureas or polyurethanes {or derivatives thereof}, as reinforcement {(as such [C08L 75/00](#))}
- B29K 2277/00** Use of {PA, i.e.} polyamides, e.g. polyesteramides {or derivatives thereof}, as reinforcement {(as such [C08L 77/00](#))}
- U B29K 2279/00** Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups **B29K261/00** to **B29K277/00**}, as reinforcement {(as such [C08L 79/00](#))}
- U B29K 2279/08 · {PI, i.e. polyimides or derivatives thereof (as such [C08L 79/08](#))}
- B29K 2279/085 · · {Thermoplastic polyimides, e.g. polyesterimides, polyetherimides ~~{(PEI)}~~, polyamideimides; Derivatives thereof}
- U B29K 2283/00** Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as reinforcement {(as such [C08L 83/00](#))}

B29K 2283/005	· {Liquid Silicone Rubbers ([LSR]) or derivatives thereof}
B29K 2285/00	Use of polymers having other elements {than silicon, sulfur, nitrogen, oxygen, and carbon} in the main chain, as reinforcement {(as such C08L 85/00)}
B29K 2423/00	Use of polyalkenes {or derivatives thereof} as filler {(as such C08L 23/00)}
B29K 2425/00	Use of polymers of vinyl-aromatic compounds {or derivatives thereof} as filler {(as such C08L 25/00)}
B29K 2427/00	Use of polyvinylhalogenides {or derivatives thereof} as filler {(as such C08L 27/00)}
B29K 2431/00	Use of polyvinylesters {or derivatives thereof} as filler {(as such C08L 31/00)}
B29K 2435/00	Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof} as filler {(as such C08L 35/00)}
B29K 2463/00	Use of {EP, i.e.} epoxy resins {or derivatives thereof} as filler {(as such C08L 63/00)}
B29K 2467/00	Use of polyesters {or derivatives thereof} as filler {(as such C08L 67/00)}
B29K 2469/00	Use of {PC, i.e.} polycarbonates {or derivatives thereof} as filler {(as such C08L 69/00)}
B29K 2471/00	Use of polyethers, {e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}, as filler {(as such C08L 71/00)}
B29K 2475/00	Use of {PU, i.e.} polyureas or polyurethanes {or derivatives thereof}, as filler {(as such C08L 75/00)}
B29K 2477/00	Use of {PA, i.e.} polyamides, e.g. polyesteramides {or derivatives thereof}, as filler {(as such C08L 77/00)}
U B29K 2479/00	Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups B29K461/00 to B29K477/00}, as filler {(as such C08L 79/00)}
U B29K 2479/08	· {PI, i.e. polyimides or derivatives thereof (as such C08L 79/08)}
B29K 2479/085	· · {Thermoplastic polyimides, e.g. polyesterimides, polyetherimides ([PEI]), polyamideimides; Derivatives thereof}
U B29K 2483/00	Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as filler {(as such C08L 83/00)}
B29K 2483/005	· {Liquid Silicone Rubbers ([LSR]) or derivatives thereof}
B29K 2485/00	Use of polymers having other elements {than silicon, sulfur, nitrogen, oxygen, and carbon} in the main chain, as filler {(as such C08L 85/00)}
B29K 2623/00	Use of polyalkenes {or derivatives thereof} for preformed parts, e.g. inserts {(as such C08L 23/00)}
B29K 2625/00	Use of polymers of vinyl-aromatic compounds {or derivatives thereof} for preformed parts, e.g. inserts {(as such C08L 25/00)}
B29K 2627/00	Use of polyvinylhalogenides {or derivatives thereof} for preformed parts, e.g. inserts {(as such C08L 27/00)}
B29K 2631/00	Use of polyvinylesters {or derivatives thereof} for preformed parts, e.g. inserts {(as such C08L 31/00)}

- B29K 2635/00 Use of polymers of unsaturated polycarboxylic acids {or derivatives thereof} for preformed parts, e.g. inserts {(as such [C08L 35/00](#))}
- B29K 2663/00 Use of {EP, i.e.} epoxy resins {or derivatives thereof} for preformed parts, e.g. inserts {(as such [C08L 63/00](#))}
- B29K 2667/00 Use of polyesters {or derivatives thereof} for preformed parts, e.g. inserts {(as such [C08L 67/00](#))}
- B29K 2669/00 Use of {PC, i.e.} polycarbonates {or derivatives thereof} for preformed parts, e.g. inserts {(as such [C08L 69/00](#))}
- B29K 2671/00 Use of polyethers, {e.g. PEEK, i.e. polyether-etherketone or PEK, i.e. polyetherketone or derivatives thereof}, for preformed parts, e.g. inserts {(as such [C08L 71/00](#))}
- B29K 2675/00 Use of {PU, i.e.} polyureas or polyurethanes {or derivatives thereof}, for preformed parts, e.g. inserts {(as such [C08L 75/00](#))}
- B29K 2677/00 Use of {PA, i.e.} polyamides, e.g. polyesteramides {or derivatives thereof}, for preformed parts, e.g. inserts {(as such [C08L 77/00](#))}
- U B29K 2679/00 Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain{ not provided for in groups [B29K661/00](#) to [B29K677/00](#)}, for preformed parts, e.g. inserts {(as such [C08L 79/00](#))}
- U B29K 2679/08
B29K 2679/085
- {PI, i.e. polyimides or derivatives thereof (as such [C08L 79/08](#))}
 - · {Thermoplastic polyimides, e.g. polyesterimides, polyetherimides (~~{PEI}~~), polyamideimides; Derivatives thereof}
- U B29K 2683/00 Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, for preformed parts, e.g. inserts {(as such [C08L 83/00](#))}
- B29K 2683/005
- {Liquid Silicone Rubbers (~~{LSR}~~) or derivatives thereof}
- B29K 2685/00 Use of polymers having other elements {than silicon, sulfur, nitrogen, oxygen, and carbon} in the main chain, for preformed parts, e.g. inserts {(as such [C08L 85/00](#))}
- B29K 2833/00 {Use of polymers of unsaturated acids or derivatives thereof as mould material (as such [C08L 33/00](#); [B29K 2835/00](#) takes precedence)(~~B29K-2835/00 takes precedence~~)}
- B29K 2877/00 {Use of PA, i.e.} polyamides, e.g. polyesteramides or derivatives thereof, as mould material [(as such [C08L 77/00](#))]
- U B29K 2879/00 {Use of polymers having nitrogen, with or without oxygen, or carbon only, in the main chain not provided for in groups [B29K 2861/00](#) to [B29K 2877/00](#)}, as mould material {(as such [C08L 79/00](#))}
- U B29K 2879/08
B29K 2879/085
- {PI, i.e. polyimides or derivatives thereof (as such [C08L 79/08](#))}
 - · {Thermoplastic polyimides, e.g. polyesterimides, polyetherimides (~~{PEI}~~), polyamideimides; Derivatives thereof}
- U B29K 2883/00 {Use of polymers having silicon, with or without sulfur, nitrogen, oxygen, or carbon only, in the main chain, as mould material (as such [C08L 83/00](#))}
- B29K 2883/005
- {Liquid Silicone Rubbers (~~{LSR}~~) or derivatives thereof}
- B29K 2901/00 {Use of unspecified macromolecular compounds as mould material (unspecified rubbers [B29K 2821/00](#); as such [C08L 101/00](#))(~~as such C08L-101/00~~)}

Project: N/A (B29L)

B29L	INDEXING SCHEME ASSOCIATED WITH SUBCLASS B29C, RELATING TO PARTICULAR ARTICLES
	<u>NOTE</u>
	This subclass constitutes an indexing scheme for non-obligatory use only. The indexing scheme may be used to identify information which supplements subject matter already classified in subclass B29C . The indexing codes of this subclass, of which only the pertinent ones should be selected, are added in conformity with paragraph 82 of the Guide so as to provide information concerning the articles produced
	This subclass constitutes an indexing scheme associated with subclass B29C {N-} and group B29B 17/00 . Parts of specified articles are indexed with the same index codes as the articles †}
B29L 2007/00	Flat articles, e.g. films or sheets (B29L24/00 B29L 2024/00 takes precedence)
B29L 2007/007	· {Narrow strips, e.g. ribbons, tapes, bands (belts B29L29/00 B29L 2029/00 ; tapes as carrier of sound or information B29L 2017/008)}
B29L 2016/00	Articles with corrugations or pleats (B29L23/18 B29L 2023/18, B29L 2024/003 take precedence)
B29L 2019/00	Buttons or semi-finished parts of buttons { for haberdashery (push-buttons B29L31/46 B29L 2031/46)}
B29L 2022/00	Hollow articles (tubular articles B29L23/00 B29L 2023/00; pneumatic tyres B29L30/00 B29L 2030/00)
B29L 2022/02	· Inflatable articles (balls B29L31/54 B29L 2031/54 ; { inner tyres B29L 2023/245 })
B29L 2023/00	Tubular articles (B29L24/00 B29L 2024/00 takes precedence; { catheters B29L 2031/7542})
B29L 2023/004	· {Bent tubes (for use as pipe couplings B29L31/24 B29L 2031/24)}
U B29L 2031/00	Other particular articles
	<u>WARNING</u>
	Groups B29L 2031/70 - B29L 2031/7782 do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: B29L 2031/70 - B29L 2031/7782 : B29L 31/00
B29L 2031/10	· Building elements, e.g. bricks, blocks, tiles, panels, posts, beams {(frameless domes B29L25/00 B29L 2025/00 , doors B29L 2031/724)}
B29L 2031/24	· Pipe joints or couplings (B29L31/26 B29L 2031/26 takes precedence)
B29L 2031/30	· Vehicles, e.g. ships or aircraft, or body parts thereof {(vanes or blades B29L31/08 B29L 2031/08 , air bags B29L 2022/027)}
B29L 2031/3076	· {Aircrafts (blades, propellers B29L31/08 B29L 2031/08)}
B29L 2031/32	· Wheels, pinions, pulleys, castors or rollers, { Rims (inner tubes B29L 2023/245 ; gears B29L 2015/003 ; tyres B29L30/00 B29L 2030/00)}
B29L 2031/46	· Knobs or handles, { push-buttons, grips (buttons for haberdashery B29L19/00 B29L 2019/00 , press-buttons as fastening element B29L 2031/7282)}
B29L 2031/52	· Sports equipment; { Games; Articles for amusement}; Toys (B29L31/54 B29L 2031/54 takes precedence)
B29L 2031/58	· Upholstery or cushions, e.g. vehicle upholstery or interior padding {(mattresses, cushions B29L2031/8178 B29L 2031/751)}
U B29L 2031/60	· Multitubular or multicompartmented articles, e.g. honeycomb

- B29L 2031/601 · · {Multi-tubular articles, i.e. composed of a plurality of tubes (hollow-walled [B29L24/00](#)[B29L 2024/00](#))}
- B29L 2031/702 · {Imitation articles, e.g. statues, mannequins (medical equipment [B29L 2031/753](#); models [B29L31/40](#)[B29L 2031/40](#))}
- U B29L 2031/709 · {Articles shaped in a closed loop, e.g. conveyor belts}
- U B29L 2031/7096 · · {Rings or ring-like articles}
- B29L 2031/7102 · · · {Toroidal articles (tyres [B29L30/00](#)[B29L 2030/00](#); inner tubes [B29L 2023/245](#))}
- B29L 2031/712 · {Containers; Packaging elements or accessories, Packages (closures therefor [B29L31/56](#)[B29L 2031/56](#); ink or toner cartridges [B29L 2031/7678](#); squeeze tubes [B29L23/20](#)[B29L 2023/20](#); suitcases [B29L 2031/7418](#))}
- B29L 2031/718 · {Cosmetic equipment, e.g. hair dressing, shaving equipment (brushes [B29L31/42](#)[B29L 2031/42](#), combs [B29L 2021/005](#))}
- B29L 2031/726 · {Fabrics (nets [B29L28/00](#)[B29L 2028/00](#))}
- B29L 2031/727 · {Fastening elements (bolts [B29L 2001/002](#); nuts [B29L 2001/005](#); screws [B29L 2001/007](#); slide fasteners [B29L5/00](#)[B29L 2005/00](#); buttons for haberdashery [B29L19/00](#)[B29L 2019/00](#))}
- B29L 2031/7278 · · {Couplings, connectors, nipples ([B29L 2031/7274](#) takes precedence; for pipes or tubes [B29L31/24](#)[B29L 2031/24](#); electrical [B29L31/34](#) [B29L 2031/34](#))}
- B29L 2031/737 · {Articles provided with holes, e.g. grids, sieves (nets [B29L28/00](#)[B29L 2028/00](#))}
- B29L 2031/7414 · {Smokers" requisites, e.g. pipe cleaners (cigar holders [B29L23/14](#) [B29L 2023/14](#))}
- B29L 2031/748 · {Machines or parts thereof not otherwise provided for (conveyor belts [B29L 2031/7092](#); driving belts [B29L 2031/7094](#); bearings [B29L31/04](#) [B29L 2031/04](#))}
- B29L 2031/7498 · · {Rotors (with blades [B29L31/08](#)[B29L 2031/08](#))}
- B29L 2031/751 · {Mattresses, cushions (upholstery [B29L31/58](#)[B29L 2031/58](#))}
- B29L 2031/772 · {Articles characterised by their shape and not otherwise provided for (closed loop [B29L 2031/709](#); ring-like [B29L 2031/7096](#); corrugated [B29L16/00](#) [B29L 2016/00](#), flat [B29L7/00](#)[B29L 2007/00](#); hollow [B29L22/00](#)[B29L 2022/00](#); screw-threaded [B29L1/00](#)[B29L 2001/00](#); toothed [B29L 2031/775](#); corrugated tubes [B29L23/18](#)[B29L 2023/18](#))}
- B29L 2031/773 · · {Dome-shaped (igloos [B29L 2031/106](#), frameless domes [B29L25/00](#) [B29L 2025/00](#))}
- B29L 2031/7734 · · {Spherical (balls [B29L31/54](#)[B29L 2031/54](#); globes [B29L 2022/002](#))}
- B29L 2031/775 · {Toothed articles (corrugated [B29L16/00](#)[B29L 2016/00](#); screw-threaded [B29L1/00](#)[B29L 2001/00](#); corrugated tubes [B29L23/18](#)[B29L 2023/18](#); comb-like [B29L21/00](#)[B29L 2021/00](#); gears, pinions, sprocket-wheels [B29L15/00](#) [B29L 2015/00](#))}

Project: N/A (B30B)

- U B30B 15/00 **Details of, or accessories for, presses; Auxiliary measures in connection with pressing (safety devices [F16P](#))**
- U B30B 15/30 · Feeding material to presses
- U B30B 15/302 · · {Feeding material in particulate or plastic state to moulding presses}
- B30B 15/304 · · · {by using feed frames or shoes with relative movement} with regard to the mould or moulds

Project: N/A (B31)

B31

MAKING ARTICLES OF PAPER ARTICLES OR CARDBOARD; WORKING PAPER OR CARDBOARD (making layered products not composed wholly of paper or cardboard B32B; handling thin material, e.g. sheets, webs, B65H)

NOTES

1. The word "paper" in this class is to be interpreted as covering material worked in a manner analogous to paper, e.g. plastic sheet materials, laminated materials or metal foils. This class does not include making articles directly from paper pulp, which is covered by [D21J](#).
2. This class is to be understood as restricted to adaptations or associations of handling sheets, webs, or blank peculiar to paper-working, e.g. bag or box making, machinery. Handling sheets, webs, or blanks of wider applicability, irrespective of whether described or claimed only for paper-working machinery, is to be regarded as of a more comprehensive nature and as such classified in [B65H](#).

Project: N/A (B31B)

B31B

MAKING BOXES, CARTONS, ENVELOPES OR BAGS OF PAPER OR CARDBOARD (incising, scoring, in general [B26D 3/08](#); combined making and filling [B65B](#))

NOTES

1. In this subclass, envelopes or bags are regarded as being essentially flexible containers, the final shape of which is determined by their contents.
2. In this subclass, the following expression is used with the meaning indicated:
 - "boxes or cartons" includes bags formed similarly to cartons, trays with upstanding side-walls, barrels, tubes and cups, other than articles formed by winding.
3. In this subclass, it is desirable to add the indexing codes of [B31B 2201/00](#) - ~~[B31B 2241/00](#)~~ [B31B 2247/00](#)

WARNING

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

B31B 7/02 covered by B31B 1/02	B31B 7/14 covered by B31B 1/14
B31B 7/60 covered by B31B 1/60	B31B 7/74 covered by B31B 1/74
B31B 9/00 covered by B31B 3/00	B31B 9/02 covered by B31B 3/02
B31B 9/14 covered by B31B 3/14	B31B 9/26 covered by B31B 3/26
B31B 9/60 covered by B31B 3/60	B31B 9/74 covered by B31B 3/74
B31B 11/02 covered by B31B 1/02	B31B 11/14 covered by B31B 1/14
B31B 11/26 covered by B31B 1/26	B31B 11/60 covered by B31B 1/60
B31B 11/74 covered by B31B 1/74	B31B 13/02 covered by B31B 1/02
B31B 13/14 covered by B31B 1/14	B31B 13/60 covered by B31B 1/60
B31B 13/74 covered by B31B 1/74	B31B 15/14 covered by B31B 1/14
B31B 15/26 covered by B31B 1/26	B31B 15/60 covered by B31B 1/60
B31B 15/74 covered by B31B 1/74	B31B 21/02 covered by B31B 19/02
B31B 21/14 covered by B31B 19/14	B31B 21/26 covered by B31B 19/26
B31B 21/60 covered by B31B 19/60	B31B 21/74 covered by B31B 19/74
B31B 23/02 covered by B31B 19/02 , B31B 23/00	B31B 23/14 covered by B31B 19/14 , B31B 23/00
B31B 23/00	B31B 23/26 covered by B31B 19/26 , B31B 23/00
B31B 23/60 covered by B31B 19/60 , B31B 23/00	B31B 25/02 covered by B31B 19/02 , B31B 25/00
B31B 23/74 covered by B31B 19/74 , B31B 23/00	B31B 25/14 covered by B31B 19/14 , B31B 25/00
B31B 25/00	B31B 25/26 covered by B31B 19/26 , B31B 25/00
B31B 25/60 covered by B31B 19/60 , B31B 25/00	B31B 25/74 covered

by [B31B 19/74](#), [B31B 25/00](#) B31B 27/02 covered by [B31B 19/02](#),
[B31B 27/00](#) B31B 27/14 covered by [B31B 19/14](#), [B31B 27/00](#)
B31B 27/26 covered by [B31B 19/26](#), [B31B 27/00](#) B31B 27/60 covered
by [B31B 19/60](#), [B31B 27/00](#) B31B 27/74 covered by [B31B 19/74](#),
[B31B 27/00](#) B31B 29/02 covered by [B31B 19/02](#), [B31B 29/00](#)
B31B 29/14 covered by [B31B 19/14](#), [B31B 29/00](#) B31B 29/26 covered
by [B31B 19/26](#), [B31B 29/00](#) B31B 31/00 covered by [B31B 29/00](#)
B31B 31/02 covered by [B31B 19/02](#), [B31B 29/00](#) B31B 31/14 covered
by [B31B 19/14](#), [B31B 29/00](#) B31B 31/26 covered by [B31B 19/26](#),
[B31B 29/00](#) B31B 31/60 covered by [B31B 29/60](#) B31B 31/74
covered by [B31B 29/74](#) B31B 33/00 covered by [B31B 29/00](#)
B31B 33/02 covered by [B31B 19/02](#), [B31B 29/00](#) B31B 33/14 covered
by [B31B 19/14](#), [B31B 29/00](#) B31B 33/26 covered by [B31B 19/26](#),
[B31B 29/00](#) B31B 33/60 covered by [B31B 29/60](#) B31B 33/74
covered by [B31B 29/74](#) B31B 35/00 covered by [B31B 29/00](#)
B31B 35/02 covered by [B31B 19/02](#), [B31B 29/00](#) B31B 35/14 covered
by [B31B 19/14](#), [B31B 29/00](#) B31B 35/26 covered by [B31B 19/26](#),
[B31B 29/00](#) B31B 35/60 covered by [B31B 29/60](#) B31B 35/74
covered by [B31B 29/74](#) B31B 37/02 covered by [B31B 19/02](#),
[B31B 37/00](#) B31B 37/14 covered by [B31B 19/14](#), [B31B 37/00](#)
B31B 37/26 covered by [B31B 19/26](#), [B31B 37/00](#) B31B 37/60 covered
by [B31B 19/60](#), [B31B 37/00](#) B31B 37/74 covered by [B31B 19/74](#),
[B31B 37/00](#) B31B 39/02 covered by [B31B 19/02](#), [B31B 39/00](#)
B31B 39/14 covered by [B31B 19/14](#), [B31B 39/00](#) B31B 39/26 covered
by [B31B 19/26](#), [B31B 39/00](#) B31B 39/60 covered by [B31B 19/60](#),
[B31B 39/00](#) B31B 41/02 covered by [B31B 19/02](#), [B31B 41/00](#)
B31B 41/14 covered by [B31B 19/14](#), [B31B 41/00](#) B31B 41/26 covered
by [B31B 19/26](#), [B31B 41/00](#) B31B 41/60 covered by [B31B 19/60](#),
[B31B 41/00](#) B31B 41/74 covered by [B31B 19/74](#), [B31B 41/00](#)

B31B 37/00

Machinery characterised by making envelopes or bags with structural provision at the base for thickness of contents from webs, e.g. from tubular webs (machinery characterised by cutting sheets and blanks from webs and working them to form such envelopes or bags ~~B31B31/00~~[B31B 21/00](#))

Project: N/A (B31F)

U B31F 1/00

Mechanical deformation of paper or cardboard without removing material including combined deformation and laminating (embossing combined with application of ink, type marking presses, selective embossing machines [B41F](#), [B41J](#), [B41K](#), [B41M](#); machines or apparatus for embossing decorations or marks [B44B 5/00](#); artists hand tools for embossing [B44B 11/04](#); producing decorative effects by processes for stamping ornamental designs on surfaces [B44C 1/24](#); mechanical deformation during paper or board making, kinds of paper or board [D21](#))

B31F 1/08

• Creasing (~~corrugating [B31F 1/20](#); zig-zag folding [B65H 45/20](#)~~){([corrugating \[B31F 1/20\]\(#\); zig-zag folding \[B65H 45/20\]\(#\)](#)}; combined with folding [B31F 1/0012](#), [B31F 1/0022](#); grooving by cutting [B26D 3/06](#), [B26D 3/08](#); by milling grooves [B23C 3/30](#); of plastics material [B29C 53/06](#))} }

B31F 5/00

Attaching together paper or cardboard sheets, strips, or webs; {(or other preformed paper articles joining by rim-rolling [B31F 1/0041](#), [B31F 1/009](#); closing tube ends by inserting an element [B31F 1/008](#), making boxes [B31B](#))} Reinforcing edges of paper or cardboard (means for applying adhesive or glue [B05C](#); stapling in box or like making [B31B](#); attaching the replacement web to the expiring web during web-roll changing [B65H 19/18](#); apparatus for splicing webs during handling [B65H 21/00](#))

Project: N/A (B32B)

- U B32B 1/00 Layered products having a general shape other than plane**
- NOTE
For classification of a product in this group, surface unevennesses or non-uniformities and the shape of individual layers are ignored.
- B32B 1/02 • Receptacles, {i.e. rigid containers}, e.g. tanks
- U B32B 3/00 Layered products comprising a layer with external or internal discontinuities or unevennesses, or a layer of non-planar form {(fibrous or filamentary layers [B32B 5/02](#) ; particulate layers [B32B 5/16](#) ; foamed layers [B32B 5/18](#)); Layered products having particular features of form (receptacles or tubular products [B32B 1/00](#))}**
- U B32B 3/02 • characterised by features of form at particular places, e.g. in edge regions {(non-uniform thickness [B32B 3/263](#))}
- B32B 3/04 • • characterised by {at least one} layer folded at the edge, e.g. over another layer; characterised by at least one layer enveloping or enclosing a material
- B32B 3/06 • • for securing layers together; for attaching the product to another member, e.g. to a support, or to another product, e.g. groove/tongue, interlocking
- U B32B 3/26 • characterised by a particular shape of the outline of the cross-section of a continuous layer; characterised by a layer with cavities or internal voids {([B32B 27/205](#) takes precedence; foam layer [B32B 15/08](#)); {characterised by an apertured layer}
- B32B 3/28 • • characterised by a layer comprising a deformed thin sheet, i.e. the layer having its entire thickness deformed out of the plane}, e.g. corrugated, crumpled ([B32B 29/08](#) takes precedence)
- B32B 3/30 • • characterised by a layer formed with recesses or projections, e.g. {hollows, grooves, protuberances, ribs (apertured layer [B32B 3/266](#) ; layer with cavities or internal voids [B32B 3/26](#))}
- 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 5/02 • characterised by structural features of a {fibrous or filamentary layer ([B32B 15/02](#) , [B32B 21/02](#) take precedence; layer formed of particles [B32B 5/16](#) ; layers formed of natural mineral fibres [B32B 19/00](#) ; coated or impregnated fibrous or filamentary layers [B32B 2255/02](#) or [B32B 2260/021](#))}
- B32B 5/04 • • characterised by a layer being specifically extensible by reason of its structure or arrangement, e.g. by reason of the chemical nature of the fibres or filaments
- B32B 5/06 • • characterised by a fibrous {or filamentary} layer {mechanically connected, e.g. by needling, sewing, stitching, hydroentangling, hook and loop-type fasteners} to another layer, e.g. of fibres, of paper
- B32B 5/08 • • the fibres or filaments of a layer being of different substances, e.g. conjugate fibres, mixture of different fibres
- B32B 5/10 • • characterised by a fibrous {or filamentary} layer reinforced with filaments

- B32B 5/16
- characterised by features of a layer formed of particles, e.g. chips, powder {, granules ([B32B 21/02](#) takes precedence; layers formed of natural mineral particles [B32B 19/00](#) ; coated or impregnated particulate layers [B32B 2255/04](#) or [B32B 2260/025](#))}
- B32B 5/18
- characterised by features of a layer {of} foamed material
- U B32B 5/22
- characterised by the presence of two or more layers which {are next to each other and are fibrous, filamentary, formed of particles or foamed ([B32B 19/06](#) , [B32B 19/048](#)[B32B 19/047](#) , [B32B 29/005](#) to [B32B 29/04](#) take precedence)}
- B32B 5/30
- • one layer {being formed of particles, e.g. chips,} granules, powder
- U **B32B 7/00**
- Layered products characterised by the relation between layers, i.e. products comprising layers having different physical properties and products characterised by the interconnection of layers**
- U B32B 7/04
- characterised by the connection of layers
- B32B 7/06
- • permitting easy separation {, e.g. releasable layer}
- B32B 7/12
- • using an adhesive {, i.e. any interposed material having adhesive or bonding properties}
- U **B32B 9/00**
- Layered products comprising a particular substance not covered by groups [B32B 11/00](#) to [B32B 29/00](#)**
- B32B 9/02
- comprising animal or vegetable substances {, e.g. cork, bamboo, starch}
- B32B 11/00**
- Layered products comprising {a layer of} bituminous or tarry substances**
- B32B 13/00**
- Layered products comprising a {a layer of} water-setting substance, e.g. concrete, plaster, asbestos cement, or like builders` material**
- B32B 15/00**
- Layered products comprising {a layer of} metal**
- B32B 15/04
- comprising metal as the main or only constituent of a layer, {which is next to another layer of the same or of a different material ([B32B 17/061](#) and [B32B 23/042](#) take precedence; next to a bituminous or tarry layer [B32B 11/08](#) ; next to a water-setting substance layer [B32B 13/06](#))}
- B32B 15/06
- • of {natural rubber or synthetic} rubber
- U **B32B 18/00**
- Laminated products composed mainly of ceramics, e.g. refractory materials {(semi-permeable membranes made of inorganic material [B01D 71/02](#) ; ceramic coatings on glass [C03C 17/00](#) ; joining of ceramic layers [C04B 37/00](#) ; coating of ceramics [C04B 41/45](#) ; applying ceramic coatings on metallic materials [C23](#); applying ceramic coatings on silicon for semi-conductor purposes [H01L](#))}**
- NOTE
- In group [B32B 18/00](#) , from 01-10-2008 onwards, features relating to interlayers, additional compositional information or further processing are indexed with codes chosen from [C04B 2237/00](#) to ~~[C04B2237/70R](#)~~[C04B 2237/88](#)
- B32B 19/00**
- Layered products comprising {a layer of} natural mineral fibres or particles, e.g. asbestos, mica**
- B32B 19/02
- {the layer of fibres or particles being impregnated or} embedded in a plastic substance
- B32B 21/00**
- Layered products comprising {a layer of} wood, e.g. wood board, veneer, wood particle board**
- B32B 23/00**
- Layered products comprising {a layer of} cellulosic plastic substances {, i.e. substances obtained by chemical modification of cellulose, e.g. cellulose ethers, cellulose esters, viscose}**

- B32B 25/00** Layered products comprising {a layer of} natural or synthetic rubber {(B32B 5/02 , B32B 5/16 , B32B 5/18 take precedence; thermoplastic elastomer B32B 2274/00)}
- B32B 25/04 • comprising rubber as the main or only constituent of a layer, {which is next to another layer of the same or of a different material (B32B 17/063 takes precedence; next to a layer of a particular substance B32B 9/043 ; next to a bituminous or tarry layer B32B 11/044 ; next to a water setting substance layer B32B 13/042 ; next to a metal layer B32B 15/06 ; next to a layer formed of natural mineral fibres or particles B32B 19/043 ; next to a wood layer B32B 21/045 ; next to a cellulosic plastic layer B32B 23/046)}
- B32B 25/16 • comprising polydienes {homopolymers} or poly-halodienes {homopolymers} (B32B 25/12 takes precedence)}
- B32B 27/00** Layered products comprising {a layer of} synthetic resin {(B32B 5/02 , B32B 5/16 , B32B 5/18 take precedence; thermoplastic elastomer B32B 2274/00)}
- NOTE
This group covers all synthetic resins except those covered by B32B 25/00 or B32B 23/00
- B32B 27/06 • as the main or only constituent of a layer, {which is next to another layer of the same or of a different material (B32B 17/064 takes precedence; next to a layer of a particular substance B32B 9/045 ; next to a bituminous or tarry layer B32B 11/046 ; next to a water setting substance layer B32B 13/12 ; next to a metal layer B32B 15/08 ; next to a layer formed of natural mineral fibres or particles B32B 19/045 ; next to a wood layer B32B 21/08 ; next to a cellulosic plastic layer B32B 23/08 ; next to a natural or synthetic rubber layer B32B 25/08)}
- B32B 27/28 • comprising synthetic resins not wholly covered by any one of the sub-groups {B32B 27/30 to B32B 27/42}
- B32B 27/30 • comprising vinyl {(co)polymers; comprising acrylic (co)polymers}
- B32B 29/00** Layered products comprising {a layer of} paper or cardboard
- U B32B 37/00** Methods or apparatus for laminating, e.g. by curing or by ultrasonic bonding {(making non-planar products B32B 1/00 ; making products characterised by particular features of structure or of composition, see the relevant groups for such products, e.g. making layered products containing glass and synthetic resin layers B32B 17/10807 ; coating of single webs or the like B05)}
- B32B 37/0038 • {involving application of liquid to the layers prior to lamination, e.g. wet laminating (B32B 37/12 takes precedence; *applying liquids in general B05*)(*applying liquids in general B05*)}
- U B32B 37/06** • characterised by the heating method
- B32B 37/065 • • {resulting in the laminate being partially bonded B32B-37/0076 takes precedence}(B32B 37/0076 takes precedence)}

Project: N/A (B41F)

- U B41F 21/00** Devices for conveying sheets through printing apparatus or machines (through platen presses B41F 1/28 ; feeding sheets to or from printing apparatus or machines B65H ; { through manifolding apparatus or the like B41L 21/00})
- B41F 21/04 • Grippers ({B41F 21/08 , B41F 21/10} B41F 21/12 , B41F 21/14 take precedence)

- U B41F 23/00** Devices for treating the surfaces of sheets, webs, or other articles in connection with printing (cleaning in general [B08B](#) ; as a final step in the manufacture of such articles, see appropriate subclasses, e.g. [B29C 71/00](#) , [D21H 23/00](#) or [D21H 25/00](#) ; { in manifolding apparatus or the like [B41L 23/00](#) } ; surface treatment in general [B44D](#) , of metal [C23G](#))
- B41F 23/02 · by dampening (in rotary lithographic machines [B41F 7/24](#) {; [B41F 23/005](#) takes precedence})~~{(B41F-23/005 takes precedence)}~~

Project: N/A (B41J)

- U B41J 2/00** Typewriters or selective printing mechanisms characterised by the printing or marking process for which they are designed (mounting, arrangement, or disposition of types or dies [B41J 1/00](#); marking methods [B41M 5/00](#); structure or manufacture of heads, e.g. inductive, for recording by magnetisation or demagnetisation of a record carrier [G11B 5/127](#); heads for reproducing capacitive information [G11B 9/07](#))

NOTES

1. This group covers devices reproducing only a discrete number of tones, whereas group [H04N 1/00](#) covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales.
2. In this group, the following expressions are used with the meanings indicated:
 - "ink jet" involves the projection of ink on to the printing material, e.g. paper, through a nozzle as a stream of droplets or particles of colouring matter
 - "continuous ink jet" means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle
 - "ink spray" means a spray of ink transported by a stream of charged particles or air on to the printing material

- U B41J 2/435** · characterised by selective application of radiation to a printing material or impression-transfer material (optical elements, systems, or apparatus [G02B](#); modulation or deflection of light [G02F](#); electrophotography [G03G](#))
- U B41J 2/447** · · using arrays of radiation sources ([B41J 2/475](#) takes precedence)
- B41J 2/45** · · · using light-emitting diode ~~{-[LED]}~~ or laser~~}~~ arrays

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](#)})

- U B41J 13/00** Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers, thermal printers,} specially adapted for supporting or handling copy material in short lengths, e.g. sheets {(handling sheets or webs in general [B65H](#); apparatus for electrographic processes using a charge pattern, e.g. copying machines, [G03G 15/00](#)})
- B41J 13/02 · Rollers (roller platens [B41J 11/04](#) {; rollers for conveying in general [B65G 39/00](#); separating articles from piles using friction rollers [B65H 3/06](#); feeding articles by rollers [B65H 5/06](#)})

Project: N/A (B41M)

- U B41M 1/00** Inking and printing with a printer`s forme
- U B41M 1/10** · Intaglio printing; {Gravure printing}

- 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](#)})
- U B41M 5/025** · by transferring ink from the master sheet
- B41M 5/035** · · by sublimation or volatilisation of {pre-printed} design, {e.g. sublistatic ([B41M 5/0256](#) takes precedence; printing on textiles [D06P 5/00](#))}
- U B41M 5/26** · Thermography ([B41M 5/20](#) , [B41M 5/24](#) take precedence); {Marking by high energetic means, e.g. laser otherwise than by burning, and characterised by the material used ([B23K](#) takes precedence; thermographic or photothermographic systems using noble metal compounds [G03C 1/494](#))}
- U B41M 5/30** · · using chemical colour formers ([B41M 5/34](#) takes precedence)
- B41M 5/32** · · · one component being a heavy metal compound, {e.g. lead or iron}
- B41M 5/40** · · characterised by the base {backcoat}, intermediate, or covering layers, {e.g. for thermal transfer dye-donor or dye-receiver sheets}; Heat, radiation filtering or absorbing means or layers; combined with other image registration layers or compositions; Special originals for reproduction by thermography {(macromolecular ink- or dye-receptive coatings [B41M 5/52](#))}
- B41M 5/42** · · · Intermediate, {backcoat}, or covering layers {([B41M 5/405](#) takes precedence; multilayer thermal transfer systems in general [B41M 5/38214](#))}

NOTE

When the invention information lies in the combination of features covered by more than one of the subgroups of [B41M 5/42](#) , classification is made in [B41M 5/42](#) , using the corresponding indexing codes of its subgroups to identify the individual features

B41M 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](#))}

- U B41M 2205/00** Printing methods or features related to printing methods; Location or type of the layers
- B41M 2205/04** · Direct thermal recording ([DTR](#))

Project: N/A (B42D)

B42D 19/00 Movable-strip writing or reading apparatus (manifolding apparatus [B41L](#); adapted for, or incorporated in, cash registers [G07G](#) {drawing board with moving strip [B43L 5/025](#)})

Project: N/A (B43L)

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.~~

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

Project: N/A (B60B)

- B60B 1/00 Spoked wheels; Spokes thereof (non-metallic [B60B 5/00](#) {; spoked wheels comprising rail-engaging elements [B60B 17/001](#); making wheel spokes [B21F 39/00](#)})
- B60B 3/00 Disc wheels, i.e. wheels with load-supporting disc body (non- metallic [B60B 5/00](#); wheel cover discs [B60B 7/00](#) {; disc wheels comprising rail-engaging elements [B60B 17/0006](#)})
- B60B 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](#)})
- U 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](#)})
- B60B 7/02 . made essentially in one part ({[B60B 7/0006](#),} [B60B 7/01](#) take precedence)
- B60B 2200/00 Type of product being used or applied (~~kind of vehicle product being used or applied~~ [L60Y200](#)~~kind of vehicle product being used or applied~~ [B60Y 2200/00](#))

Project: N/A (B60C)

- B60C 17/00 Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor (having multiple separate inflatable chambers [B60C 5/20](#) ; {additional shear belt layers [B60C9/18K](#) [B60C 9/18](#)})
- 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}
 B60C 23/0447 {Wheel or tyre mounted circuits}
- NOTE**
~~B60C23/04D12 and subgroups only~~
- B60C 23/06 . Signalling devices actuated by deformation of the tyre, {e.g. tyre mounted deformation sensors or indirect determination of tyre deformation based on wheel speed, wheel-centre to ground distance or inclination of wheel axle}
- 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
- B60C 25/05 · · Machines, {i.e. motorized devices, e.g. for mounting, demounting (matching of tyres with rims, i.e. conjoint balancing [G01M](#))}
- 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 27/06 · extending over the complete circumference of the tread, e.g. made of chains {or cables}{[B60C 27/20](#) takes precedence)
- 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 27/10 · · {provided with} tensioning means

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 1/48 · characterised by the mounting
- B60D 1/50 · · resiliently mounted (~~B60D 1/30 takes precedence~~){(~~B60D 1/182~~[B60D 1/30](#) takes precedence ;[B60D 1/182](#) takes precedence; springs or dampers per se [F16F](#))}

Project: N/A (B60G)

- U B60G 3/00 Resilient suspension for a single wheel (pivoted suspension arms 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 3/18 · with two or more pivoted arms, e.g. parallelogram
- U B60G 3/20 · · all arms being rigid
- B60G 3/24 · · · a rigid arm being formed by the live axle {(~~3~~[B60G/22](#)[B60G 3/22](#), [B60G 3/26](#) take precedence; driving arrangements [B60K 17/22](#), [B60K 17/30](#), [B60K 17/32](#))}
- U 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 [F16F](#))**
- NOTE**
- The term "torsion bar" includes torsion tube or the like. The term "rubber" includes synthetic substitutes of a similar nature.
- B60G 11/26 · having fluid springs only, e.g. hydropneumatic springs ({[B60G 11/006](#),} [B60G 15/12](#) take precedence)
- U B60G 2206/00 Indexing codes related to the manufacturing of suspensions: constructional features, the materials used, procedures or tools**
- U B60G 2206/01 · Constructional features of suspension elements, e.g. arms, dampers, springs
- U B60G 2206/70 · · Materials used in suspensions
- U B60G 2206/71 · · · Light weight materials
- B60G 2206/7101 · · · · Fiber-reinforced plastics (~~(FRP)~~)
- U B60G 2800/00 Indexing codes relating to the type of movement or to the condition of the vehicle and to the end result to be achieved by the control action**
- U B60G 2800/90 · System Controller type
- U B60G 2800/91 · · Suspension Control

- U B60G 2800/912 · · · Attitude Control; levelling control
- B60G 2800/9123 · · · · Active Body Control [{\[ABC\]}](#)
- B60G 2800/93 · · Skid or slide control [{\[ASR\]}](#)
- B60G 2800/95 · · Automatic Traction or Slip Control [{\[ATC\]}](#)
- B60G 2800/97 · · Engine Management System [{\[EMS\]}](#)
- B60G 2800/972 · · Electronic Differential Lock [{\[EDS\]}](#)
- B60G 2800/98 · · Intelligent Transportation System or Bus [{\[IDB\]}](#)

Project: N/A (B60J)

- U 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)
- U B60J 7/185 · Locking arrangements (locks in general [E05B](#))
- B60J 7/1858 · · {for locking soft tops to a surrounding rigid roof structure, e.g. to a closed
vehicle body ([B60J12D](#) [B60J 7/1291](#) takes precedence)}

Project: N/A (B60K)

- U B60K 17/00 **Arrangement or mounting of transmissions in vehicles (clutches per se,**
e.g. construction thereof, [F16D](#); gearing per se, e.g. construction thereof,
[F16H](#))
- U B60K 17/34 · for driving both front and rear wheels, e.g. four wheel drive vehicles
(arrangement or mounting of control devices for changing number of driven
wheels [B60K 23/08](#))
- U B60K 17/348 · · having differential means for driving one set of wheels, e.g. the front, at one
speed and the other set, e.g. the rear, at a different speed ([B60K 17/346](#)
takes precedence)
- B60K 17/35 · · · including arrangements for suppressing or influencing the power transfer,
e.g. viscous clutches (differential gearing with locking devices [{F16H1/44](#)
[F16H 48/20}](#))

Project: N/A (B60L)

- U 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](#))
- U B60L 11/18 · using power supply from primary cells, secondary cells, or fuel cells
- U B60L 11/1851 · · {Battery monitoring or controlling; Arrangements of batteries, structures or
switching circuits therefore}
- B60L 11/1861 · · · {Monitoring or controlling state of charge [{\[SOC\]}](#)}
- B60L 11/1862 · · · · {Target range for state of charge [{\[SOC\]}](#)}
- U B60L 15/00 **Methods, circuits, or devices for controlling the traction-motor speed of**
electrically-propelled vehicles
- U B60L 15/02 · characterised by the form of the current used in the control circuit
- B60L 15/025 · · {using field orientation; Vector control; Direct Torque Control [{\[DTC\]}](#)}
- U B60L 2270/00 **Problem solutions or means not otherwise provided for**
- U B60L 2270/10 · Emission reduction
- U B60L 2270/14 · · of noise
- B60L 2270/147 · · · electro magnetic [{\[EMI\]}](#)

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](#))**
- U B60N 2/02
- the seat or part thereof being movable, e.g. adjustable ([B60N 2/427](#) takes precedence) ; adjustable arm-rests [B60N 2/46](#) ; adjustable head-rests [B60N 2/48](#))
- U B60N 2/04
- • the whole seat being movable
- B60N 2/06
- • • slidable ([B60N 2/12](#) {[B60N 2/2209](#)} takes precedence)
- B60N 2/20
- • the back-rest being tiltable, e.g. to permit easy access ([B60N 2/0224](#) , [B60N 2/04](#) , [B60N 2/22](#) , {[B60N 2/3002](#)} take precedence)
- U B60N 2/22
- • the back-rest being adjustable ([B60N 2/2878](#) takes precedence)}
- B60N 2/23
- • • by {linear actuators, e.g.} linear screw mechanisms
- U B60N 2/24
- for particular purposes or particular vehicles
- U B60N 2/26
- • for children ([B60N 2/30](#) takes precedence)
- B60N 2/28
- • • Seats readily mountable on, and dismantlable from, existing seats {or other parts} of the vehicle
- B60N 2/30
- • Non-dismountable {or dismantlable} seats storable in a non-use position, e.g. foldable spare seats (convertible for other use [B60N 2/32](#))
- B60N 2/42
- • the seat constructed to protect the occupant from the effect of abnormal g-forces, e.g. crash or safety seats ([B60N 2/26](#) , [B60N 2/46](#) , [B60N 2/48](#) take precedence ; *built-in air bags [B60R 21/207](#)*){(~~built-in air bags [B60R 21/207](#)~~)}
- 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](#))}
- B60N 2/68
- • Seat frames, e.g. for the back-rest, {e.g. reinforced frames}
- B60N 2/70
- • {Upholstery, e.g.} upholstery springs
- 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 3/06
- of footrests (floors of road vehicles {[B62D 25/20](#)})
- B60N 3/18
- of drinking-water {or other beverage} dispensing devices

Project: N/A (B60Q)

- 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](#)})**
- U B60Q 1/26
- the devices being primarily intended to indicate the vehicle, or parts thereof, or to give signals, to other traffic {(such devices mounted on the vehicle rear part [F21S 48/20](#) ; means for the lighting or illuminating of aerials, e.g. for purpose of warning [H01Q 1/06](#))}
- B60Q 1/32
- • for indicating vehicle sides, {e.g. clearance lights}
- U B60Q 1/34
- • for indicating change of drive direction ([B60Q 1/22](#) takes precedence)
- B60Q 1/40
- • • having {mechanical, electric or electronic} automatic return to inoperative position
- B60Q 1/42
- • • • {having mechanical automatic return to inoperative position} due to steering-wheel position, {e.g. with roller wheel control}
- B60Q 1/44
- • for indicating braking action or preparation for braking, {e.g. by detection of the foot approaching the brake pedal}

- B60Q 1/46
- for giving flashing caution signals during drive, other than signalling change of direction, e.g. flashing the headlights, {hazard lights (flashing lights in general [F21S 10/06](#))}
- B60Q 1/56
- for illuminating registrations or the like, {e.g. for licence plates (license plates [B60R 13/10](#))}
- B60Q 7/00**
- Arrangement or adaptation of portable emergency signal devices on {board} vehicles {to be placed on roadways or vehicles, e.g. warning triangles}, (arrangements for enforcing caution on roads, e.g. marker posts, [E01F 9/00](#) ; signs [G09F](#) , e.g. reflecting warning triangles [G09F 13/16](#))**
- B60Q 9/00**
- Arrangements or adaptations of signal devices not provided for in one of the preceding main groups, {e.g. haptic signalling}**
- B60Q 11/00**
- Arrangements of monitoring devices for devices provided for in groups [B60Q 1/00](#) to [B60Q 9/00](#) {(testing of electric installations on road vehicle [G01R 31/00](#))}**
- U B60Q 2400/00**
- Special features or arrangements of exterior signal lamps for vehicles**
- B60Q 2400/30
- Daytime running lights ([DRL](#)), e.g. circuits or arrangements therefor

Project: N/A (B60R)

- U 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 [G02B](#))**
- U B60R 1/02
- Rear-view mirror arrangements (periscope arrangements [B60R 1/10](#))
- U B60R 1/06
- • mounted on vehicle exterior {([B60R 1/025](#) , [B60R 1/08](#) take precedence)}
- B60R 1/076
- • • yieldable to excessive external force and provided with an indexed use position {([B60R 1/0617](#) , [B60R 1/074](#)) take precedence}
- B60R 1/08
- • involving special optical features, e.g. avoiding blind spots {e.g. convex mirrors; Side-by-side associations of rear-view and other mirrors ([B60R 1/025](#) , [B60R 1/10](#) take precedence)}
- B60R 1/10
- Front-view mirror arrangements; {(specially adapted for covering the peripheral part of the vehicle [B60R 1/002](#))}; periscope arrangements {,i.e. optical devices using combinations of mirrors, lenses, prisms or the like (specially adapted for covering the peripheral part of the vehicle [B60R 1/002](#) ; for viewing traffic-lights [B60R 1/005](#)); Other mirror arrangements giving a view from above or under the vehicle}
- U B60R 7/00**
- Stowing or holding appliances inside vehicle primarily intended for personal property smaller than suit-cases, e.g. travelling articles, or maps (for radio sets, television sets, telephones or the like, mounting of cameras operative during drive, tools, or spare parts [B60R 11/00](#) ; for receptacles for refuse, food, beverages, cigarettes [B60N](#))**
- B60R 7/04
- in driver or passenger space, {e.g. using racks ([B60R 7/005](#) , [B60R 7/08](#) take precedence)}
- B60R 7/08
- Disposition of racks, clips, {holders, containers} or the like {for supporting specific articles ([B60R 7/005](#) takes precedence)}
- U B60R 9/00**
- Supplementary fittings on vehicle exterior for carrying loads, e.g. luggage, sports gear or the like**
- U B60R 9/04
- Carriers associated with vehicle roof ([B60R 9/08](#) takes precedence)
- B60R 9/048
- • Carriers characterised by article-gripping, {-covering,-}retaining, or -locking means

- U B60R 13/00 Elements for body-finishing, identifying, or decorating; Arrangements or adaptations for advertising purposes**
- B60R 13/02 · {Internal} Trim mouldings; {Internal} Ledges; Wall liners {for passenger compartments}; Roof liners ([B60R 13/01](#) takes precedence; { padded linings for the vehicle interior [B60R 21/04](#) ; arrangements or adaptations of floor mats or carpets in vehicles [B60N 3/04](#) ; internal lining for trains [B61D 17/18](#)})
- B60R 13/04 · {External} Ornamental or guard strips; Ornamental inscriptive devices {thereon (fastening strips or bars to sheets or plates by means of clips [F16B 5/12](#))}
- B60R 13/07 · Water drainage or guide means not integral with roof structure ([B60R 13/06](#) , {[B60J 10/0045](#)} take precedence; { integral with roof structure [B62D 25/07](#) ; drainage openings having movable or removable closures [B62D 25/24](#)})
- B60R 16/00 Electric or fluid circuits specially adapted for vehicles and not otherwise provided for; Arrangement of elements of electric or fluid circuits specially adapted for vehicles and not otherwise provided for {(devices for protecting vehicle occupants in case of accidents [B60R 21/00](#) ; safety belts [B60R 22/00](#) ; central door locking [E05B 49/00](#) , [E05B65/38](#) [E05B 77/50](#))}**
- U B60R 16/02 · electric {constitutive elements}
- B60R 16/037 · · for occupant comfort, {e.g. for automatic adjustment of appliances according to personal settings, e.g. seats, mirrors, steering wheel}
- 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](#))
- B60R 19/18 · · {characterised by the cross-section;} Means within the bumper to absorb impact
- B60R 19/20 · · · containing {mainly} gas or liquid, e.g. inflatable (connection of valves to inflatable elastic bodies [B60C 29/00](#))
- B60R 19/22 · · · containing {mainly} cellular material, e.g. solid foam
- U B60R 19/24 · · Arrangements for mounting bumpers on vehicles
- U B60R 19/26 · · · comprising yieldable mounting means ({[B60R 19/38](#) takes precedence;} springs, shock absorbers, or means for damping vibrations per se [F16F](#))
- B60R 19/32 · · · · Fluid shock absorbers {, e.g. with coaxial coil springs}
- U B60R 19/38 · · · · adjustably or movably mounted, e.g. horizontally displaceable for securing a space between parked vehicles {(adjustably mounted for compensating manufacturing tolerances [B60R 19/24](#) , [B60R 19/26](#))}
- B60R 19/40 · · · · in the direction of an obstacle before a collision, {or extending during driving of the vehicle, i.e. to increase the energy absorption capacity of the bumper (inflatable bumpers [B60R 19/20](#))}
- B60R 19/52 · Radiator or grille guards {; Radiator grilles (cooling aspects [B60K 11/08](#))}
- B60R 19/56 · {Fittings damping bouncing force in truck collisions, e.g. bumpers;} Arrangements on high-riding vehicles, e.g. lorries, for preventing vehicles or objects from running thereunder

- 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}
- B60R 21/0136 • • • responsive to actual contact with an obstacle {, e.g. to vehicle deformation, bumper displacement or bumper velocity relative to the vehicle (monitoring crash strength in combination with passenger seat detection [B60R 21/01558](#))}
- B60R 21/015 • • including means for detecting the presence or position of passengers, passenger seats or child seats {, and the related safety parameters therefor, e.g. speed or timing of airbag inflation in relation to occupant position or seat belt use}
- WARNING
Group(s) [B60R 21/01504](#) - [B60R 21/01566](#) is/are incomplete pending reclassification of documents from group(s) [B60R 21/015](#).
- Until reclassification is complete, group [B60R 21/015](#) should be considered in order to perform a complete search.
- B60R 21/02 • Occupant safety arrangements or fittings, {e.g. crash pads (seat belts with crash pads [B60R 22/14](#) ; removable children's seats having a front guard or barrier [B60N 2/2839](#))}
- U B60R 21/04 • • Padded linings for the vehicle interior; {Energy absorbing structures associated with padded or non-padded linings}
- B60R 21/05 • • • associated with the steering wheel, {steering} hand lever or {steering} column (yieldable steering columns [B62D 1/18](#))
- B60R 21/055 • • Padded {or energy-absorbing} fittings, {e.g. seat belt anchors (sun visors [B60J 3/00](#) ; head rests [B60N 2/48](#))}
- U B60R 21/06 • • Safety nets, transparent sheets, curtains, or the like, e.g. between occupants and glass ({[B60R 21/026](#) , [B60R 21/11](#) , [B60R 21/12](#) , [B60R 21/16](#) take precedence)
- B60R 21/08 • • • {automatically} movable from an inoperative to an operative position, e.g. in a collision (electrical circuits for triggering safety arrangements [B60R 21/01](#))
- B60R 21/09 • • Control elements or operating handles movable from an operative to an out-of-the way position, e.g. {pedals,} switch knobs, window cranks {(specially adapted for brake pedals, e.g. by venting of master cylinder or destruction of force transmitting rod, [B60T 7/065](#))}

- U B60R 22/00 Safety belts or body harnesses in vehicles (safety belts or body harnesses in general [A62B 35/00](#))**
- U B60R 22/02 · Semi-passive restraint systems, e.g. systems applied or removed automatically but not both; {Manual restraint systems (knee, leg or head belts [B60R 22/001](#) ; devices for releasing in an emergency, remote or automatic unbuckling devices [B60R 22/32](#))}
- B60R 22/03 · · Means for presenting the belt or part thereof to the wearer, {e.g. foot-operated}
- U B60R 22/12 · Construction of belts or harnesses ([B60R 21/18](#) takes precedence; { woven fabrics for safety belts [D03D 1/0005](#))}
- B60R 22/14 · · incorporating enlarged restraint areas, e.g. vests, nets, crash pads, optionally for children (crash pads for occupants` safety on vehicles in general [B60R 21/02](#))}
- U B60R 22/18 · Anchoring devices
- B60R 22/195 · · with means to tension the belt in an emergency, {e.g. means of the through-anchor or splitted reel type}{electrical circuits for triggering safety arrangements [B60R 21/01](#))}
- NOTE**
If the type of belt tensioner is not specified and can be used indifferently for pulling belt anchors or rotating belt reels, the documents are classified in [B60R 22/46](#)
- U B60R 22/32 · Devices for releasing in an emergency, e.g. after an accident; {Remote or automatic unbuckling devices (unlocking devices for retractors [B60R 22/3416](#))}
- B60R 22/34 · Belt retractors, e.g. reels (~~anchoring devices{e.g. guide loops}~~, ~~with means to tension the belt in an emergency~~ [B60R 22/195](#)~~anchoring devices {e.g. guide loops}~~, ~~with means to tension the belt in an emergency~~ [B60R 22/195](#))
- U B60R 22/36 · · self-locking in an emergency ({[B60R 22/3405](#)}, [B60R 22/343](#) take precedence)
- B60R 22/41 · · · with additional means for preventing locking {during unwinding} under predetermined conditions
- B60R 22/46 · · {Reels} with means to tension the belt in an emergency {by forced winding up}{electrical circuits for triggering safety arrangements [B60R 21/01](#){ tensioners using reels only guiding the belt during normal use, e.g. splitted reels [B60R 22/195](#))}

Project: N/A (B60T)

- U B60T 7/00 Brake-action initiating means**
- U B60T 7/12 · for automatic initiation; for initiation not subject to will of driver or passenger {(limiting speed of vehicles other than rail vehicles [B60K 31/00](#))}
- B60T 7/20 · · specially for trailers, e.g. in case of uncoupling of {or overrunning by} trailer (inertia-actuated over-run brakes [B60T 13/08](#))
- B60T 7/22 · · initiated by contact of vehicle, e.g. bumper, with an external object, e.g. another vehicle, or by means of contactless obstacle detectors mounted on the vehicle}
- 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](#))}

- U B60T 8/172
 - • Determining control parameters used in the regulation, e.g. by calculations involving measured or detected parameters {(B60T 8/17551 takes precedence)}
- B60T 8/1725
 - • • {Using tyre sensors, e.g. Sidewall Torsion sensors {(SWT)}} (for tyre pressure and temperature detection B60C 23/00)}
- B60T 8/174
 - • characterised by using special control logic, e.g. fuzzy logic {,neural computing}
- U B60T 8/32
 - responsive to a speed condition, e.g. acceleration or deceleration ({using electrical circuitry or regulation means B60T 8/17} ; B60T 8/28 takes precedence; electric devices on electrically propelled vehicles indicating the wheel slip B60L 3/10 ; measuring linear or angular speed per se G01P 3/00)
- U B60T 8/34
 - • having a fluid pressure regulator responsive to a speed condition
- B60T 8/50
 - • • having means for controlling the rate at which pressure is reapplied to {or released from} the brake
- U B60T 17/00**

Component parts, details, or accessories of power brake systems not covered by groups B60T 8/00 , B60T 13/00 or B60T 15/00 , or presenting other characteristic features (air compressors per se F04)
- U B60T 17/18
 - Safety devices; Monitoring
- B60T 17/20
 - • Safety devices operable by passengers other than the driver, {e.g. for railway vehicles}
- U B60T 2201/00**

Particular use of vehicle brake systems; Special systems using also the brakes; Special software modules within the brake system controller
- U B60T 2201/12
 - Pre-actuation of braking systems without significant braking effect; Optimizing brake performance by reduction of play between brake pads and brake disc
- B60T 2201/124
 - • Rain brake support {(RBS)}; Cleaning or drying brake discs, e.g. removing water or dirt
- U B60T 2210/00**

Detection or estimation of road or environment conditions; Detection or estimation of road shapes
- U B60T 2210/30
 - Environment conditions or position therewithin
- B60T 2210/36
 - • Global Positioning System {(GPS)}
- U B60T 2270/00**

Further aspects of brake control systems not otherwise provided for
- B60T 2270/83
 - Control features of electronic wedge brake {(EWB)}

Project: N/A (B60W)

- B60W 30/00**

Purposes of road vehicle drive control systems not related to the control of a particular sub-unit, e.g. of systems using conjoint control of vehicle sub-units, { or advanced driver assistance systems for ensuring comfort, stability and safety or drive control systems for propelling or retarding the vehicle (anti-lock brake systems {(ABS)} B60T 8/00)}
- U B60W 30/18
 - Propelling the vehicle

WARNING
Subgroups of B60W 30/18 are not complete. Documents from B60K 41/00 and B60W 30/18 are in the process of being reorganised to the new groups
- U B60W 30/188
 - • Controlling power parameters of the driveline, e.g. determining the required power
- U B60W 30/1886
 - • • {Controlling power supply to auxiliary devices}
- B60W 30/1888
 - • • • {Control of power take off {(PTO)}}}

- 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 2050/0001 · {Details of the control system}
 - U B60W 2050/0002 · {Automatic control, details of type of controller or control system architecture}
 - U B60W 2050/0008 · · {Feedback, closed loop systems or details of feedback error signal}
 - B60W 2050/0009 · · · {Proportional differential *{[PD]}* controller}
 - B60W 2050/001 · · · {Proportional integral *{[PI]}* controller}
 - B60W 2050/0011 · · · {Proportional Integral Differential *{[PID]}* controller}
 - U B60W 50/04 · Monitoring the functioning of the control system
 - B60W 2050/041 · {Built in Test Equipment *{[BITE]}*}
 - U B60W 50/045 · {Monitoring control system parameters}
 - B60W 2050/046 · · {involving external transmission of data to or from the vehicle, e.g. via telemetry, satellite, Global Positioning System *{[GPS]}*}

Project: N/A (B60Y)

- U B60Y 2300/00** **Purposes or special features of road vehicle drive control systems (for systems using conjoint control of multiple vehicle sub-units [B60W 30/00](#))**
- U B60Y 2300/18 · Propelling the vehicle
 - U B60Y 2300/188 · · Controlling power parameters of the driveline, e.g. determining the required power
 - U B60Y 2300/1886 · · · Controlling power supply to auxiliary devices
 - B60Y 2300/1888 · · · · Control of power take off *{[PTO]}*}
- U B60Y 2400/00** **Special features of vehicle units**
- U B60Y 2400/43 · Engines
 - B60Y 2400/442 · · Exhaust gas recirculation *{[EGR]}*}
 - U B60Y 2400/70 · Gearings
 - B60Y 2400/72 · · Continuous variable transmissions *{[CVT]}*}

Project: N/A (B61B)

- U B61B 13/00** **Other railway systems**
- B61B 13/10 · Tunnel systems *{(pneumatic tubes conveyers B65G){(pneumatic tubes conveyers B65G {; B61C 15/045 takes precedence})}}*

Project: N/A (B61D)

- U B61D 17/00** **Construction details of vehicle bodies (for tank wagons [B61D 5/00](#); for hopper cars [B61D 7/00](#); body details specially adapted for tipping wagons [B61D 9/06](#); for mine cars [B61D 11/00](#))**
- B61D 17/005 · {with bodies characterised by use of plastics materials *{(B61D 17/005 takes precedence){(B61D 17/005 takes precedence; bogie frames comprising parts made from fibre einforced matrix material B61F 5/523)}*}
- U B61D 19/00** **Door arrangements specially adapted for rail vehicles (locks for vehicles [E05B 77/00](#) - [E05B 85/00](#); door-operating mechanisms [E05F](#))**

- B61D 19/001
- {for wagons or vans (closure elements for hopper car discharge openings [B61D 7/16](#); *doors convertible into loading and unloading ramps* [B61D 47/00](#); [B61D 19/003](#) takes precedence)}(~~doors convertible into loading and unloading ramps B61D 47/00~~)(~~B61D 19/003 takes precedence~~)}

Project: N/A (B61K)

- U B61K 7/00** **Railway stops fixed to permanent way; Track brakes or retarding apparatus fixed to permanent way; Sand tracks or the like (skids, wedges, vehicle-mounted scotch blocks [B61H](#))**
- U B61K 7/02
- Track brakes or retarding apparatus (operating mechanisms for track-mounted scotch blocks [B61L](#))
- B61K 7/10
- • electrodynamic (~~on vehicles B60L~~){(*on vehicles [B60L](#)* {; [B61K 7/025](#) takes precedence})}

Project: N/A (B61L)

- U B61L 15/00** **Indicators provided on the vehicle or vehicle train for signalling purposes; { On-board control or communication systems}**
- B61L 15/0054
- {Train integrity supervision, e.g. end-of-train (~~EOT~~) devices}
- U B61L 27/00** **Central traffic control systems; { Track-side control or specific communication systems}**
- U B61L 27/0038
- {Track-side control of safe travel of vehicle or vehicle train, e.g. braking curve calculation (on-board target speed calculation and supervision [B61L 3/008](#))}
- B61L 2027/0044
- • {using European Train Control System (~~ETCS~~)}
- B61L 2027/005
- • {using Communication-based Train Control (~~CBTC~~)}

Project: N/A (B62B)

- U B62B 5/00** **Accessories or details specially adapted for hand carts (([B62B 3/1404](#)) , [B62B 9/00](#) take precedence; wheels, axles, or axle bearing for vehicles [B60B](#); castors for vehicles, castors in general [B60B 33/00](#))**
- B62B 5/0096
- {Identification of the cart or merchandise, e.g. by barcodes or radio frequency identification (~~RFID~~)}
- U B62B 5/08
- Children`s seats ([B62B 3/14](#) takes precedence); {Seats or supports for other persons}
- U B62B 9/00** **Accessories or details specially adapted for children`s carriages or perambulators (providing for travelling on snow [B62B 19/00](#))**
- U B62B 9/10
- Perambulator bodies; Equipment therefor (collapsible or foldable [B62B 7/06](#) ; convertible [B62B 7/12](#))
- B62B 9/14
- • {Equipment protecting from environmental influences, e.g.} Hoods; Weather screens; Cat nets
- U B62B 9/26
- Securing devices for bags or toys; {Arrangements of racks, bins, trays or other devices for transporting articles}
- U B62B 9/28
- Auxiliary dismountable seats; {Additional platforms for children in standing-up position}

Project: N/A (B62D)

- U B62D 1/00** **Steering controls, i.e. means for initiating a change of direction of the vehicle**
- B62D 1/24
- not vehicle-mounted {{special adaptations of automatic tractor steering ~~A01B69/04~~[A01B 69/008](#) ; devices for lifting, movable on wheels, automatically guided [B66F 9/063](#)}

- 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
- U B62D 5/07 · · Supply of pressurised fluid for steering also supplying other consumers; {control thereof}
- B62D 5/08 · · characterised by type of {steering} valve used (valves in general [F16K](#))
- U B62D 6/00** Arrangements for automatically controlling steering depending on driving conditions sensed and responded to, e.g. control circuits (means for initiating a change in direction [B62D 1/00](#) ; steering valves [B62D 5/06](#) ; combined with means for inclining the vehicle body or wheels on bends [B62D 9/00](#))
- NOTE
When classifying in this group, classification is also made in the appropriate one of groups [B62D 1/00](#) to [B62D 5/00](#) or [B62D 7/00](#) to [B62D 19/00](#) if other aspects of the steering system are of interest
- B62D 6/08 · responsive only to {driver} input torque
WARNING
Group [B62D 6/08](#) is not complete. See also [B62D 5/04](#)
- B62D 6/10 · · characterised by means for sensing {or determining} torque
WARNING
Group [B62D 6/10](#) is not complete. See also [G01L 5/22](#)
- U B62D 9/00** Steering deflectable wheels not otherwise provided for (steering position indicators [B62D 15/02](#))
- B62D 9/04 · combined with means for {inwardly} inclining wheels on bends ([B62D 9/02](#) takes precedence)
WARNING
Group [B62D 9/04](#) is not complete. See also [B62D 9/02](#)
- U B62D 15/00** Steering not otherwise provided for
- U B62D 15/02 · Steering position indicators; {Steering position determination; Steering aids}
- U B62D 21/00** Understructures, i.e. chassis frame on which a vehicle body may be mounted (combined frame and vehicle body [B62D 23/00](#) ; { characterised by the material thereof [B62D 29/00](#)})
- B62D 21/11 · with resilient means for suspension {, e.g. of wheels or engine; sub-frames for mounting engine or suspensions}
NOTE
This group does not cover subject matter primarily relating to the suspension, with only a nominal recitation of frame structure, which are covered by subclass [B60G](#)
- 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](#) ; }~~superstructure~~ {or monocoque structure} sub-units {or parts or details thereof} [B62D 25/00](#) ; { characterised by the material thereof [B62D 29/00](#)})

- B62D 25/00** Superstructure {or monocoque structure} sub-units; Parts or details thereof not otherwise provided for {(having impact absorbing means [B62D 21/15](#) ; running-boards, steps, or the like as superstructure sub-unit [B60R 3/00](#))}
- U B62D 25/04 · Door pillars; {windshield pillars}
- U B62D 25/08 · Front or rear portions {(sub-frames for mounting engine or suspensions [B62D 21/11](#))}
- B62D 25/10 · · Bonnets or lids, {e.g. for trucks, tractors, busses, work vehicles (for truck beds [B60J 7/1607](#) ; for boats [B63B 19/12](#) ; doors arranged at the vehicle rear [B60J 5/10](#) ; inlet covers for vehicle fuel tanks [B60K 15/05](#) ; for protecting non-occupants of a vehicle [B60R 21/38](#))}
- B62D 25/12 · · · Parts or details thereof (locks [E05B](#), {~~E05B65/19~~[E05B 83/16](#) ; devices for holding open [E05C 17/00](#) , e.g. while carrying oversize objects [E05C 17/042](#); hinges [E05D](#); counterbalancing means [E05F](#); { checks, stops, buffers [E05F 5/00](#) ; }springs,{e.g. pneumatic springs}F16F; }springs, {e.g. pneumatic springs} F16F)
- B62D 25/24 · Superstructure sub-units with access {or drainage} openings having movable or removable closures; {Sealing means therefor} (inlet covers for vehicle fuel tanks [B60K 15/05](#))
- B62D 27/00** Connections between superstructure {or understructure} sub-units {([B62D 33/0207](#) , [B62D 33/044](#) take precedence; between sub-units predominantly made of synthetic material [B62D 29/048](#))}
- B62D 29/00** Superstructures, {understructures, or sub-units thereof,} characterised by the material thereof {([B62D 33/044](#) , [B62D 33/048](#) take precedence)}
- U B62D 55/00 Endless track vehicles (steering aspects [B62D 11/00](#) ; { characterised by the driver not being seated [B62D 51/007](#))}
- U B62D 55/06 · with tracks without ground wheels
- B62D 55/075 · · Tracked vehicles for ascending or descending stairs, {steep slopes or vertical surfaces}(magnetic or pneumatic ground-engaging parts [B62D 55/265](#) ; chairs or multi-track cycles specially adapted for invalids [A61G 5/00](#))
- U B62D 65/00 Designing, manufacturing, e.g. assembling, facilitating disassembly, or structurally modifying motor vehicles or trailers, not otherwise provided for
- U B62D 65/02 · Joining sub-units or components to, or positioning sub-units or components with respect to, body shell or other sub-units or components
- B62D 65/16 · · the sub-units or components being exterior fittings, e.g. bumpers, lights, wipers {, exhausts}

Project: N/A (B63B)

- U B63B 11/00 Interior subdivision of hulls (bulkhead space construction [B63B 3/56](#))
- B63B 11/04 · Constructional features of bunkers, {e.g. structural fuel tanks,} or ballast tanks, e.g. with elastic walls ({tanks for fuel or the like not forming subdivisions of the hull [B63B 17/0027](#) ; } cleaning of tanks [B63B 57/00](#))
- WARNING
Not complete pending reclassification; see also [B63B 25/08](#) and subgroups
- B63B 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](#))}
- WARNING
Not complete pending a reorganisation; for documents concerning protective caps, or anti-theft devices other than using keys, see [B63J 99/00](#)
- B63B 17/02 · Awnings {,including rigid weather protection structures, e.g. sunroofs; Tarpaulins; Accessories for awnings or tarpaulins}
- U B63B 17/04** · Stanchions; Guard-rails; {Bulwarks or the like}
- U B63B 19/00** **Arrangements or adaptations of ports, doors, windows, port-holes, or other openings or covers (scuppers [B63B 13/00](#) ; arrangements of watertight doors in bulkheads [B63B 43/24](#))**
- U B63B 19/02** · Clear-view screens; {Windshields (canopies connected to windshields [B63B 17/02](#))}
- 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](#))**
- WARNING
Group [B63H 21/00](#) is no longer used for classification of adaptations of ropes, hawsers, or the like, or parts thereof. Documents are in the process of being reorganised to [B63B 21/20](#)
- B63B 21/20 · Adaptations of chains, ropes, hawsers, or the like, or of parts thereof chains, ropes or hawsers in general, see the relevant subclasses, e.g. [F16G](#) {or [D07B](#)}
- WARNING
Not complete pending a reorganisation, see [B63B 21/00](#)
- U B63B 21/24** · Anchors
- B63B 21/46 · · with variable, {e.g.} sliding, connection to the chain, {especially for facilitating the retrieval of the anchor}
- B63B 21/50 · Anchoring arrangements {or methods} for special vessels, e.g. for floating drilling platforms or dredgers
- B63B 21/54 · Boat-hooks or the like {, e.g. hooks detachably mounted to a pole}
- U B63B 22/00** **Buoys ({floating decoys, e.g. for waterfowl [A01M 31/06](#);} means for indicating the location of underwater objects [B63C 7/26](#) ; life-buoys, e.g. rings [B63C 9/08](#) ; { mountings of acoustic transducer in underwater equipment, e.g. sonobuoys [G10K 11/006](#) ; electric cables supported on or from floats [H02G 9/12](#)})**
- B63B 22/04 · {Fixations or other} anchoring arrangements

- U B63B 27/00** **Loading or unloading cargo or passengers (self-discharging barges or lighters [B63B 35/30](#) ; shore-based [B65G](#){ elevators, escalators or moving walkways per se [B66B](#); floating cranes [B66C 23/52](#) ; loading or unloading devices per se, see the relevant subclasses, e.g. [B65G](#), [B66C](#), [B67D](#)})**
- WARNING
The scope of this group is broader than the scope of the corresponding IPC group, and includes the scope of the IPC2 subgroups [B63B 27/02](#) , [B63B 27/06](#) , and [B63B 27/20](#)
- U B63B 27/02 · with intermittent action
- U B63B 27/14 · · Ramps; Gangways or other outboard ladders (inboard ladders [B63B 29/20](#){ ; land-based bridges giving access to ships [E01D 15/24](#)}); {Pilot lifts}
- U B63B 27/20 · with continuous action
- U B63B 27/24 · · Loading or unloading fluids
- WARNING
this group is pending a reorganisation, also documents covered by group [B63B 27/25](#) are within this group
- B63B 27/25 · · · {Arrangement of ship-based loading or unloading equipment} for fluidised bulk material
- WARNING
Not complete, pending a reorganisation, see [B63B 27/24](#)
- B63B 27/30 · {Arrangement of ship-based loading or unloading equipment} for transfer at sea between ships or between ships and off-shore structures
- WARNING
Not complete, pending a reorganisation, see [B63B 22/021](#), [B63B 35/44](#) , and subgroups
- B63B 27/36 · {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 2035/005 · {Search and rescue (~~SAR~~) vessels}
- U B63B 35/44 · Floating buildings, stores, drilling platforms, or workshops, e.g. carrying water-oil separating devices {(construction methods for floating offshore platforms [B63B 9/065](#))}
- WARNING
This group and its subgroups are pending a reorganisation, also documents covered by groups [B63B 27/30](#) , [B63B 27/32](#) and [B63B 27/34](#) are within this group and its subgroups.
- B63B 2035/448 · · {Floating hydrocarbon production vessels, e.g. Floating Production Storage and Offloading vessels (~~FPSO~~)}
- U B63B 35/73 · Other vessels or like floating structures for pleasure or sport
- U B63B 35/74 · · Body supporting buoyant devices with seat; {and bathing boats}
- B63B 57/00** **Tank {or cargo hold} cleaning specially adapted for vessels (tank cleaning in general [B08B 9/08](#))**

U B63B 59/00 Hull protection peculiar to vessels; Cleaning devices peculiar to vessels and integral therewith (cleaning of vehicles in general [B60S](#) ; other cleaning in general [B08B](#) ; inhibiting corrosion of metals by anodic or cathodic protection [C23F 13/00](#))

B63B 59/02 · Fenders integral with waterborne vessels or specially adapted therefor, {e.g. fenders forming part of the hull or incorporated in the hull}; Rubbing-strakes (fenders on coasts, in harbours or on other fixed marine structures [E02B 3/26](#))

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

B63C 2009/0017 · {characterised by making use of satellite radio beacon positioning systems, e.g. the Global Positioning System ([GPS](#))}

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]

U B63C 9/26 · Cast or life lines; Attachments thereto; Containers therefor; {Rescue nets or the like} (adaptations of aerial cableways to shipboard use [B63B 27/18](#) ; guns for line throwing [F41F](#); line-carrying missiles [F42B 12/68](#))

U B63C 11/00 **Equipment for dwelling or working underwater; Means for searching for underwater objects (composition of chemical substances for use in breathing apparatus [A62D 9/00](#) ; swimming aids or equipment [A63B 31/00](#) to [A63B 35/00](#) ; submarines [B63G 8/00](#))**

U B63C 11/02 · Divers` equipment

U B63C 11/04 · · Resilient suits

U B63C 11/08 · · · Control of air pressure within suit, e.g. for controlling buoyancy; {Buoyancy compensator vests, or the like}

B63C 11/26 · · Communication means, {e.g. means for signalling the presence of divers} (electric communication in general [H04](#))

- B63C 11/34
 - Diving chambers {or underwater vessels, e.g. unmanned,} with mechanical link, e.g. cable, to a base (manipulators [B25J](#); {externally attached cofferdams and the like [B63B 17/0018](#) ; } diving chambers without mechanical link to a base [B63G 8/00](#) ; caissons adapted to laying foundations [E02D 23/00](#) to [E02D 27/00](#))
- U B63C 11/48
 - Means for searching for underwater objects (means for indicating the location of sunken objects [B63C 7/26](#) ; locating by use of the reflection or reradiation of radio or other waves [G01S](#); { mountings of acoustic transducers in underwater equipment [G10K 11/006](#)})
- U B63C 11/49
 - Floating structures with underwater viewing devices, e.g. with windows; {Arrangements on floating structures of underwater viewing devices, e.g. on boats (arrangement of visual equipment on submarines [B63G 8/38](#))}

Project: N/A (B63H)

- U **B63H 5/00**
 - Arrangements on vessels of propulsion elements directly acting on water**
 - 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](#) ; steering by {auxiliary} jet action, {rudders carrying jets} [B63H 25/46](#) ; power plant per se, see the relevant classes)~~**
- B63H 16/00
 - Effecting propulsion by muscle power (~~swimming frameworks, {i.e. apparatus fixed to or held by the swimmer or diver} with swimmer-operated driving mechanism [A63B 35/00](#) ; 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](#))~~**
- U B63H 16/08
 - Other apparatus for converting muscle power into propulsive effort (general features of propulsion elements, see the relevant groups)
- B63H 16/18
 - using sliding {or pivoting} handle or pedal, i.e. the motive force being transmitted to a propelling means by means of a lever operated by the hand or foot of the occupant
- WARNING**
 - This group is not complete pending a reclassification; for documents published before 01.01.2012, see also groups [B63H 16/12](#) and [B63H 16/14](#)

- U B63H 20/00** **Outboard propulsion units, i.e. propulsion units having a substantially vertical power leg mounted outboard of a hull and terminating in a propulsion element, e.g. "outboard motors", Z-drives {with level bridging shaft arranged substantially outboard}(power plants per se, see the relevant classes); Arrangements thereof on vessels {(transom panels for outboard motors on inflatable boats [B63B 7/087](#); tug-type floating propeller units [B63B 35/665](#); rudders carrying propellers [B63H 25/42](#); rudders carrying jets [B63H 25/46](#); engines of outboard propulsion units [F02B 61/045](#))}**
- WARNING
Not complete pending a reclassification; see also [B63H 5/1252](#), as well as [B63H 21/26](#) and subgroups
- B63H 20/24
- {Arrangements, apparatus and methods for handling exhaust gas in outboard drives, e.g.} exhaust gas outlets {(in engines, e.g. outboard marine engines, [F01N](#))}
- WARNING
This group and its subgroups are not complete, pending a reorganisation; see [B63H 21/32](#) , [B63H 21/38](#) and [B63B 2770/00](#)
- B63H 20/26
- - {Exhaust gas outlets} passing through the propeller or its hub
- B63H 20/28
- {Arrangements, apparatus and methods for handling cooling-water in outboard drives, e.g.} cooling-water intakes {(cooling circuits for outboard marine engines [F01P 3/202](#))}
- WARNING
This group and its subgroups are not complete, pending a reorganisation; see [B63H 21/38](#) and [B63B 2770/00](#)
- B63H 20/30
- - {Cooling-water intakes} for flushing {(circuits for flushing outboard marine engines [F01P 3/205](#))}
- U B63H 20/32
- Housings {(air intakes for outboard engines [F02M 35/167](#))}
- B63H 20/34
- - comprising stabilising fins, {foils, anticavitation plates, splash plates, or rudders (rudders carrying propellers [B63H 25/42](#) ; rudders carrying jets [B63H 25/46](#))}
- U B63H 21/00** **Use of propulsion power plant or units on vessels (use of outboard propulsion units [B63H 20/00](#) ; hull reinforcements for carrying propulsion power plant or units [B63B 3/70](#) ; { propulsion of submarines [B63G 8/08](#) ; }propulsion power plant or units per se, see the relevant classes)**
- NOTE
This group comprises arrangements of propulsion power plant or units on vessels and to some extent it includes adaptations of such plant or units to facilitate such arrangements
- WARNING
this group is pending a reorganisation; also documents covered by group [B63H 21/36](#) are within this group
- U B63H 21/32
- Arrangements of propulsion-unit exhaust uptakes; Funnels peculiar to vessels; {Small watercraft exhaust arrangements, e.g. under-water}, (engine exhausts in general [F01N](#) ; flue devices for furnaces in general [F23J](#) ; { exhaust gas outlets forming part of outboard propulsion units or Z-drives [B63H 20/24](#)})
- WARNING
Group [B63H 21/32](#) is no longer used for classification of documents dealing with gas exhaust outlets forming part of outboard propulsion units or Z-drives.

Respective documents are in the process of being reorganised to groups
[B63H 20/24](#) and [B63H 20/26](#)

- 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 25/02
- Initiating means for steering, {for slowing down, otherwise than by use of propulsive elements, or for dynamic anchoring}

WARNING

[B63H 25/02](#) and subgroups are not complete in view of initiating means for slowing down or for dynamic anchoring, pending a reorganisation; see also group [B63H 25/00](#)

- U B63H 25/04**
- · automatic, e.g. reacting to compass
- B63H 2025/045
- · · {making use of satellite radio beacon positioning systems, e.g. the Global Positioning System ~~{(GPS)}~~}

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](#))**
- U B64C 1/06**
- Frames; Stringers; Longerons; {Fuselage sections}
- B64C 1/40
- Sound or heat insulation, {e.g. using insulation blankets (insulating elements for vehicles, in general [B60R 13/08](#))}
- U B64C 27/00** **Rotorcraft; Rotors peculiar thereto (alighting gear [B64C 25/00](#))**
- U B64C 27/54**
- Mechanisms for controlling blade adjustment or movement relative to rotor head, e.g. lag-lead movement
- U B64C 27/72**
- · Means acting on blades
- B64C 2027/7205
- · · {on each blade individually, e.g. individual blade control ~~{(IBC)}~~}
- U B64C 2027/7211**
- · · · {without flaps}
- B64C 2027/7233
- · · · · {using higher-harmonic control ~~{(HHC)}~~}
- U B64C 2201/00** **Unmanned aerial vehicles; Equipment therefor**
- U B64C 2201/14**
- characterised by flight control
- B64C 2201/141
- · autonomous, i.e. by navigating independently from ground or air stations, e.g. by using inertial navigation systems ~~{(INS)}~~}

Project: N/A (B64D)

- U B64D 13/00** **Arrangements or adaptations of air-treatment apparatus for aircraft crew or passenger, or freight space; {or structural parts of the aircraft} (treatment rooms with artificial climate for medical purposes [A61G 10/02](#) ; respiratory apparatus in general [A62B](#) ; for for vehicles in general [B60H](#))**

B64D 31/00 Power plant control; Arrangement thereof (~~{F02 takes precedence}~~ flying controls B64C)

U B64D 33/00 Arrangements in aircraft of power plant parts or auxiliaries not otherwise provided for

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 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})

Project: N/A (B64F)

U B64F 1/00 Ground or aircraft-carrier-deck-installations (specially adapted for captive aircraft B64F 3/00; aircraft-carriers B63; fog-dispersal installations E01H; wind tunnels G01M; grounded flight trainers G09B)

B64F 1/18

- Visual or acoustic landing aids (optical or acoustic signalling in general G08 {; B64F 1/002 takes precedence})~~{(B64F 1/002 takes precedence)}~~

Project: N/A (B65B)

B65B MACHINES, APPARATUS OR DEVICES FOR, OR METHODS OF, PACKAGING ARTICLES OR MATERIALS; UNPACKING (bundling and pressing devices for cigars A24C 1/44; paper-bag holders as shop or office accessories A47F 13/08; apparatus for coating, e.g. by dipping, B05C; devices for tensioning and securing binders adapted to be supported by the article or articles to be bound B25B, B65B 13/00; nailing or stapling devices per se B25C, B27F; { cutting or severing in general B26D, B26F; } inserting documents in envelopes and closing the latter B43M 3/00, B43M 5/00; wrappers, containers or other packaging elements, e.g. binders protective caps B65D; stacking articles in, or removing them from, pallets B65G; devices for handling sheets or webs of interest apart from their application in packaging machines B65H; packaging of matches C06F; ~~wrapping sugar during manufacture C13H~~; ~~wrapping sugar during manufacture C13B 45/00~~; { filling of grease guns F16N 37/02; packing of shotgun cartridges for immediate use F42B; wrapping of coins G07D 9/00}; making containers or receptacles per se, see the appropriate subclasses)

NOTE

The term "packaging" should be understood as including mainly the following operations: ~~— filling portable containers or receptacles with materials or small articles to form packages — inserting articles, or groups of articles, into containers or receptacles — closing filled containers or receptacles otherwise than by metal-, glass-, or wood-working operations — enclosing, or partially enclosing, articles or quantities of material, in sheets, strips, blanks, webs, or tubes of thin flexible material, e.g. wrapping — bundling articles, e.g. holding articles together in groups by applying string or wire — attaching articles to cards, sheets, or webs~~

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 63/00** **Miscellaneous auxiliary devices operating on articles or materials to be packaged and not otherwise provided for (operating on sheets, blanks, webs, binding material, or packages, and not otherwise provided for [B65B 61/00](#))**
- B65B 63/04 · for folding or winding articles, e.g. gloves, stockings ([B65B 63/024](#) takes precedence;); folding or winding webs or filamentary material in general [B65H 45/00](#), [B65H 45/00](#), [B65H 54/00](#); folding textile articles in connection with laundering preparatory to packaging [D06F 89/00](#))
- U B65B 69/00** **Unpacking of articles or materials, not otherwise provided for**
- B65B 69/0075 · {Emptying systems for flexible intermediate bulk containers [\(FIBC\)](#)}
- U B65B 2220/00** **Specific aspects of the packaging operation**
- B65B 2220/08 · Creating fin seals as the longitudinal seal on horizontal or vertical form fill seal [\(FFS\)](#) machines
- B65B 2220/10 · Creating an off-center longitudinal seal on horizontal or vertical form fill seal [\(FFS\)](#) machines
- B65B 2220/12 · Creating additional longitudinal welds on horizontal or vertical form fill seal [\(FFS\)](#) machines for stiffening packages or for creating package edges

Project: N/A (B65C)

- B65C 5/00 **Labelling fabrics or comparable materials or articles with deformable surface, e.g. paper, fabric rolls, stockings, shoes ~~(affixing labels to non-rigid containers [B65C 3/26](#); by sewing [D05B](#))~~([affixing labels to non-rigid containers \[B65C 3/26\]\(#\); by sewing \[D05B\]\(#\)](#)); applying marks during shoe manufacture [A43D 95/14](#); marking textile materials by attaching tags [D06H 1/04](#))**
- B65C 7/00 **Affixing tags ~~(in combination with filling of tea bags [B65B 29/04](#))~~([in combination with filling of tea bags \[B65B 29/04\]\(#\)](#)); multi-step processes for making labels or tags [B31D 1/02](#))**
- U B65C 9/00** **Details of labelling machines or apparatus [\(attaching articles to carriers \[B65B 15/00\]\(#\); cards of samples \[G09F 5/04\]\(#\)\)](#)**

B65C 9/46

- Applying date marks, code marks, or the like, to the label during labelling (manually-controlled or operable apparatus having printing equipment [B65C 11/02](#); ticket printing and issuing [G07B 1/00](#) { *apparatus for ticket validating or cancelling G07B 11/00* } ~~{(apparatus for ticket validating or cancelling G07B 11/00)}~~)

B65C 11/00

Manually-controlled or manually-operable label dispensers, e.g. modified for the application of labels to articles (special furniture, fittings, or accessories for shops, storehouses, bars, or the like [A47F](#); for paper napkins, for toilet paper [A47K](#); for playing cards [A63F](#); movable-strip writing or reading apparatus [B42D 19/00](#); adhesive tape dispensers ~~[B65H35/07](#) [B65H 35/002](#)~~; dispensers for tickets [G07B](#); coin-operated dispensers for stamps [G07F](#) { *dispensing devices for pamphlets from vehicles G09F 21/22* } ~~{(dispensing devices for pamphlets from vehicles G09F 21/22)}~~)

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 the appropriate subclass of [B60](#) to [B64](#); machines, apparatus, or devices for, or methods of, packaging articles or materials [B65B](#); sack holders [B65B 67/00](#) ; refuse receptacles [B65F 1/00](#) ; handling sheets, webs or filamentary material [B65H](#); load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith for transmitting lifting forces [B66C](#); liquid handling [B67](#); storing gases [F17](#); { packaging for photosensitive or like materials [G03](#), e.g. [G03C 3/00](#)}; making containers, see subclasses dealing with the working of the material concerned)

NOTES

- In this subclass, the indexing codes of [B65D 2519/00004](#) - [B65D 2519/00995](#) should be added, if applicable
- This subclass covers:
 - containers, packaging elements or packages with auxiliary means or provisions for displaying articles or materials;
 - methods of packaging which are wholly characterised by the form of the package produced or the form of the container or packaging element used, as distinct from the operations performed or the apparatus employed, which are covered by subclass [B65B](#)
- 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
- 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 5/43](#)~~, [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	to
B65D 5/46032			
B65D 5/465	covered by	B65D 5/46008	to
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](#) to [B65D 17/26](#)
[B65D 19/32](#) covered by [B65D 19/0002](#) ,
[B65D 19/0004](#)

[B65D 21/024](#) covered by [B65D 21/0201](#)
[B65D 21/028](#) covered by [B65D 21/0204](#)
[B65D 21/032](#) covered by [B65D 21/0211](#)
[B65D 21/036](#) covered by [B65D 21/0217](#)
[B65D 25/26](#) covered by [B65D 81/02](#)
[B65D 30/00](#) - [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 ~~[B65D55/02E](#)~~
[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](#) to [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 21/00S H01L 21/00 , H05K 13/00
B65D 91/00 covered by A47G 29/12

- 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)
- U B65D 5/24
 - • with adjacent sides interconnected by gusset folds
- B65D 5/247
 - • • {and being maintained in erected condition by integral mechanical locking means formed on, or coating with, the gusset folds, e.g. locking tabs, tongue and slit ([B65D 248/00](#) [B65D 5/248](#) takes precedence)}
- U B65D 5/42
 - Details of containers or of foldable or erectable container blanks
- B65D 5/56
 - • Linings or internal coatings, {e.g. pre-formed trays provided with a blow- or thermoformed layer}{to protect the articles from mechanical damage [B65D 81/127](#)}
- B65D 5/60
 - • • Loose, {or loosely attached}, linings {(made only of relatively rigid sheet material [B65D 5/566](#))}
- U B65D 5/64
 - • Lids
- B65D 5/66
 - • • Hinged lids ({[B65D 5/325](#)} takes precedence)
- U B65D 21/00 Nestable, stackable, or joinable containers; Containers of variable capacity (large containers [B65D 88/00](#) ; { containers for display purposes [A47B 87/0276](#)})**
- B65D 21/08
 - Containers of variable capacity (containers of polygonal cross-section adapted to be of variable capacity formed by folding or erecting blanks made of paper {[B65D 5/0005](#)})
- U B65D 23/00 Details of bottles or jars not otherwise provided for (closure-securing elements [B65D 45/00](#))**
- U B65D 23/12
 - Means for the attachment of smaller articles
- B65D 23/14
 - • of tags, {labels, cards, coupons, decorations or the like ([B65D 23/008](#) takes precedence)}
- U B65D 25/00 Details of other kinds or types of rigid or semi-rigid containers**
- U B65D 25/28
 - Handles (of containers made by folding or erecting blanks made of paper [B65D 5/46](#) ; of bottles or jars [B65D 23/10](#) ; { holders for glasses, bottles, cartons, plastic bags, cans [A47G 23/02](#)})
- B65D 25/32
 - • Bail handles, i.e. pivoted {rigid} handles of generally semi-circular shape {with pivot points on two opposed sides or wall parts of the container}
- U B65D 25/38
 - Devices for discharging contents ({containers formed by folding or erecting paper blanks [B65D 5/72](#) ; incorporated in removable or non-permanently secured closure members [B65D 47/00](#) ; for discharging thin flat articles [B65D 83/08](#))
- U B65D 25/40
 - • Nozzles or spouts (in general [B05B](#))
- U B65D 25/42
 - • • Integral or attached nozzles or spouts
- B65D 25/46
 - • • • Hinged, {foldable} or pivoted nozzles or spouts

- U B65D 31/00** **Bags or like containers made of paper and having structural provision for thickness of contents {(with shock-absorbing properties [B65D 81/03](#))}**
 B65D 31/14 · Valve bags, {i.e. with valves for filling}
- U B65D 33/00** **Details of, or accessories for, sacks or bags**
 B65D 33/01 · Ventilation or drainage of bags, {e.g. disaligned apertures, labyrinth welds (pressure-relief valves comprising at least one elastic element [B65D 77/225](#); connection of valves to inflatable elastic bodies [B60C 29/00](#))}
 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 33/28 · · Strings or strip-like closures, {i.e. draw closures}
- B65D 35/00** **Pliable tubular containers adapted to be permanently {or temporarily} deformed to expel contents, e.g. collapsible tubes for toothpaste or other plastic or semi-liquid material; Holders therefor {(packages for tubes [B65D 85/14](#))}**
- B65D 39/00** **Closures arranged within necks or pouring openings or in discharge apertures, e.g. stoppers (lids or covers [B65D 43/00](#) ; with additional securing elements [B65D 45/00](#))**
- NOTE
 In this group, the indexing codes of ~~L65D339~~[B65D 2539/00](#) are used
- 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
- U B65D 41/04** · · Threaded or like caps or cap-like covers secured by rotation
 B65D 41/06 · · · with bayonet cams, {i.e. removed by first pushing axially to disengage the cams and then rotating}
- 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
- U B65D 41/34** · · Threaded or like caps or cap-like covers {provided with tamper elements formed in, or attached to, the closure skirt}
 B65D 41/36 · · · with bayonet cams, {i.e. removed by first pushing axially to disengage the cams and then rotating}
- U B65D 43/00** **Lids or covers for rigid or semi-rigid containers (for cooking vessels [A47J 36/06](#) ; covers for pressure vessels in general [F16J 13/00](#))**
- U B65D 43/02** · Removable lids or covers (with means for piercing, cutting, or tearing a frangible inner closure [B65D 51/22](#))
 B65D 43/08 · · having a peripheral flange fitting over the rim of the container {(not in use, covered by [B65D 43/0222](#) and [B65D 43/0274](#) + ~~L65D43~~[B65D 2543/00](#) codes)}

- U B65D 45/00** **Clamping or other pressure-applying devices for securing or retaining closure members (screw-threaded or bayonet connections between stoppers or caps and containers [B65D 39/08](#) , [B65D 41/04](#) , [B65D 41/34](#) ; expansible stoppers [B65D 39/12](#) ; for pressure vessels in general [F16J 13/00](#))**
- B65D 45/32 · for applying radial {or radial and axial} pressure, e.g. contractible bands encircling closure member
- U B65D 47/00** **Closures with filling and discharging, or with discharging, devices (dispensers for liquid soap [A47K 5/12](#) ; desk equipment for applying liquid by contact with surfaces [B43M 11/00](#) ; fluid delivery valves in general [F16K 21/00](#))**
- U B65D 47/04 · Closures with discharging devices other than pumps
- U B65D 47/20 · · comprising hand-operated members for controlling discharge {(closures with liquid-dispensing taps or cocks [B67D 3/04](#))}
- B65D 47/26 · · · with slide valves, {i.e. valves that open and close a passageway by sliding over a port}, e.g. formed with slidable spouts
- B65D 47/30 · · · with plug valves, {i.e. valves that open and close a passageway by turning a cylindrical or conical plug without axial passageways}
- U B65D 47/42 · with pads or like contents-applying means {(contents-applying means associated to aerosol container nozzles [B65D 83/285](#) ; } brushes combined or associated with containers [A46B 11/00](#) ; swabs for applying media to the human body from an integral supply [A61F13/40](#))
- B65D 47/44 · · combined with slits opening when container is deformed or when pad is pressed against surface to which contents are to be applied (pliable tubular containers with valves opening when closure is pressed against surfaces {([B65D35/54](#) not used) [B65D 47/248](#))}
- U B65D 51/00** **Closures not otherwise provided for (covers or similar closures as engineering elements for pressure vessels in general [F16J 13/00](#))**
- B65D 51/24 · combined {or co-operating} with auxiliary devices for non-closing purposes
- 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 · Packaging elements holding or encircling completely or almost completely the bundle of articles, e.g. wrappers
- B65D 71/12 · · the packaging elements {e.g. wrappers} being formed by folding a single blank
- B65D 71/14 · · · having a tubular shape {e.g. tubular wrappers} without end walls (sleeves [B65D 59/04](#))
- U B65D 71/28 · · · · characterised by the handles
- B65D 71/30 · · · · unitary {i.e. integral} with the tubular packaging elements
- B65D 71/36 · · · {having a tubular shape, e.g. tubular wrappers, with} end walls
- B65D 71/38 · · the packaging elements {e.g. wrappers} being formed by folding and interconnecting two or more blanks
- U B65D 75/00** **Packages comprising articles or materials partially or wholly enclosed in strips, sheets, blanks, tubes, or webs of flexible sheet material, e.g. in folded wrappers ([B65D 71/00](#) takes precedence; wrapping [B65B 11/00](#))**
- U B65D 75/28 · Articles or materials wholly enclosed in composite wrappers, i.e. wrappers formed by associating or interconnecting two or more sheets or blanks

- U B65D 75/30
- Articles or materials enclosed between two opposed sheets or blanks having their margins united, e.g. by pressure-sensitive adhesive, crimping, heat-sealing, or welding
- U B65D 75/32
- one or both sheets or blanks being recessed to accommodate contents
- B65D 75/36
- one sheet or blank being recessed and the other formed of relatively stiff flat sheet material, e.g. blister packages, {the recess or recesses being preformed ([B65D 73/0057](#) , [B65D 73/0092](#) take precedence)}
- U B65D 77/00**
- Packages formed by enclosing articles or materials in preformed containers, e.g. boxes, cartons, sacks, bags**
- U B65D 77/04
- Articles or materials enclosed in two or more containers disposed one within another
- B65D 77/06
- Liquids or semi-liquids {or other materials or articles} enclosed in flexible containers disposed within rigid containers
- U B65D 77/10
- Container closures formed after filling ({for sacks or bags [B65D 33/16](#) } ; closing filled containers in association with packaging [B65B 7/00](#) , [B65B 51/00](#))
- B65D 77/20
- by applying separate lids or covers, {i.e. flexible membrane or foil-like covers}
- U B65D 81/00**
- Containers, packaging elements, or packages, for contents presenting particular transport or storage problems, or adapted to be used for non-packaging purposes after removal of contents**
- U B65D 81/24
- Adaptations for preventing deterioration or decay of contents; Applications to the container or packaging material of food preservatives, fungicides, pesticides or animal repellants (with thermal insulation [B65D 81/38](#))
- B65D 81/26
- with provision for draining away, or absorbing, {or removing by ventilation,} fluids, e.g. exuded by contents; {([B65D 33/01](#) takes precedence)}; Applications of corrosion inhibitors or desiccators
- B65D 81/34
- for packaging foodstuffs {or other articles} intended to be cooked or heated within the package
- U B65D 83/00**
- Containers or packages with special means for dispensing contents (dispensing means incorporated in removable or non-permanently secured container closures [B65D 47/00](#) ; for shops, stores, offices, bars, or the like [A47F 1/04](#) ; showcases or cabinets with dispensing arrangements [A47F 3/02](#) ; { for surgical articles [A61B 19/026](#) } ; magazines for screws or nuts in combination with spanners, wrenches or screw-drivers [B25B 23/06](#) ; nail dispensers [B25C 3/00](#) ; for use in connection with the handling of sheets, webs, or filamentary material [B65H](#); coin deliverers [G07D 1/00](#) ; { coin-freed apparatus for dispensing discrete articles [G07F 11/00](#)})**
- WARNING
- Groups [B65D 83/75](#) to [B65D 83/759](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [B65D 83/75](#) to [B65D 83/759](#) : [B65D 83/14](#)
- U B65D 83/14
- for delivery of liquid or semi-liquid contents by internal gaseous pressure, i.e. aerosol containers {for a product delivered by a propellant (spraying devices for the destruction of noxious animals or plants [A01M 7/00](#) , for therapeutic purposes [A61M 11/00](#) ; spraying or atomizing apparatus in general [B05B](#); aerosol compositions, e.g. propellants [C09K 3/30](#) ; pumping of fluid by direct contact of another fluid, e.g. siphons [F04F](#); fluid-delivery valves in general [F16K 21/00](#) ; discharge nozzles in general [F16K 31/58](#) ; vessels for containing or storing compressed, liquefied, or solidified gases [F17C](#)}
- U B65D 83/16
- characterised by the actuating means {(actuation occurring by moving the aerosol container relative to an outer shell [B65D 83/386](#) ; involved in metering valve assemblies [B65D 83/546](#)}

- B65D 83/20
- • • {operated by manual action, e.g. button-type actuator or} actuator cap {(actuators formed as a rigid elongate spout [B65D 83/306](#))}
- B65D 83/24
- • • with means to hold the valve open, {e.g. for continuous delivery}
- U B65D 83/28
- • Nozzles, nozzle fittings or accessories specially adapted therefor
- B65D 83/30
- • • for guiding the flow of spray, {e.g. funnels, hoods}
- B65D 83/36
- • allowing operation in any orientation, {e.g. discharge in inverted position}
- B65D 83/40
- • Closure caps (actuator caps {[B65D 83/205](#)})
- U B65D 83/44
- • Valves specially adapted therefor; Regulating devices (filling or charging means [B65D 83/42](#) ; { pressure regulators releasing propellant inside the container [B65D 83/663](#) } ; pressure relief devices [B65D 83/70](#))
- B65D 83/50
- • • Non-reclosable valves, {e.g. for complete delivery in a single dose}
- U B65D 83/52
- • • for metering
- U B65D 83/54
- • • • Metering valves; {Metering valve assemblies}
- U B65D 83/60
- • Product and propellant separated {(portable fire extinguishers wherein extinguishing material and pressure gas are stored in separate containers [A62C 13/66](#))}
- B65D 83/66
- • • first separated, but finally mixed, {e.g. in a dispensing head (mixing in general [B01F](#))}
- B65D 83/68
- • Dispensing two or more products, {e.g. sequential dispensing or simultaneous dispensing of two or more products without mixing them}
- B65D 83/72
- • with heating or cooling devices, {e.g. heat-exchangers}
- 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 19/026](#) } ; containers specially adapted for medical or pharmaceutical purposes [A61J 1/00](#) ; paint cans [B44D 3/12](#) ; oil cans [F16N 3/04](#) ; containers for carrying smallarms [F41C 33/06](#) ; packaging of ammunition or explosive charges [F42B 39/00](#) ; containers for record carriers, specially adapted for co-operation with the recording or reproducing apparatus [G11B 23/00](#))**
- NOTE
Attention is drawn to Note (4) following the title of this subclass
- U B65D 85/08
- for compressible or flexible rod-shaped or tubular articles {(collapsible tubes per se [B65D 35/00](#))}
- B65D 85/14
- • for collapsible {empty} tubes, {i.e. pliable tubular containers adapted to be permanently or temporarily deformed to expel contents}
- U B65D 85/70
- for materials not otherwise provided for
- B65D 85/804
- • Disposable containers or packages with contents which are {mixed,} infused or dissolved in situ {i.e. without having been previously removed from the package ([B65D 65/46](#) takes precedence; tea infusers [A47G 19/16](#) ; spoons or stirrers comprising beverage additives [A47G 21/04](#))}
- U B65D 85/808
- • • for immersion in the liquid {to release part or all of their contents}, e.g. tea bags
- B65D 85/812
- • • • with features facilitating their {manipulation or} suspension {([B65D 85/8085](#) takes precedence)}
- U **B65D 88/00**
- Large containers (component parts, details or accessories [B65D 90/00](#) ; construction or assembling of bulk storage containers employing civil engineering techniques in situ or off the site [E04H 7/00](#) ; gas holders of variable capacity [F17B](#) ; vessels for containing or storing compressed, liquefied or solidified gases [F17C](#))**

- U B65D 88/16
B65D 88/1612
- flexible ([B65D 88/34](#) to [B65D 88/78](#) take precedence; hoppers [B65D 88/26](#))
 - · {Flexible intermediate bulk containers [{\[FIBC\]}](#)}
- U **B65D 90/00** **Component parts, details or accessories for large containers ([B65D 88/34](#) to [B65D 88/78](#) take precedence)**
- B65D 90/008
- {Doors for containers, e.g. ISO-containers (locking [E05B65/16](#)[E05B 83/12](#))}
- U B65D 90/12
- Supports
- U B65D 90/20
B65D 90/205
- · Frames or nets, e.g. for flexible containers
 - · · {for flexible containers, i.e. the flexible container being permanently connected to the frame ([B65D 77/061](#) , [B65D 88/1612](#) , [B65D 90/046](#) take precedence; unpacking of Flexible Intermediate Bulk Container [{\[FIBC\]}](#) [B65B 69/0075](#) ; crane hooks for frames for FIBC [B66C 1/226](#))}
- B65D 2251/00** **Details relating to container closures (lids or covers for box-like containers [B65D 43/00](#); see also [B65D 43/00](#))(see also [B65D 43/00](#))**
- 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 2581/3486
B65D 2581/3487
- · · Dielectric characteristics of microwave reactive packaging
 - · · · Reflection, Absorption and Transmission [{\[RAT\]}](#) properties of the microwave reactive package
- U **B65D 2585/00** **Containers, packaging elements or packages specially adapted for particular articles or materials**
- U B65D 2585/68
- for machines, engines, or vehicles in assembled or dismantled form
- U B65D 2585/6802
B65D 2585/6845
- · specific machines, engines or vehicles (not used)
 - · · ~~other household devices;~~ *other [B65D 2585/6815](#) and household devices [B65D 2585/6835](#) take precedence ([B65D 2585/6815](#) and [B65D 2585/6835](#) take precedence)*
- U **B65D 2588/00** **Large container (not used)**
- U B65D 2588/02
- rigid (not used)
- U B65D 2588/12
B65D 2588/125
- · specially adapted for transport (not used)
 - · · Intermediate bulk container [{\[IBC\]}](#)
- U B65D 2588/16
B65D 2588/162
- flexible (not used)
 - · Flexible intermediate bulk containers [{\[FIBC\]}](#) (not used)

Project: N/A (B65F)

- U **B65F 1/00** **Refuse receptacles; {Accessories therefor}(containers not specially adapted for refuse, features of refuse receptacles of general interest [B65D](#))**
- U B65F 1/14
- Other constructional features; {Accessories}(holders or carriers for hand articles [A45F 5/00](#); fastening devices [E05C](#))
- B65F 1/16
- · Lids or covers ([{B65F 1/1421}](#) takes precedence); pedal or hand-lever operated {for containers in general} [B65D](#))
- U **B65F 3/00** **Vehicles particularly adapted for collecting refuse (vehicles in general [B60](#); driving vehicle equipment or auxiliaries [B60K](#); discharging contents by tilting entire vehicles [B65G](#); wheeled apparatus for emptying sewers or cesspools [E03F 7/10](#))**

- U B65F 3/14 · with devices for charging, distributing or compressing refuse in the interior of the tank of a refuse vehicle ([B65F 3/02](#) takes precedence)
- U B65F 3/20 · · with charging pistons, plates, or the like (for discharging [B65F 3/28](#))
- B65F 3/203 · · · {with charging teeth, cutters or the like mounted on an axle or a drum ~~[B65F 3/202](#), [B65F 3/205](#), [B65F 3/206](#) take precedence~~}([B65F 3/202](#), [B65F 3/205](#), [B65F 3/206](#) take precedence)}

Project: N/A (B65G)

- U B65G 1/00 **Storing articles, individually or in orderly arrangement, in warehouses or magazines (conveyer combinations in warehouses, magazines, or workshops [B65G 37/00](#) ; stacking of articles [B65G 57/00](#) ; removing articles from stacks [B65G 59/00](#) ; loading machines [B65G 65/02](#) ; arrangements of articles for drying or baking in kilns or ovens [F26](#) ; [F27](#))**
NOTE
group [B65G 1/0442](#) takes precedence over the other groups, except over [B65G 1/08](#)
- U B65G 1/02 · Storage devices (furniture, shop fittings, table equipment [A47B](#) , [A47F](#) , [A47G](#) ; mechanical garages [E04H](#) ; for data record cards in association with machines for making or sensing data [G06K](#) ; coin changers or sorters [G07D](#) ; coin-freed apparatus [G07F](#){ pallets [B65D 19/00](#)})
- U B65G 1/04 · · mechanical
- B65G 1/12 · · · with {separate} article supports or holders movable in a closed circuit to facilitate insertion or removal of articles {the articles being books, documents, forms or the like}
- B65G 1/137 · · · with arrangements or automatic control means for selecting which articles are to be removed (devices for feeding articles to conveyers from several groups of articles ~~[B65G 47/10](#)~~[B65G 47/04](#))
- B65G 3/00 **Storing bulk material or loose, i.e. disorderly, articles (filling or emptying storage spaces or containers, spreading out or piling up bulk material or loose articles [B65G 65/28](#) , [B65G 65/30](#) , [B65G 69/04](#) {[B65G 63/00](#) ; storing agricultural or horticultural produce [A01F 25/00](#)})**
- U B65G 15/00 **Conveyers having endless load-conveying surfaces, i.e. belts and like continuous members, to which tractive effort is transmitted by means other than endless driving elements of similar configuration (having load-conveying surfaces formed by interconnected longitudinal links [B65G 17/06](#))**
- B65G 15/60 · Arrangements for supporting or guiding belts, e.g. by fluid jets (constructions of rollers or supports therefor [B65G 39/00](#) {[F16C 13/00](#)})
- U B65G 17/00 **Conveyers having an endless traction element, e.g. a chain, transmitting movement to a continuous or substantially continuous load-carrying surface or to a series of individual load-carriers; Endless-chain conveyers in which the chains form the load-carrying surface (railway systems, detachable load-carriers on rails [B61B](#); escalators or paternosters neither combined nor associated with loading or unloading apparatus [B66B 9/00](#))**
- B65G 17/16 · comprising individual load-carriers which are pivotally mounted, e.g. for free-swinging movement (guides inverting or tilting load-carriers for emptying {[B65G 47/38](#) ; [B65G 17/20](#) takes precedence })
- U B65G 17/30 · Details; Auxiliary devices (belts [B65G 15/30](#) ; framework [B65G 21/00](#))

- B65G 17/48
- Controlling attitudes of load-carriers during movement (~~B65G 17/48 takes precedence~~) (~~B65G 17/18 takes precedence~~); guides [B65G 21/20](#); ~~inverting or tilting load carriers to discharge contents B65G 47/38~~; (~~guides B65G 21/20; inverting or tilting load carriers to discharge contents B65G 47/38~~)
- U B65G 21/00** **Supporting or protective framework or housings for endless load-carriers or traction elements of belt or chain conveyers (for load-carriers in jiggling conveyers [B65G 27/08](#)); supporting framework or bases for conveyers as a whole [B65G 41/00](#))**
- B65G 21/20
- Means incorporated in, or attached to, framework or housings for guiding {or retaining} load-carriers, traction elements or loads supported on moving surfaces (arrangements for supporting belts [B65G 15/60](#); { details of chain conveyers [B65G 17/30](#); } rollers or roller arrangements [B65G 39/00](#); [F16G](#))
- U B65G 47/00** **Article or material handling devices associated with conveyers; Methods employing such devices (for sorting, e.g. postal [B07C](#))**
- U B65G 47/34
- Devices for discharging articles or materials from conveyers ([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 47/51
- according to unprogrammed signals, e.g. influenced by supply situation at destination (volume, flow or liquid level meters [G01F](#); scales or weighing machines [G01G](#); remote controls [G05G](#))
- U B65G 47/5104
- {for articles}
- B65G 47/515
- {First In-Last Out systems (~~FILO~~); Last In-First Out systems (~~LIFO~~)}
- U B65G 47/52
- Devices for transferring articles or materials between conveyers {or sections of one conveyer}, i.e. discharging and feeding devices (loading or unloading by means not incorporated in, or not operatively associated with, conveyers [B65G 65/00](#); transfer of workpieces during metal rolling [B21B 41/00](#))
- B65G 47/68
- adapted to receive articles arriving in one layer from one conveyer {lane} and to transfer them in individual layers to more than one conveyer {lane or to one broader conveyer lane}, or vice-versa, e.g. combining the flows of articles conveyed by more than one conveyer
- B65G 47/71
- the articles being discharged {or distributed} to several {distinct separate} conveyers {or to a broader conveyer lane}
- U B65G 51/00** **Conveying articles through pipes or tubes by fluid flow or pressure (pneumatic railways [B61B](#)); Conveying articles over a flat surface, e.g. the base of a trough, by jets located in the surface (pumps [F04](#); fluid dynamics [F15D](#); valves, taps, cocks [F16K](#); pipes, pipe joints, or associated devices [F16L](#))**
- U B65G 51/04
- Conveying the articles in carriers having a cross-section approximating that of the pipe or tube; Tube mail systems
- B65G 51/08
- Controlling or conditioning the operating medium (~~in compressors 59~~; ~~in compressors [F04B](#)~~; air-conditioning, e.g. de-watering, in pneumatic systems [F16L 55/10](#))

B65G 53/00 Conveying materials in bulk through troughs, pipes, or tubes by floating the materials, or by flows of gas, liquid, or foam (fluidising in connection with loading or unloading [B65G 69/06](#) ; loaders for hay or cereals [A01D 87/00](#) ; { discharging means for mixtures containing clay or cementitious material [B28C 7/16](#) ; } fluidising devices facilitating filling or emptying of large containers [B65D 88/72](#) ; {combined washing or cutting and conveyance of materials in sugar manufacture [A23N](#); [C13C](#); [C13B](#);} dredging [E02F](#); winning materials out of alluvial deposits [E21C 45/00](#) ; hydraulic or pneumatic mine-filling-up machines [E21F 15/00](#) ; fluid dynamics [F15D](#) {pumping fluid by direct action of another fluid [F04F](#)})

U B65G 53/34

· Details

B65G 53/38

· · Modification of material containing walls to facilitate fluidisation (hoppers with walls modified for fluidisation of contents ~~[B65D3714](#)~~[B65D 88/72](#))

**B65G 57/00 -
B65G 69/00**

Stacking or de-stacking; Loading or unloading (by means incorporated in, or operatively associated with, conveyers [B65G 47/00](#) ; lift trucks [B60P](#) ; [B66F](#) ; handling sheet material or flat articles made therefrom [B65H](#) ; cranes [B66C](#) ; loading or unloading by soil-shifting or like equipment [E02F](#) ; stacking or de-stacking data record cards in association with machines for marking or sensing data [G06K](#))

NOTE

In groups [B65G 57/00](#) to [B65G 61/00](#) , the following term is used with the meaning indicated: ~~-"stacking" means disposing articles individually or in layers one above each other~~

- *"stacking" means disposing articles individually or in layers one above each other*

B65G 63/00

Transferring or trans-shipping at storage areas, railway yards, harbours, {or in opening mining cuts}; Marshalling yard installations (transferring refuse between vehicles or containers [B65F 9/00](#) ; dredging, soil shifting [E02F](#) ; conveyers used in co-operation with coal or like winning apparatus [E21C 47/00](#))

Project: N/A (B65H)

B65H

HANDLING THIN OR FILAMENTARY MATERIAL, e.g. SHEETS, WEBS, CABLES

NOTES

1. This subclass does not cover methods or devices intimately associated with other operations on thin or filamentary material, e.g sheets, webs, cables or means for performing such operations, which are classified in the relevant subclasses for these operations, e.g.:

[B07C](#) Postal sorting, similar sorting of documents, e.g. cheques

[B08B 1/02](#) Cleaning travelling work, e.g. webs, by methods involving the use of tools, brushes or like members

[B21B 41/00](#) Metal rolling involving guiding, conveying or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves

[B21C 47/00](#) , Winding-up, coiling, winding-off or temporarily

[B21C 49/00](#) accumulating metal wire, metal band or other

flexible metal material, characterised by features relevant to metal processing only, other than by rolling

[B21D 43/00](#) Feeding, positioning or storing devices, combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal without essentially removing material

[B23K 9/12](#) Means for automatic feeding of electrodes for spot or seam welding or cutting

[B29C 31/00](#) Handling for shaping or joining of plastics, for shaping of substances in a plastic state in general or for after-treatment of shaped products, e.g. feeding the material to be shaped

[B41B 15/32](#) , Film-handling mechanisms in photographic

[B41B 21/32](#) composing machines

[B41F 13/02](#) Conveying or guiding webs through rotary printing presses or machines

[B41J 11/00](#) to Handling of copy- or impression-transfer material

[B41J 17/00](#) in typewriters or selective printing mechanisms

[B41K 3/44](#) Means for handling copy matter in stamping or numbering apparatus or devices

[B41L](#) Handling sheets or webs in apparatus or devices for manifolding, duplicating or printing for office or other commercial purposes, or on addressing machines or like series-printing machines

[B42B](#) Handling relating to permanently attaching together sheets, quires, or signatures

[B42C](#) Handling sheets in book-binding

[B65B](#) Handling of sheets or webs in apparatus for, or methods of, packaging articles, not of interest apart from their application in packaging machines

[B65C](#) Handling of labels in labelling or tagging apparatus

[C14B 1/62](#) Winding or stacking hides or leather in machines or devices for manufacturing leather

[D01](#) to [D07](#) Spinning, weaving, braiding, lace-making, knitting, sewing, making ropes or cables

[D21F 2/00](#) Transferring webs from wet ends to press sections in paper-making

[F26B 13/00](#) Handling fabrics, fibres, yarns or other material in long lengths in drying apparatus

[G03B](#) Film-strip handling or handling of pictures in apparatus for taking photographs or for

projecting or viewing them
[G06K 13/00](#) Conveying record carriers from one station
to
another
[G06M 7/00](#) Counting of flat articles, e.g. sheets,
carried
by a conveyer
[G11B 15/00](#) to Information storage based on relative
movement
[G11B 19/00](#) , between record carrier and
transducer,
[G11B 23/00](#) , involving handling record carriers
for
[G11B 25/00](#) recording or reproducing
[H01F 41/06](#) Manufacturing coils for magnets,
inductances,
transformers, by winding
[H01G 13/02](#) Machines for winding capacitors
[H04N 1/00](#) Sheet handling not of interest apart from
its
use in systems for transmission or reproduction
of pictures or patterns not varying in
time, e.g. facsimile transmission

2. In this subclass:

- the groups relating to thin material, as defined under (i) of Note (3) below, are primarily intended to cover the handling of articles made of paper or cardboard, but also include the handling of articles made of other materials which have similar characteristics or present similar handling problems, e.g. articles made of sheet- plastics or leather;
- the groups relating to filamentary material (groups [B65H 49/00](#) onwards,) as defined in Note (3) below, cover only methods or devices of general application or interest.

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

- "handling" includes feeding, folding (other than in the manufacture of products), guiding, orientating, storing, unwinding, and winding;
- "thin material" includes:
 - i. sheets, signatures, envelopes, blanks, and thin and thin piles thereof (hereinafter referred to as "articles"), and
 - ii. webs, tapes, and films, e.g. of paper, fabric, metal foil, or plastics;
- "filamentary material" includes thread, wires, ropes, cables, and hoses;
- "package" means a mass of filamentary material, formed by coiling, depositing, or winding, with or without a supporting core or former or an enclosing container or receptacle.
- {"yarn" also covers similar filamentary materials.}

WARNING

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

- [B65H 35/07](#) covered by [B65H 35/0006](#) -
[B65H 77/00](#) covered by [B65H 23/00](#) , [B65H 59/00](#)
- [B65H 83/00](#) , [B65H 83/02](#) covered by
[B07C 1/025](#) , ~~[G07D1/00D](#)~~ [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 5/02
- by belts or chains, {e.g. between belts or chains (by combinations of endless conveyers and grippers [B65H 5/085](#) ; by suction belts [B65H 5/224](#)}}
- U B65H 23/00** **Registering, tensioning, smoothing or guiding webs (registering articles [B65H 9/00](#) ; in connection with splicing [B65H 21/00](#))**
- U B65H 23/04
- longitudinally
- U B65H 23/18
- · by controlling or regulating the web-advancing mechanism, e.g. mechanism acting on the running web
- U B65H 23/195
- · · in winding mechanisms or in connection with winding operations
- B65H 23/198
- · · · motor-controlled {(Controlling electrical drive motors therefor)}
- 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
- U B65H 54/38
- · Arrangements for preventing ribbon winding; {Arrangements for preventing irregular edge forming, e.g. edge raising or yarn falling from the edge}
- U B65H 67/00** **Replacing or removing cores, receptacles, or completed packages at paying-out, winding, or depositing stations**
- B65H 67/04
- Arrangements for removing completed take-up packages and {or} replacing by cores, formers, or empty receptacles at winding or depositing stations; Transferring material between adjacent full and empty take-up elements {(arrangement of the service carriage [B65H 54/26](#))}
- 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 75/00** **Storing webs, tapes, or filamentary material, e.g. on reels (fishing reels [A01K 89/00](#) ; storing means for record carriers, specially adapted for cooperation with the recording or reproducing apparatus [G11B 23/02](#))**
- U B65H 75/02
- Cores, formers, supports, or holders for coiled, wound, or folded material, e.g. reels, spindles, bobbins, cop tubes, cans (packaging aspects [B65D 85/67](#))
- U B65H 75/04
- · Kinds or types ([B65H 75/18](#) takes precedence)
- U B65H 75/08
- · · of circular or polygonal cross-section (cans or receptacles [B65H 75/16](#))
- B65H 75/12
- · · · with a single end flange {(e.g. with a conical end flange)}; formed with one end of greater diameter than the barrel
- B65H 81/00** **Methods, apparatus, or devices for covering or wrapping cores by winding webs, tapes, or filamentary material, not otherwise provided for (forming hollow objects by winding filamentary material on to fusible or soluble cores {[B29C 53/56](#)} ; Wrapping for the purpose of packaging [B65B 11/00](#) ; making wound articles of paper [B31C](#))**
- U B65H 2301/00** **Handling processes for sheets or webs**
- U B65H 2301/40
- Type of handling process
- U B65H 2301/44
- · Moving, forwarding, guiding material
- U B65H 2301/443
- · · by acting on surface of handled material
- U B65H 2301/4433
- · · · by means holding the material
- B65H 2301/44331
- · · · · at particular portion of handled material (to be used in combination with at least one code [L65H713](#) to be used in combination with at least one code [B65H 2701/13](#))
- U B65H 2551/00** **Means for control to be used by operator; User interfaces**

- U B65H 2551/20 · Display means; Information output means
- U B65H 2551/21 · · Monitors; Video displays
- B65H 2551/212 · · · Liquid crystal display [\(LCD\)](#)

U B65H 2601/00 Problem to be solved or advantage achieved

- U B65H 2601/50 · Diminishing, minimizing or reducing
- U B65H 2601/52 · · entities relating to handling machine
- U B65H 2601/524 · · · Vibration
- B65H 2601/5244 · · · · by using electro-rheological fluid [\(ERF\)](#)

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 1/30 · · · effective on driving gear, {e.g. acting on power electronics, on inverter or rectifier controlled motor}
- B66B 1/32 · · · effective on braking devices, {e.g. acting on electrically controlled brakes (brake control [H02P](#), lift brakes per se [B66B 5/02](#))}
- B66B 1/34 · Details, {e.g. call counting devices, data transmission from car to control system, devices giving information to the control system}

U B66B 7/00 Other common features of elevators

- U B66B 7/02 · Guideways; Guides (arrangements in mine shafts [E21D 7/02](#))
- B66B 7/04 · · {Riding means, e.g.} Shoes, Rollers, {between car and guiding means, e.g. rails, ropes (rollers adapted to match the shape of a special guiding means [B66B 7/02](#) ; vibration attenuation systems acting between car and its supporting frame [B66B 11/026](#))}

U B66B 11/00 Main component parts of lifts in, or associated with, buildings or other structures

- B66B 11/02 · Cages, {i.e. cars}(doors, gates or other apparatus controlling access to, or exit from, cages [B66B 13/00](#))
- U B66B 11/04 · Driving gear; {Details thereof, e.g. seals (braking devices acting on the driving gear [B66B 5/02](#) ; of mining-hoist winding devices [B66B 15/08](#))}

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 1/10 · by mechanical means
- U B66C 1/22 · · Rigid members, e.g. L-shaped members, with parts engaging the under surface of the loads; Crane hooks
- B66C 1/226 · · · {for flexible intermediate bulk containers [\(FIBC\)](#)}

Project: N/A (B67C)

- U B67C 3/00** **Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus; Filling casks or barrels with liquids or semiliquids (filling containers with liquids or semiliquids using apparatus other than bottling or like apparatus [B65B 3/00](#))**
- U B67C 3/02 · Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus
- U B67C 3/22 · · Details
- U B67C 3/24 · · · Devices for supporting or handling bottles (transport or storing devices in general [B65G](#))
- B67C 3/248 · · · · {Bottle lifting devices actuated by threads [B67C 3/242](#) takes precedence}[\(B67C 3/242 takes precedence\)](#)}

Project: N/A (B67D)

- U B67D 3/00** **Apparatus or devices for controlling flow of liquids under gravity from storage containers for dispensing purposes (separating and dispensing metered quantities of liquids [G01F](#))**
- U B67D 3/0058 · {Details}
- U B67D 3/0061 · · {of liquid containers, e.g. filling, emptying, closing or opening means}
- B67D 3/0067 · · · {relating to shape or materials, e.g. bag-in-box packages [\(BIB\)](#)}, pouches}

Project: N/A (B81B)

- U B81B 7/00** **Micro-structural systems; {Auxiliary parts of micro-structural devices or systems}**
- 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](#))}
- NOTE**
- 1. This group covers: only MEMS with an electronic circuit which is not specific to a particular application.*
- ~~1-2. This group covers: only MEMS with an electronic circuit which is not specific to a particular application. This group~~ does not cover: electronic circuits per se, e.g. for controlling or driving application specific MEMS
- B81B 7/02 · containing distinct electrical or optical devices of particular relevance for their function, e.g. micro-electro-mechanical systems [\(MEMS\)](#) ([B81B 7/04](#) takes precedence)

Project: N/A (B81C)

- U B81C 2201/00** **Manufacture or treatment of micro-structural devices or systems**
- U B81C 2201/01 · in or on a substrate
- U B81C 2201/0101 · · Shaping material; Structuring the bulk substrate or layers on the substrate; Film patterning
- U B81C 2201/0102 · · · Surface micromachining
- B81C 2201/0104 · · · · Chemical-mechanical polishing [\(CMP\)](#)
- U B81C 2201/0128 · · · Processes for removing material
- U B81C 2201/013 · · · · Etching
- B81C 2201/0132 · · · · · Dry etching, i.e. plasma etching, barrel etching, reactive ion etching [\(RIE\)](#), sputter etching or ion milling

- U B81C 2201/0174 · · for making multi-layered devices, film deposition or growing
 B81C 2201/0181 · · · Physical Vapour Deposition (~~PVD~~), i.e. evaporation, sputtering, ion plating
 or plasma assisted deposition, ion cluster beam technology

Project: N/A (C01)

C01

INORGANIC CHEMISTRY (processing powders of inorganic compounds preparatory to the manufacturing of ceramic products [C04B 35/00](#); fermentation or enzyme-using processes for the preparation of elements or inorganic compounds except carbon dioxide [C12P 3/00](#); obtaining metal compounds from mixtures, e.g. ores, which are intermediate compounds in a metallurgical process for obtaining a free metal [C21B](#), [C22B](#); production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis [C25B](#))

NOTES

1. In this class, in the absence of an indication to the contrary, a compound is classified in the last appropriate place; { except compounds of group [C01B 6/00](#) which takes precedence over the other groups of class [C01](#) }.

2. The name of compounds is to be taken in a strictly limitative sense. With the exception of hydrogen and oxygen, in order to include water of hydration and acid salts, compounds may not contain other parts than its name suggests. In some cases however subgroups are provided for compounds containing more parts than their name suggests, e.g. group [C01F 7/76](#), providing for alum, is a subgroup of group [C01F 7/74](#) covering aluminium sulfates. In such a case, this note is applicable to the particular subgroup

3. In class [C01](#) it is desirable to add the indexing codes relating to structural and physical aspects of solid inorganic compounds. The indexing codes are chosen from the groups of ~~M01P~~[C01P](#)

Project: N/A (C01B)

U C01B

NON-METALLIC ELEMENTS; COMPOUNDS THEREOF; {METALLOIDS OR COMPOUNDS THEREOF NOT COVERED BY SUBCLASS [C01C](#)}

NOTES

1. In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups.

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

WARNINGS

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

[C01B 31/16](#) covered by [B01J 39/24](#) ,
[B01J 41/18](#)
[C01B 35/16](#) , [C01B 35/18](#) covered by
[C01B 35/00](#) + s.gr.

2. General concordance IPC4 or IPC5 to IPC6 groups is as follows:

[C01B 25/37](#) (partly) : [C01B 37/002](#)
[C01B 25/453](#) : [C01B 37/00](#) ,
[C01B 39/54](#)
[C01B 33/185](#) : [C01B 37/02](#)
[C01B 33/28](#) and subgroups : [C01B 37/00](#)
, [C01B 39/00](#)
[C01B 35/1009](#) : [C01B 37/06](#) ,
[C01B 39/12](#) , [C01B 39/54](#)

- 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](#) to [C01B 3/18](#) and in groups [C01B 3/22](#) to [C01B 3/586](#) it is desirable to add the indexing codes of group [C01B 2203/00](#) , for aspects relating to hydrogen or synthesis gas generation processes.
- C01B 3/02 · Production of hydrogen or of gaseous mixtures containing {a substantial proportion of} hydrogen
- C01B 4/00** **Hydrogen isotopes; Inorganic compounds thereof prepared by isotope exchange, e.g. $\text{NH}_3 + \text{D}_2 \rightarrow \text{NH}_2\text{D} + \text{HD}$ (separation of isotopes [B01D 59/00](#) ; other chemical reactions to form compounds of hydrogen isotopes, see the relevant groups for hydrogen compounds in class [C01](#))**
- U C01B 7/00** **Halogens; Halogen acids (oxyacids [C01B 11/00](#))**
- U C01B 7/01 · Chlorine; Hydrogen chloride
- U C01B 7/07 · · Purification; {Separation ([C01B 7/015](#) takes precedence)}
- U C01B 13/00** **Oxygen; Ozone; Oxides or hydroxides in general**
- U C01B 13/02 · Preparation of oxygen (by liquefying [F25J](#))
- C01B 13/0229 · · {Purification or separation processes}
- NOTE**
- In groups [C01B 13/0229](#) to [C01B 13/0288](#) , additional features relating to the purification or separation processes are indexed with codes chosen from [C01B 2210/0026](#) to ~~M210/00W90~~[C01B 2210/0098](#).
- U C01B 13/14 · Methods for preparing oxides or hydroxides in general (particular individual oxides or hydroxides, see the relevant groups of subclasses [C01B](#) to [C01G](#) or [C25B](#), according to the element combined with the oxygen or hydroxy group)
- C01B 13/36 · · by precipitation reactions in {aqueous} solutions {([C01B 13/328](#) takes precedence)}
- U C01B 15/00** **Peroxides; Peroxyhydrates; Peroxyacids or salts thereof; Superoxides; Ozonides**
- C01B 15/04 · Metal peroxides or peroxyhydrates thereof; {Metal} superoxides; {Metal} ozonides; {Peroxyhydrates thereof}
- U C01B 17/00** **Sulfur; Compounds thereof**
- U C01B 17/69 · Sulfur trioxide; Sulfuric acid
- U C01B 17/90 · · Separation; Purification
- C01B 17/92 · · · Recovery from acid tar or the like, {e.g. alkylation acids (obtaining sulfur dioxide as an intermediate in sulfur trioxide recovery therefrom [C01B 17/58](#))}
- U C01B 21/00** **Nitrogen; Compounds thereof**
- C01B 21/02 · Preparation of nitrogen (by decomposition of ammonia {[C01B 3/047](#)})

- C01B 21/06
- Binary compounds of nitrogen with metals, with silicon, or with boron, {or with carbon, i.e. nitrides; Compounds of nitrogen with more than one metal, silicon or boron} (azides [C01B 21/08](#))
- NOTES**
1. Binary compounds, i.e. compounds of nitrogen with only one other element chosen from metals, silicon, boron or carbon, are classified in groups [C01B 21/06](#) or [C01B 21/0605](#) to [C01B 21/076](#). Compounds of nitrogen with more than one element chosen from metals, silicon or boron are classified in [C01B 21/0602](#)
 2. Documents relating to several specific binary compounds are classified in [C01B 21/06](#) only and receive the indexing codes chosen from [C01B 21/0602](#) to [C01B 21/076](#) to identify the specific compounds
- U C01B 21/20
- Nitrogen oxides; Oxyacids of nitrogen; Salts thereof
- C01B 21/206
- • {Nitric anhydride (N_2O_5) ([C01B 21/203](#) takes precedence)}
- U C01B 21/24
- • Nitric oxide (NO) {([C01B 21/203](#) takes precedence)}
- C01B 21/26
- • • Preparation by catalytic {or non-catalytic} oxidation of ammonia
- C01B 21/36
- • Nitrogen dioxide (NO_2 , N_2O_4){([C01B 21/203](#)), [C01B 21/26](#), [C01B 21/30](#) take precedence}
- U C01B 21/38
- • Nitric acid
- U C01B 21/46
- • • Purification; Separation; {Stabilisation ([C01B 21/40](#) takes precedence)}
- 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 25/234
- • • Purification; Stabilisation; Concentration (purification concomitant with preparation [C01B 25/22](#); preparation involving solvent-solvent extraction [C01B 25/46](#))
- U C01B 25/237
- • • • Selective elimination of impurities {([C01B 25/2343](#) takes precedence)}
- C01B 25/238
- • • • • Cationic impurities, {e.g. arsenic compounds}
- 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 31/24
- Methods for the preparation of carbonates or bicarbonates in general (~~percarbonates [C15/10](#)~~; ~~percarbonates [C01B 15/10](#)~~; particular individual carbonates, see the relevant groups in [C01B](#) to [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 33/02
- Silicon (forming single crystals or homogeneous polycrystalline material with defined structure [C30B](#))
- U C01B 33/021
- • Preparation (chemical coating from the vapour phase [C23C 16/00](#))
- C01B 33/023
- • • by reduction of silica or {free} silica-containing material
- U C01B 33/113
- Silicon oxides; Hydrates thereof {(preparing monoxide by reduction of siliceous material [C01B 33/182](#))}
- U C01B 33/12
- • Silica; Hydrates thereof, e.g. lepidic silicic acid
- U C01B 33/14
- • • Colloidal silica, e.g. dispersions, gels, sols

- C01B 33/146
- • • After-treatment of sols ({preparation of hydrosols or aqueous dispersions from hydroorganosols, organosols or dispersions in an organic medium [C01B 33/141](#)}; preparation of hydroorganosols, organosols or dispersions in an organic medium from hydrosols {or aqueous dispersions} [C01B 33/145](#))
- U C01B 33/20
- C01B 33/26
- C01B 33/32
- Silicates (persilicates [C01B 15/14](#) ; { containing aluminium [C01B 33/26](#)})
 - • Aluminium-containing silicates, {i.e. silico-aluminates}
 - • Alkali metal silicates ({[C01B33/20B](#)[C01B 33/24](#)}, [C01B 33/26](#) take precedence)
- U C01B 33/36
- • having base-exchange properties but not having molecular sieve properties (regeneration thereof [B01J 49/00](#))
- U C01B 33/38
- • • Layered base-exchange silicates, e.g. clays, micas or alkali metal silicates of kenyaite or magadiite type ({activation of naturally occurring clays [B01J 20/12](#) ; pillared layered base-exchange silicates [B01J 29/049](#)})
- U C01B 33/42
- • • Micas; {Interstratified clay-mica products (delaminated mica or vermiculite platelets obtained by a process involving cation-exchange [C04B 14/208](#))}
- U C01B 37/00**
- Compounds having molecular sieve properties but not having base-exchange properties**
- NOTE
- Compounds classified in main group [C01B 37/00](#) are also classified in other groups of class [C01](#) according to their composition
- U C01B 37/06
- C01B 37/08
- Aluminophosphates containing other elements, e.g. metals, boron
 - • Silicoaluminophosphates (SAPO compounds), {e.g. CoSAPO}
- U C01B 39/00**
- Compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites; Their preparation; After-treatment, e.g. ion-exchange or dealumination (treatment to modify the sorption properties, e.g. shaping using a binder, [B01J 20/10](#) ; treatment to modify the catalytic properties, e.g. combination of treatments to make the zeolites appropriate to their use as a catalyst, [B01J 29/04](#) ; treatment to improve the ion-exchange properties [B01J 39/14](#) ; regeneration or reactivation of ion-exchange properties [B01J 49/00](#) ; preparation of stabilised suspensions used in detergents [C11D 3/12](#))**
- NOTES
1. In this group, the following term is used with the meaning indicated:
 - "zeolites" means:
 - i. crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional, microporous lattice framework structure of tetrahedral oxide units;
 - ii. compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron.
 2. Compounds classified in main group [C01B 39/00](#) are also classified in other groups of class [C01](#) according to their composition
- U C01B 39/02
- Crystalline aluminosilicate zeolites; Isomorphous compound thereof; Direct preparation thereof; Preparation thereof starting from a reaction mixture containing a crystalline zeolite of another type, or from preformed reactants; After-treatment thereof
- C01B 39/06
- • Preparation of isomorphous zeolites characterised by measures to replace the aluminium or silicon atoms in the lattice framework by atoms of other elements, {i.e. by direct or secondary synthesis}

- C01B 39/10 · · · the replacing atoms being {at least} phosphorus atoms
- C01B 39/12 · · · the replacing atoms being {at least} boron atoms

U C01B 2203/00 Integrated processes for the production of hydrogen or synthesis gas (reactors or details thereof [B01J 2208/00](#) to [B01J 2219/00](#))

- U C01B 2203/02 · Processes for making hydrogen or synthesis gas
- U C01B 2203/025 · · containing a partial oxidation step
- C01B 2203/0261 · · · containing a catalytic partial oxidation step *(/CPO/)*

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](#) to [C01G](#), according to the metal

- U C01C 1/02 · Preparation, {purification} or separation of ammonia
- U C01C 1/04 · · Preparation of ammonia by synthesis { in the gas phase}(preparation or purification of gas mixtures for ammonia synthesis [C01B 3/025](#))
- U C01C 1/0405 · · · {from N₂ and H₂ in presence of a catalyst}
- C01C 1/0458 · · · · {Separation of NH₃(during purge gas treatment [C01C 1/0476](#))}
- U C01C 1/08 · · Preparation of ammonia from nitrogenous organic substances
- C01C 1/083 · · · {from molasses (~~treatment of molasses in general C13J~~ *treatment of molasses in general C13B 50/006*)}

Project: N/A (C01D)

C01D

COMPOUNDS OF ALKALI METALS, i.e. LITHIUM, SODIUM, POTASSIUM, RUBIDIUM, CAESIUM, OR FRANCIUM (metal hydrides { monoborane, diborane or addition complexes thereof} [C01B 6/00](#); salts of oxyacids of halogens [C01B 11/00](#); peroxides, salts of peroxyacids [C01B 15/00](#); sulfides [C01B 17/22](#); thiosulfates, dithionites, polythionates [C01B 17/64](#); compounds containing selenium or tellurium [C01B 19/00](#); binary compounds of nitrogen with metals [C01B 21/06](#); azides [C01B 21/08](#); { compounds other than ammonia and cyanogen, containing nitrogen and other non-metals [C01B 21/082](#)}; metal amides [C01B 21/092](#); nitrites [C01B 21/50](#); phosphides [C01B 21/50](#); { compounds of noble gases [C01B 23/0005](#)}; phosphides [C01B 25/08](#); salts of oxyacids of phosphorus [C01B 25/16](#); carbides [C01B 31/30](#); compounds containing silicon [C01B 33/00](#); compounds containing boron [C01B 35/00](#); cyanides [C01C 3/08](#); salts of cyanic acid [C01C 3/14](#); salts of cyanamide [C01C 3/16](#); thiocyanates [C01C 3/20](#))

Project: N/A (C01F)**C01F**

COMPOUNDS OF THE METALS BERYLLIUM, MAGNESIUM, ALUMINIUM, CALCIUM, STRONTIUM, BARIUM, RADIUM, THORIUM, OR OF THE RARE-EARTH METALS (metal hydrides { monoborane, diborane or addition complexes thereof} [C01B 6/00](#); salts of oxyacids of halogens [C01B 11/00](#); peroxides, salts of peroxyacids [C01B 15/00](#); sulfides or polysulfides of magnesium, calcium, strontium, or barium [C01B 17/42](#); thiosulfates, dithionites, polythionates [C01B 17/64](#); compounds containing selenium or tellurium [C01B 19/00](#); binary compounds of nitrogen with metals [C01B 21/06](#); azides [C01B 21/08](#); { compounds other than ammonia or cyanogen containing nitrogen and non-metals and optionally metals [C01B 21/082](#); amides or imides of silicon [C01B 21/087](#)}; metal { imides or} amides [C01B 21/092](#), {[C01B 21/0923](#)}; nitrites [C01B 21/50](#); { compounds of noble gases [C01B 23/0005](#)}; phosphides [C01B 25/08](#); salts of oxyacids of phosphorus [C01B 25/16](#); carbides [C01B 31/30](#); compounds containing silicon [C01B 33/00](#); compounds containing boron [C01B 35/00](#); compounds having molecular sieve properties but not having base-exchange properties [C01B 37/00](#); compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites, [C01B 39/00](#); cyanides [C01C 3/08](#); salts of cyanic acid [C01C 3/14](#); salts of cyanamide [C01C 3/16](#); thiocyanates [C01C 3/20](#); { double sulfates of magnesium with sodium or potassium [C01D 5/12](#); with other alkali metals [C01D 15/00](#), [C01D 17/00](#)})

U C01F 7/00**Compounds of aluminium**

U C01F 7/02

- Aluminium oxide; Aluminium hydroxide; Aluminates

U C01F 7/30

- Preparation of aluminium oxide or hydroxide by thermal decomposition {or by hydrolysis or oxidation} of aluminium compounds

C01F 7/32

- {Thermal decomposition} of sulfates {including complex sulfates, e.g. alums}

C01F 7/44

- Dehydration of aluminium {oxide or} hydroxide, {i.e. all conversions of one form into another involving a loss of water}

U C01F 11/00**Compounds of calcium, strontium, or barium ([C01F 7/00](#) takes precedence)**

C01F 11/46

- Sulfates (dehydration of gypsum {for the production of calcium sulfate cements}) [C04B 11/02](#)

Project: N/A (C01G)**C01G**

COMPOUNDS CONTAINING METALS NOT COVERED BY SUBCLASSES [C01D](#) OR [C01F](#)(metal hydrides { monoborane, diborane or addition complexes thereof} [C01B 6/00](#); salts of oxyacids of halogens [C01B 11/00](#); peroxides, salts or peroxyacids [C01B 15/00](#); thiosulfates, dithionites, polythionates [C01B 17/64](#); compounds containing selenium, or tellurium [C01B 19/00](#); binary compounds of nitrogen with metals [C01B 21/06](#); azides [C01B 21/08](#); { compounds containing nitrogen, other non-metals and metal [C01B 21/082](#)}; metal amides [C01B 21/092](#); nitrites [C01B 21/50](#); { compounds of noble gases [C01B 23/0005](#)}; phosphides [C01B 25/08](#); salts of oxyacids of phosphorus [C01B 25/16](#); carbides [C01B 31/30](#); compounds containing silicon [C01B 33/00](#); compounds containing boron [C01B 35/00](#); compounds having molecular sieve properties but not having base-exchange properties [C01B 37/00](#); compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites, [C01B 39/00](#); cyanides [C01C 3/08](#); salts of cyanamide [C01C 3/16](#); thiocyanates [C01C 3/20](#))

WARNING

Groups [C01G 51/30](#) to [C01G 51/70](#) and [C01G 53/40](#) to [C01G 53/70](#) do not correspond to former or current IPC-groups. The concordance CPC :

IPC is as follows: - [C01G 51/30](#) - [C01G 51/70](#) : [C01G 51/00](#) - [C01G 53/40](#)
- [C01G 53/70](#) : [C01G 53/00](#)

U C01G 51/00 Compounds of cobalt

- U C01G 51/40 · {Cobaltates}
- C01G 51/70 · · {containing rare earth, e.g. LaCoO_3 ([C01G 51/68](#) takes precedence)}

U C01G 53/00 Compounds of nickel

- U C01G 53/40 · {Nickelates}

WARNING

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

- C01G 53/70 · · {containing rare earth, e.g. LaNiO_3 ([C01G 53/68](#) takes precedence)}

Project: N/A (C02F)

- U C02F 1/46 · by electrochemical methods
- U C02F 1/461 · · by electrolysis
- U C02F 1/467 · · · by electrochemical disinfection; {by electrooxydation or by electroreduction}

U C02F 3/00 Biological treatment of water, waste water, or sewage {(C02F 1/006 takes precedence)}

- U C02F 3/02 · Aerobic processes
- U C02F 3/12 · · Activated sludge processes
- U C02F 3/1236 · · · {Particular type of activated sludge installations}
- C02F 3/1263 · · · · {Sequencing batch reactors [\(SBR\)](#)}
- U C02F 3/28 · Anaerobic digestion processes
- C02F 3/2846 · · {using upflow anaerobic sludge blanket [\(UASB\)](#) reactors}

U C02F 2201/00 Apparatus for treatment of water, waste water or sewage

- U C02F 2201/32 · Details relating to UV-irradiation devices
- U C02F 2201/322 · · Lamp arrangement
- C02F 2201/3222 · · · Units using UV-light emitting diodes [\(LED\)](#)}

U C02F 2209/00 Controlling or monitoring parameters in water treatment

- C02F 2209/005 · Processes using a programmable logic controller [\(PLC\)](#)}
- C02F 2209/04 · Oxidation reduction potential [\(ORP\)](#)}
- C02F 2209/08 · Chemical Oxygen Demand [\(COD\)](#)}; Biological Oxygen Demand [\(BOD\)](#)}
- C02F 2209/10 · Solids, e.g. total solids [\(TS\)](#)}, total suspended solids [\(TSS\)](#) or volatile solids [\(VS\)](#)}
- C02F 2209/20 · Total organic carbon [\(TOC\)](#)}
- C02F 2209/21 · Dissolved organic carbon [\(DOC\)](#)}

Project: N/A (C03B)

U C03B 5/00 Melting in furnaces; Furnaces so far as specially adapted for glass manufacture

- C03B 5/02 · in electric furnaces, {e.g. by dielectric heating (electric heating in general [H05B](#))}

- U C03B 5/16 · Special features of the melting process; Auxiliary means specially adapted for glass-melting furnaces
- C03B 5/26 · · Outlets, {e.g. drains, siphons}; Overflows, {e.g. for supplying the float tank, tweels}
- C03B 7/00** **Distributors for the molten glass; Means for taking-off charges of molten glass; Producing the gob, {e.g. controlling the gob shape, weight or delivery tact}**
- C03B 7/10 · Cutting-off {or severing} the glass flow with the aid of knives or scissors, {or non-contacting cutting means, e.g. a gas jet}; Construction of the blades used
- C03B 7/12 · · Cutting-off {or severing} a free-hanging glass stream, {e.g. by the combination of gravity and surface tension forces}
- U C03B 9/00** **Blowing glass; Production of hollow glass articles**
- U C03B 9/30 · Details of blowing glass (for blowing with the mouth [C03B 9/02](#)); Use of materials for the moulds
- U C03B 9/34 · · Glass-blowing moulds not otherwise provided for
- U C03B 9/353 · · · Mould holders; {Mould opening and closing mechanisms}
- C03B 11/00** **Pressing {molten} glass {or performed glass reheated to equivalent low viscosity without blowing (shaping molten glass by a press-blow process [C03B 9/00](#) , e.g. [C03B 9/193](#) ; re-forming shaped glass [C03B 23/00](#) ; re-heating the performed glass [C03B 29/00](#) ; transporting the performed or pressed glass during its manufacture [C03B 35/00](#))}**
- U C03B 11/06 · Construction of plunger or mould
- C03B 11/10 · · for making hollow {or semi-hollow} articles
- U C03B 11/12 · Cooling, heating, or insulating the plunger, the mould, or the glass-pressing machine; {cooling or heating of the glass in the mould} ([C03B 9/38](#) takes precedence)
- C03B 11/14 · {Pressing laminated glass articles or glass} with metal inserts {or enclosures, e.g. wires, bubbles, coloured parts}
- C03B 13/00** **Rolling {molten} glass, {i.e. where the molten glass is shaped by rolling (re-forming shaped glass by rolling [C03B 23/004](#) , [C03B 23/033](#) , [C03B 23/055](#))}**
- C03B 13/01 · Rolling profiled glass articles, {e.g. with I, L, T cross-sectional profiles}
- C03B 13/06 · Rolling corrugated sheets, {e.g. with undulating waving form}
- C03B 13/08 · Rolling patterned sheets, {e.g. sheets having a surface pattern}
- C03B 13/10 · Rolling multi-layer sheets, {e.g. sheets having a coloured glass layer}
- C03B 13/12 · Rolling glass with enclosures, e.g. wire, {bubbles, fibres, particles} or asbestos
- C03B 17/00** **Forming {molten} glass by flowing-out, pushing-out, {extruding} or drawing downwardly or laterally from forming slits or by overflowing over lips**
- C03B 17/02 · Forming {molten} glass coated with coloured layers; {Forming molten glass of different compositions or layers; Forming molten glass comprising reinforcements or inserts}
- U C03B 19/00** **Other methods of shaping glass (manufacture or treatment of flakes, fibres or filaments from softened glass, minerals or slags [C03B 37/00](#))**
- C03B 19/01 · by progressive fusion {or sintering} of powdered glass onto a shaping substrate, i.e. accretion, {e.g. plasma oxidation deposition (making fibre preforms [C03B 37/01291](#))}
- C03B 19/06 · by sintering, {e.g. by cold isostatic pressing of powders and subsequent sintering, by hot pressing of powders, by sintering slurries or dispersions not undergoing a liquid phase reaction}

- C03B 19/14
- by gas- {or vapour-} phase reaction processes
- C03B 20/00**
- Processes specially adapted for the production of quartz or fused silica articles, {not otherwise provided for (C03B 19/01 , C03B 19/066 , C03B 19/106 , C03B 19/12 , C03B 19/14 , C03B 37/00 take precedence)}**
- U C03B 23/00**
- Re-forming shaped glass (re-forming fibres or filaments C03B 37/14)**
- U C03B 23/02
- Re-forming glass sheets
- U C03B 23/023
- · by bending
- U C03B 23/03
- · · by press-bending between shaping moulds
- C03B 23/033
- · · · in a continuous way, e.g. roll forming, {or press-roll bending}
- U C03B 23/04
- Re-forming tubes or rods
- C03B 23/057
- · by fusing, e.g. for flame sealing (C03B 9/42 , C03B 21/06 {C03B 23/099} , C03B 33/08 take precedence)
- C03B 27/00**
- Tempering {or quenching} glass products**
- C03B 32/00**
- Thermal after-treatment of glass products not provided for in groups {C03B 19/00} , C03B 25/00 to C03B 31/00 { or C03B 37/00}, e.g. crystallisation, eliminating gas inclusions or other impurities; {Hot-pressing vitrified, non-porous, shaped glass products}**
- U C03B 33/00**
- Severing cooled glass (severing glass fibres C03B 37/16)**
- U C03B 33/02
- Cutting or splitting sheet glass {or ribbons}; Apparatus or machines therefor (C03B 33/09 takes precedence; glass-cutting tools C03B 33/10)
- C03B 33/023
- · the sheet {or ribbon} being in a horizontal position
- C03B 33/07
- Cutting armoured, {multi-layered, coated} or laminated, glass products
- C03B 33/08
- by fusing, {i.e. by melting through the glass}
- C03B 35/00**
- Transporting of glass products during their manufacture, {e.g. hot glass lenses, prisms}(conveying systems for fragile sheets, e.g. glass B65G 49/06)**
- C03B 35/04
- Transporting of hot hollow {or semi-hollow} glass products (C03B 35/26 takes precedence)
- U C03B 37/00**
- Manufacture or treatment of flakes, fibres, or filaments from softened glass, minerals, or slags**
- U C03B 37/01
- Manufacture of glass fibres or filaments
- U C03B 37/012
- · Manufacture of preforms for drawing fibres or filaments
- U C03B 37/0128
- · · {starting from pulverulent glass}
- C03B 37/01291
- · · · {by progressive melting, e.g. melting glass powder during delivery to and adhering the so-formed melt to a target or preform, e.g. the Plasma Oxidation Deposition ({POD}) process}
- C03B 37/014
- · · made entirely or partially by chemical means, {e.g. vapour phase deposition of bulk porous glass either by outside vapour deposition ({OVD}), or by outside vapour phase oxidation ({OVPO}) or by vapour axial deposition ({VAD}) (C03C 17/02 takes precedence)}
- C03B 37/02
- · by drawing or extruding, {e.g. direct drawing of molten glass from nozzles; Cooling fins therefor (C03B 37/04 takes precedence; sizing of the fibres C03C 25/00)}
- C03B 37/022
- · · from molten glass in which the resultant product consists of different sorts of glass or is characterised by shape, e.g. hollow fibres, {undulated fibres, fibres presenting a rough surface (C03B 37/025 takes precedence)}

- C03B 37/023
 - • • Fibres composed of different sorts of glass, {e.g. glass optical fibres, made by the double crucible technique}
- C03B 37/025
 - • • from reheated softened tubes, rods, fibres or filaments, {e.g. drawing fibres from preforms (draw-down of tubes, rods or preforms to reduced diameter preforms [C03B 37/0124](#))}
- C03B 37/027
 - • • Fibres composed of different sorts of glass, {e.g. glass optical fibres} ([C03B 37/0253](#) , [C03B 37/028](#) take precedence)
- C03B 37/028
 - • • Drawing fibre bundles, e.g. for making fibre bundles of multifibres, {image fibres; (Drawing multicore or photonic crystal fibres [C03B 37/027](#))}
- U C03B 37/03
 - • • Drawing means, e.g. drawing drums; {Traction or tensioning devices}
- C03B 37/04
 - • by using centrifugal force, {e.g. spinning through radial orifices; Construction of the spinner cups therefor (bonder application [C03C 25/00](#))}
- C03B 37/05
 - • • by projecting {molten glass} on a rotating body having no radial orifices
- C03B 37/075
 - Manufacture of {non-optical} fibres or filaments consisting of different sorts of glass or characterised by shape, e.g. undulated fibres ([C03B 37/022](#) , [C03B 37/027](#) , [C03B 37/028](#) take precedence; light guides [G02B 6/00](#))
- C03B 37/08
 - Bushings, {e.g. construction, bushing reinforcement means}; Spinnerettes; Nozzles; Nozzle plates
- U C03B 37/10
 - Non-chemical treatment ([C03C 25/00](#) takes precedence; yarns or threads [D02](#) ; woven fabrics [D03](#) ; non-woven fabrics [D04](#))
- C03B 37/14
 - • Re-forming fibres or filaments, {i.e. changing their shape}([C03B 37/025](#) takes precedence)

C03B 40/00

Preventing adhesion between glass and glass or between glass and the means used to shape it, {hold it or support it}

U C03B 2203/00

Fibre product details, e.g. structure, shape

- U C03B 2203/10
 - Internal structure or shape details
- U C03B 2203/22
 - • Radial profile of refractive index, composition or softening point
- C03B 2203/26
 - • • Parabolic or graded index ([GRIN](#)) core profile
- C03B 2203/30
 - Polarisation maintaining ([PM](#)), i.e. birefringent products, e.g. with elliptical core, by use of stress rods, "PANDA" type fibres

Project: N/A (C03C)**U C03C 25/00**

Surface treatment of fibres or filaments from glass, minerals, or slags {{woven fabrics [D03](#); non-woven fabrics [D04](#); treatment of fabrics in general or non-chemical aspects of treatment of glass fabrics [D06M](#)}}

- C03C 25/70
 - Cleaning, e.g. for reuse ({[C03C 25/002](#)}, [C03C 25/62](#) and [C03C 25/66](#) take precedence)

Project: N/A (C04B)**U C04B 2/00**

Lime, magnesia or dolomite (hydraulic lime cements [C04B 7/34](#))

- U C04B 2/02
 - Lime {(obtaining Ca(OH)_2 otherwise than by simple slaking of quick lime [C01F 11/02](#))}
- U C04B 2/04
 - • Slaking {(simultaneous dehydrating of gypsum and slaking of lime [C04B 11/022](#))}
- U C04B 2/06
 - • • with addition of substances, e.g. hydrophobic agents; {Slaking in the presence of other compounds}

- C04B 5/00** Treatment of {metallurgical} slag (manufacture of slag wool [C03B](#) ; in, or for, the production of metals [C21B](#) , [C22B](#)); Artificial stone from molten {metallurgical} slag (mechanical aspects [B28B 1/54](#){ other cast stone [C04B 32/005](#))
- U C04B 7/00** Hydraulic cements (calcium sulfate cements [C04B 11/00](#))
- U C04B 7/02 · Portland cement
- C04B 7/04 · · using raw materials containing gypsum, {i.e. processes of the Mueller-Kuehne type}
- U C04B 7/12 · Natural pozzuolanes; Natural pozzuolana cements; {Artificial pozzuolanes or artificial pozzuolana cements other than those obtained from waste or combustion residues, e.g. burned clay; Treating inorganic materials to improve their pozzuolanic characteristics} (cements containing slag [C04B 7/14](#))
- U C04B 7/22 · Iron ore cements; {Iron rich cements, e.g. Ferrari cements, Kühl cements}
- U C04B 7/24 · Cements from oil shales, residues or waste other than slag
- C04B 7/26 · · from raw materials containing flue dust, {i.e. fly ash ([C04B 7/243](#) takes precedence)}
- C04B 7/28 · · from combustion residues, {e.g. ashes or slags from waste incineration} ({[C04B 7/243](#) , [C04B 7/26](#) take precedence)
- U C04B 7/30 · · from oil shale; from oil shale residues; {from lignite processing, e.g. using certain lignite fractions}
- U C04B 7/34 · Hydraulic lime cements; Roman cements; {natural cements}
- U C04B 7/36 · Manufacture of hydraulic cements in general
- C04B 7/38 · · Preparing or treating the raw materials individually or as batches, {e.g. mixing with fuel; ([C04B 7/362](#) takes precedence)}
- U C04B 7/43 · · Heat treatment, e.g. precalcining, burning, melting; Cooling {(aspects only relating to the installation [F27B](#))}
- U C04B 7/44 · · · Burning; Melting
- C04B 7/45 · · · · in fluidised beds, {e.g. spouted beds}
- U C04B 7/47 · · · Cooling; {Waste heat management}
- U C04B 7/48 · · Clinker treatment ([C04B 7/47](#) takes precedence)
- U C04B 7/52 · · · Grinding; {After-treatment of ground cement}
- C04B 7/60 · · Methods for eliminating alkali metals or compounds thereof, {e.g. from the raw materials or during the burning process; methods for eliminating other harmful components (avoiding environmental pollution [C04B 7/364](#))}
- U C04B 11/00** **Calcium sulfate cements**
- C04B 11/02 · {Methods and apparatus for} dehydrating gypsum {(for other purposes than cement manufacture [C01F 11/466](#))}
- U C04B 11/028 · · Devices therefor {characterised by the type of calcining devices used therefor or by the type of hemihydrate obtained}
- C04B 11/032 · · · for the wet process, e.g. dehydrating in solution or under saturated vapour conditions, {i.e. to obtain alpha-hemihydrate ([C04B 11/0281](#) to [C04B 11/0288](#) take precedence)}
- C04B 11/036 · · · for the dry process, e.g. dehydrating in a fluidised bed or in a rotary kiln, {i.e. to obtain beta-hemihydrate ([C04B 11/0281](#) to [C04B 11/0288](#) take precedence)}
- C04B 11/05 · obtaining anhydrite, {e.g. Keene`s cement}([C04B 11/028](#) takes precedence)

- U C04B 14/00 Use of inorganic materials as fillers, e.g. pigments, for mortars, concrete or artificial stone; Treatment of inorganic materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone (expanding or defibrillating materials [C04B 20/00](#))**
- NOTE
Fillers with a well-defined shape other than granular are considered to be reinforcing elements and thus are classified in [E04C 5/00](#) . However, if they are only characterised by their composition, classification is made in [C04B](#) only
- C04B 14/02 · Granular materials, {e.g. micro-balloons}
 - U C04B 14/04 · · Silica-rich materials; Silicates
 - U C04B 14/22 · · · Glass; {Devitrified glass}
 - U C04B 14/32 · · Carbides; Nitrides; Borides; {Silicides}
 - C04B 14/34 · · Metals, {e.g. ferro-silicon}
 - C04B 14/36 · · Inorganic materials not provided for in groups {[C04B 14/022](#) and} [C04B 14/04](#) to [C04B 14/34](#)
 - U C04B 14/38 · Fibrous materials; Whiskers
 - U C04B 14/46 · · Rock wool; {Ceramic or silicate fibres ([C04B 14/40](#) , [C04B 14/42](#) take precedence)}
- 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
- C04B 16/12 · characterised by the shape (fibrous macromolecular compounds [C04B 16/06](#) ; porous macromolecular compounds [C04B 16/08](#)), {e.g. perforated strips}
- 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
- C04B 18/02 · Agglomerated materials, {e.g. artificial aggregates}
 - U C04B 18/04 · Waste materials; Refuse {([C04B 14/405](#) takes precedence)}
 - U C04B 18/06 · · Combustion residues, e.g. purification products of smoke, fumes or exhaust gases
 - C04B 18/08 · · · Flue dust, {i.e. fly ash}
 - C04B 18/10 · · · Burned {or pyrolised} refuse
 - U C04B 18/18 · · organic ([C04B 18/10](#) takes precedence)
 - C04B 18/24 · · · Vegetable refuse, e.g. rice husks, maize-ear refuse; Cellulosic materials, e.g. paper, {cork}
- C04B 22/00 Use of inorganic materials as active ingredients for mortars, concrete or artificial stone, e.g. accelerators, {shrink compensating agents}**

- U C04B 24/00 Use of organic materials as active ingredients for mortars, concrete or artificial stone, e.g. plasticisers**
- NOTE
Groups [C04B 24/003](#) to [C04B 24/006](#) take precedence over groups [C04B 24/008](#) to [C04B 24/226](#)
- U C04B 24/16 · Sulfur-containing compounds
- U C04B 24/20 · · Sulfonated aromatic compounds
- C04B 24/22 · · · Condensation {or polymerisation} products thereof
- NOTE
In this group the following term is used with the meaning indicated:
- "aldehydes" also covers other organic compounds reacting as aldehydes, e.g. glyoxylic acid
- C04B 26/00 Compositions of mortars, concrete or artificial stone, containing only organic binders, {e.g. polymer or resin concrete (mechanical aspects moulding polymer or resin concrete [B29C 67/242](#))}**
- U C04B 26/30 · Compounds having one or more carbon-to-metal or carbon-to-silicon linkages; {Other silicon-containing organic compounds; Boron-organic compounds}
- 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](#) to [C04B 12/00](#)
- U C04B 28/14 · containing calcium sulfate cements {(gypsum-paper plates [E04C](#))}
- C04B 28/16 · · containing anhydrite, {e.g. Keene`s cement}
- C04B 28/28 · containing organic polyacids, e.g. polycarboxylate cements, {i.e. ionomeric systems}
- U C04B 32/00 Artificial stone not provided for in other groups of this subclass**
- C04B 32/005 · {Artificial stone obtained by melting at least part of the composition, e.g. metal (~~C04B 28/36 and C03C take precedence~~)([C04B 28/36 and C03C take precedence](#); cast stone from molten slag [C04B 5/00](#) ; artificial stone obtained by melting the polymeric ingredient of the composition [C04B 26/00](#))}
- C04B 33/00 Clay-wares (monolithic refractories or refractory mortars [C04B 35/66](#) ; porous products [C04B 38/00](#))**
- NOTE
In groups [C04B 33/00](#) to [C04B 33/36](#) , from 01-10-2008 onwards, the indexing codes of groups [C04B 2235/00](#) to [C04B 2235/9646](#) are used (with the exception of ~~C04B2235/34H~~[C04B 2235/349](#), ~~C04B2235/602N~~[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](#)})
- U C04B 33/132 · · · Waste materials; Refuse; {Residues} ([C04B 33/16](#) takes precedence; { waste glass [C04B 33/13](#)})

- U C04B 35/00** Shaped ceramic products characterised by their composition {(porous ceramic products [C04B 38/00](#); ceramic articles characterised by particular shape, see the relevant classes, e.g. linings for casting ladles, tundishes, cups or the like [B22D 41/02](#); ceramic substrates for microelectronic semi-conductors [H01L 23/15](#)); Ceramics compositions (containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides other than as macroscopic reinforcing agents [C22C](#); {shaping of ceramics [B28B](#)}); Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products {(Chemical preparation of powders of inorganic compounds [C01](#); infiltration of sintered ceramic preforms with molten metal [C04B 41/51](#))}

NOTES

1. In this group, in the absence of an indication to the contrary, compositions are classified according to the constituent present in the highest proportion by weight.
2. In this group, magnesium is considered as an alkaline earth metal.
3. In this group, a composite is considered as a sintered material containing more than one phase, where the secondary phases are not resulting from sintering aids
4. In this group, fine ceramics are considered as products having a polycrystalline, fine-grained microstructure, e.g. of dimensions below 100 micrometers.
5. The production of ceramic powder is classified in this group in so far as it relates to the preparation of powder with specific characteristics.
6. In groups [C04B 35/00](#) to [C04B 35/83](#) , from 01-01-2005 onwards, the indexing codes of groups [C04B 2235/00](#) to [C04B 2235/9692](#) are used to identify aspects relating to ceramic starting mixtures and sintered ceramic products

WARNING

Attention is drawn to WARNINGS 3 and 4 after subclass title

- U C04B 35/01 • based on oxide ceramics
- U C04B 35/16 • • based on silicates other than clay {(zircon [C04B 35/48](#))}
- C04B 35/20 • • • rich in magnesium oxide, {e.g. forsterite ([C04B 35/195](#) takes precedence)}
- C04B 35/22 • • • rich in calcium oxide, {e.g. wollastonite ([C04B 35/195](#) takes precedence)}
- C04B 35/447 • • based on phosphates, {e.g. hydroxyapatite}
- C04B 35/48 • • based on zirconium or hafnium oxides, zirconates, {zircon} or hafnates
- U C04B 35/49 • • • containing also titanium oxides or titanates
- C04B 35/491 • • • • based on lead zirconates and lead titanates, {e.g. PZT}
- U C04B 35/515 • based on non-oxide ceramics
- U C04B 35/56 • • based on carbides {or oxycarbides (containing free metal binder [C22C 29/00](#))}
- U C04B 35/565 • • • based on silicon carbide
- C04B 35/571 • • • • obtained from {Si-containing} polymer precursors {or organosilicon monomers}
- U C04B 35/58 • • based on borides, nitrides, [i.e. nitrides, oxynitrides, carbonitrides or oxycarbonitrides] or silicides {(containing free binder metal [C22C 29/00](#))}
- U C04B 35/584 • • • based on silicon nitride
- C04B 35/589 • • • • obtained from {Si-containing} polymer precursors {or organosilicon monomers}
- C04B 35/597 • • • based on silicon oxynitride, {e.g. SIALONS}

- C04B 35/622
- Forming processes; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products
- NOTE
- In groups [C04B 35/622](#) and subgroups indexing codes are given for aspects relating to the preparation, properties or mechanical treatment or to heat treatments of green bodies. The codes are chosen from [C04B 2235/60](#) to [C04B2235/66P](#) [C04B 2235/668](#)
- U C04B 35/626
- Preparing or treating the powders individually or as batches {(pigments for ceramics [C09C 1/0009](#)); preparing or treating macroscopic reinforcing agents for ceramic products, e.g. fibres; mechanical aspects section B}
- WARNING
- Groups [C04B 35/62605](#) to [C04B 35/62695](#) are not complete, see also other subgroups of [C04B 35/00](#) , e.g. [C04B 35/626](#)
- C04B 35/63
- using additives specially adapted for forming the products, {e.g.. binder binders}
- U C04B 35/632
- Organic additives
- U C04B 35/634
- Polymers ([C04B 35/636](#) takes precedence)
- U C04B 35/63404
- {obtained by reactions only involving carbon-to-carbon unsaturated bonds}
- C04B 35/63416
- {Polyvinylalcohols ([PVA](#)); Polyvinylacetates}
- C04B 35/6342
- {Polyvinylacetals, e.g. polyvinylbutyral ([PVB](#))}
- C04B 35/63444
- {Nitrogen-containing polymers, e.g. polyacrylamides, polyacrylonitriles, polyvinylpyrrolidone ([PVP](#)), polyethylenimine ([PEI](#))}
- U C04B 35/63448
- {obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds}
- C04B 35/63488
- {Polyethers, e.g. alkylphenol polyglycoether, polyethylene glycol ([PEG](#)), polyethylene oxide ([PEO](#))}
- C04B 37/00**
- Joining burned ceramic articles with other burned ceramic articles or other articles by heating (laminated products [B32B](#), [E04C](#); { soldering and welding materials [B23K 35/24](#)})**
- NOTE
- In groups [C04B 37/00](#) to [C04B 37/04](#) , from 01-10-2008 onwards, features relating to interlayers, additional compositional information or further processing are indexed with codes chosen from [C04B 2237/00](#) to [C04B2237/70R](#) [C04B 2237/88](#)
- WARNING
- Groups [C04B 37/005](#) , [C04B 37/006](#) , [C04B 37/025](#) and [C04B 37/026](#) are no longer used for classification as from September 1, 2008. Aspects relating to interlayers are from that date indexed by codes chosen from [C04B 2237/02](#) to [C04B 2237/16](#)
- U C04B 37/02
- with metallic articles
- C04B 37/021
- {in a direct manner, e.g. direct copper bonding ([DCB](#))}
- U C04B 40/00**
- Processes, in general, for influencing or modifying the properties of mortars, concrete or artificial stone compositions, e.g. their setting or hardening ability (active ingredients [C04B 22/00](#) to [C04B 24/00](#) ; hardening of a well-defined composition [C04B 26/00](#) to [C04B 28/00](#) ; making porous, cellular or lightening [C04B 38/00](#) ; mechanical aspects [B28](#) , e.g. conditioning the materials prior to shaping [B28B 17/02](#))**

- U C04B 40/06
- Inhibiting the setting, e.g. mortars of the deferred action type containing water in breakable containers; {Inhibiting the action of active ingredients}
- NOTE
Compositions with prolonged pot-life are not classified here.
They are classified as other compositions and the symbol [C04B 2111/00086](#) is allocated in Combination Set.
- 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](#) to [C04B 41/5392](#) as well as in the range [C04B 41/60](#) to [C04B 41/72](#)
 - when the substrate to be treated is of the ceramic type, classification is made in the range [C04B 41/00](#) to [C04B 41/5392](#) as well as in the range [C04B 41/80](#) to [C04B 41/91](#)
 - when the substrate to be treated is a-specific, classification is made only in the range [C04B 41/00](#) to [C04B 41/5392](#)
 2. In groups [C04B 41/0018](#) to [C04B 41/53](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.
 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](#) to [C04B 41/53](#) , it is desirable to add the indexing codes relating to the nature of the substrate being treated. The indexing codes, which are chosen from groups [C04B 26/00](#) to [C04B 38/00](#) should be unlinked.
 5. In groups [C04B 41/00](#) to [C04B 41/53](#) , it is desirable to add the indexing codes relating to aspects of the coating composition or to the method of application. The indexing codes, which are chosen from groups [C04B 41/00](#) to [C04B 41/5392](#) should be unlinked.
 6. Attention is drawn to internal Note (2) following the title of subclass [C04B](#).
- C04B 41/45
- Coating or impregnating (paints [C09D](#)), {e.g. injection in masonry, partial coating of green or fired ceramics, organic coating compositions for adhering together two concrete elements (ion-implantation [C04B 41/0027](#))}
- NOTES
1. In group [C04B 41/45](#) and sub-groups, as a general rule, classification is made according to the end products, rather than according to the starting materials, in the coating or impregnating compositions.
 2. In groups [C04B 41/45](#) to [C04B 41/528](#) the following term is used with the meaning indicated:
 - "coating" covers material applied to the substrates as powdery material or applied from the gas or liquid phase, e.g. as a slurry; it only covers the use of preformed sheet-like elements in so far as the thickness of these sheets is small compared with the thickness of the substrate and so far as the resulting product is not exclusively one of the type classifiable in [B32B](#)

- U C04B 41/50
C04B 41/51
- with inorganic materials
 - • Metallising, {e.g. infiltration of sintered ceramic preforms with molten metal (covering materials with metals in general [C23C](#) ; ceramic compositions containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides, other than as macroscopic reinforcing agents [C22C](#) ; infiltration of preforms containing free metal, e.g. cermets [C22C](#))}
- C04B 41/53
- involving the removal of at least part of the materials of the treated article, {e.g. etching, drying of hardened concrete ([C04B 41/0036](#) to [C04B 41/0054](#) take precedence)}
- U C04B 2111/00 Mortars, concrete or artificial stone or mixtures to prepare them, characterised by specific function, property or use**
- U C04B 2111/00241
- Physical properties of the materials not provided for elsewhere in [C04B 2111/00](#)
- C04B 2111/00301
- • Non-porous materials, e.g. macro-defect free [\(MDF\)](#) products
- U C04B 2201/00 Mortars, concrete or artificial stone characterised by specific physical values**
- NOTE
- Indexing codes [C04B 2201/05](#) to [C04B 2201/30](#) are only to be used when the specific physical values are claimed or when they deviate considerably from the average usual values.
- U C04B 2201/50
C04B 2201/52
- for the mechanical strength
 - • High compression strength concretes, i.e. with a compression strength higher than about 55 N/mm², e.g. reactive powder concrete [\(RPC\)](#)
- U C04B 2235/00 Aspects relating to ceramic starting mixtures or sintered ceramic products**
- NOTE
- In this group, magnesium is considered as an alkaline earth metal.
- U C04B 2235/02
- Composition of constituents of the starting material or of secondary phases of the final product
- NOTE
- Indexing codes [C04B 2235/02](#) to [C04B 2235/5481](#) are to be used only if the aspect is not trivial or not standard, e.g. if water is used as a mixing medium for a powder, whereas normally an organic mixing medium is used or if not the standard alpha-alumina is used to make an alumina ceramic but gamma-alumina in stead.
- U C04B 2235/30
- • Constituents and secondary phases not being of a fibrous nature
- NOTES
1. Indexing codes [C04B 2235/30](#) to [C04B 2235/549](#) are to be given to constituents or additives only if:
- a. it is not obvious from the end product as such that the constituent or additive has been used for making the end product.
- Examples:
- in case spinel is made from a certain clay in stead of from alumina and silica, the clay is coded,
 - when calcium zirconate and titania are used to make calcium zirconium titanate, a code should be given for the calcium zirconate constituent while normally calcium oxide or calcium carbonate and zirconia are used.

The titania constituent of the starting mixture is not coded since it is to be expected that a single metal oxide is used to make a mixed metal oxide.

- b. it is not obvious from the "invention information" symbols that this constituent has been used to make the end product, e.g. if the "invention information" symbol given indicates that a zirconia-alumina composite is prepared it is common practice that zirconia and alumina constituents have been used and thus no codes for zirconia or alumina are given. In the same way, if an allocation indicates that an oxide ceramic contains carbon, no code for the addition of carbon is given. However for an alumina composite product comprising titania, the main symbol for composites based on alumina is given together with an indexing code for titania.

2. In groups [C04B 2235/32](#) to [C04B 2235/349](#) oxides are considered to comprise also metal salts from which they are formed by heating.

- U C04B 2235/32 . . . Metal oxides, mixed metal oxides, or oxide-forming salts thereof, e.g. carbonates, nitrates, (oxy)hydroxides, chlorides

NOTE

In groups [C04B 2235/32](#) to [C04B 2235/349](#) metal salts are classified according to the oxides that are formed by heating the metal salts.

- C04B 2235/3293 . . . Tin oxides, stannates or oxide forming salts thereof, e.g. indium tin oxide ~~{ITO}~~

- U C04B 2235/38 . . . Non-oxide ceramic constituents or additives

- U C04B 2235/3852 . . . Nitrides, e.g. oxynitrides, carbonitrides, oxycarbonitrides, lithium nitride, magnesium nitride

- C04B 2235/3856 . . . Carbonitrides, e.g. titanium carbonitride, zirconium carbonitride

NOTE

When indexing in group [C04B 2235/3856](#) indexing according to the metal is also made in groups [C04B 2235/3865](#) to ~~C04B2235/38H~~ [C04B 2235/3886](#)

- U C04B 2235/65 . Aspects relating to heat treatments of ceramic bodies such as green ceramics or pre-sintered ceramics, e.g. burning, sintering or melting processes

- U C04B 2235/66 . Specific sintering techniques, e.g. centrifugal sintering

- C04B 2235/666 . . Applying a current during sintering, e.g. plasma sintering ~~{SPS}~~, electrical resistance heating or pulse electric current sintering ~~{PECS}~~

Project: N/A (C05)

C05

FERTILISERS; MANUFACTURE THEREOF (processes or devices for granulating materials, in general [B01J 2/00](#); soil-conditioning or soil-stabilising materials [C09K 17/00](#))

NOTES

1. An ingredient in a mixture of fertilisers, or a single fertiliser which contains more than one of the chemical elements on which the subdivision into subclasses is based, is classified only in the first of the appropriate subclasses. Thus, a nitrophosphate or an ammoniated superphosphate is classified in [C05B](#) but not in [C05C](#), magnesium phosphate is classified in [C05B](#) but not in [C05D](#), and calcium cyanamide in [C05C](#) but not in [C05D](#).

2.

In this class, mixtures of fertilizers are classified in the first appropriate place. After the notation of the appropriate classification symbol and separated therefrom by a + sign, notations concerning the ingredients of the mixture, not covered by the chosen classification symbol, may be added. These notations

are selected from class [C05](#) and are presented in the following way, e.g.
[C05B 1/02](#) + [C05D 1/02](#) + [C05D 9/02](#)

Project: N/A (C07C)

- U C07C 29/00** **Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom not belonging to a six-membered aromatic ring**
C07C 29/03
 - by addition of hydroxy groups to unsaturated carbon-to-carbon bonds, e.g. with the aid of H₂O₂ (by simultaneous introduction of -OH groups and halogens [C07C 29/64](#))
- U C07C 51/00** **Preparation of carboxylic acids or their salts, halides or anhydrides (of acids by hydrolysis of oils, fats or waxes [C11C](#))**
C07C 51/41
 - Preparation of salts of carboxylic acids ({[C07C 51/093](#) to [C07C 51/34](#) take precedence}) preparation of soap [C11D](#))
- U C07C 309/00** **Sulfonic acids; Halides, esters, or anhydrides thereof**
U C07C 309/01
 - Sulfonic acids
C07C 309/62
 - • Sulfonated fats, oils or waxes of undetermined constitution (chemical modification of petroleum waxes [C10G 73/38](#) {Bituminosulfonic acid [C07G 9/00](#)})

Project: N/A (C07F)

- 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
U C07F 7/12
 - • • Organo silicon halides
C07F 7/14
 - • • • Preparation thereof from {optionally substituted} halogenated silanes and hydrocarbons {hydrosilylation reactions}

Project: N/A (C07J)

- C07J 5/00** **Normal steroids containing carbon, hydrogen, halogen or oxygen, substituted in position 17 beta by a chain of two carbon atoms, e.g. pregnane and substituted in position 21 by only one singly bound oxygen atom, {i.e. only one oxygen bound to position 21 by a single bond}**
- C07J 53/00** **Steroids in which the cyclopenta(a)hydrophenanthrene skeleton has been modified by condensation with a carbocyclic rings or by formation of an additional ring by means of a direct link between two ring carbon atoms, {including carbocyclic rings fused to the cyclopenta(a)hydrophenanthrene skeleton are included in this class}**

Project: N/A (C07K)

- 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 7/04
 - Linear peptides containing only normal peptide links
C07K 7/22
 - • {Tachykinins, e.g.} Eledoisins, {Substance P}; Related peptides
C07K 7/23
 - • Luteinising hormone-releasing hormone ({LHRH}); Related peptides

- U C07K 14/00 Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof**
- U C07K 14/005
- from viruses
- NOTE
- When classifying in this group, subject-matter related to viral proteins shall be classified by the symbol [C07K 14/005](#) together with (a number of) appropriate indexing codes out of [C12N 2710/00-C12N 2795/00](#)
- WARNING
1. From March 15, 2012 groups [C07K 14/01](#) - [C07K 14/19](#) and subgroups thereof are no longer used for the classification of new documents. 2. Reclassification of the back-file follows the principle outlined in the Note here above
- U C07K 14/08
- · RNA viruses
- U C07K 14/15
- · · Retroviridae, e.g. bovine leukaemia virus, feline leukaemia virus human T-cell leukaemia-lymphoma virus
- U C07K 14/155
- · · · Lentiviridae, e.g. visna-maedi virus, equine infectious virus, FIV, SIV
- U C07K 14/16
- · · · · HIV-1; {HIV-2}
- U C07K 14/18
- · · Togaviridae; {Flaviviridae}
- U C07K 14/195
- from bacteria
- NOTE
- In groups [C07K 14/20](#) to [C07K 14/365](#) , where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets.
- C07K 14/30
- · from Mycoplasmatales, e.g. Pleuropneumonia-like organisms [{PPLO}](#)
- U C07K 14/415
- from plants
- C07K 14/43
- · {Sweetening agents, e.g.} [thauMATIN](#), [{monellin}](#)
- U C07K 14/435
- from animals; from humans
- U C07K 14/46
- · from vertebrates
- U C07K 14/47
- · · from mammals
- U C07K 14/4701
- · · · {not used}
- C07K 14/4742
- · · · · {Bactericidal/Permeability-increasing protein [{BPI}](#)}
- C07K 14/4748
- · · · · {Tumour specific antigens; Tumour rejection antigen precursors [{TRAP}](#)}, e.g. MAGE}
- U C07K 14/475
- · Growth factors; Growth regulators
- C07K 14/48
- · · Nerve growth factor [{NGF}](#)
- C07K 14/485
- · · Epidermal growth factor [{EGF}](#) (urogastrone)
- C07K 14/49
- · · Platelet-derived growth factor [{PDGF}](#)
- C07K 14/495
- · · Transforming growth factor [{TGF}](#)
- C07K 14/50
- · · Fibroblast growth factors [{FGF}](#)
- C07K 14/501
- · · · {acidic FGF [{aFGF}](#)}
- C07K 14/503
- · · · {basic FGF [{bFGF}](#)}
- C07K 14/505
- · · Erythropoietin [{EPO}](#)
- U C07K 14/52
- · Cytokines; Lymphokines; Interferons
- C07K 14/525
- · · Tumor necrosis factor [{TNF}](#)
- C07K 14/5255
- · · · {Lymphotoxin [{LT}](#)}
- C07K 14/53
- · · Colony-stimulating factor [{CSF}](#)

- C07K 14/54 . . . Interleukins [{\[IL\]}](#)
- C07K 14/5415 {Leukaemia inhibitory factor [{\[LIF\]}](#)}
- C07K 14/555 . . . Interferons [{\[IFN\]}](#)
- U C07K 14/575 . . Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [C07K 14/665](#) , e.g. corticotropin [C07K 14/695](#))
- C07K 14/57509 . . . {Corticotropin releasing factor [{\[CRF\]}](#) (Urotensin)}
- C07K 14/57536 . . . {Endothelin, vasoactive intestinal contractor [{\[VIC\]}](#)}
- C07K 14/57563 . . . {Vasoactive intestinal peptide [{\[VIP\]}](#); Related peptides}
- C07K 14/58 . . . Atrial natriuretic factor complex; Atriopeptin; Atrial natriuretic peptide [{\[ANP\]}](#); Cardionatrin; Cardiodilatin
- C07K 14/59 . . . Follicle-stimulating hormone [{\[FSH\]}](#); Chorionic gonadotropins, e.g. HCG; Luteinising hormone [{\[LH\]}](#); Thyroid-stimulating hormone [{\[TSH\]}](#)
- C07K 14/595 . . . Gastrins; Cholecystokinins [{\[CCK\]}](#)
- C07K 14/61 . . . Growth hormones [{\[GH\]}](#) (Somatotropin)
- U C07K 14/665 . . derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin
- C07K 14/68 . . . Melanocyte-stimulating hormone [{\[MSH\]}](#)
- C07K 14/695 . . . Corticotropin [{\[ACTH\]}](#)
- U C07K 14/705 . . Receptors; Cell surface antigens; Cell surface determinants {(tumour specific antigens [C07K 14/4748](#))}
- C07K 14/70567 . . . {Nuclear receptors, e.g. retinoic acid receptor [{\[RAR\]}](#), RXR, nuclear orphan receptors}
- U C07K 14/715 . . . for cytokines; for lymphokines; for interferons
- C07K 14/7151 {for tumor necrosis factor [{\[TNF\]}](#), for lymphotoxin [{\[LT\]}](#)}
- C07K 14/7153 {for colony-stimulating factors [{\[CSF\]}](#)}
- C07K 14/7155 {for interleukins [{\[IL\]}](#)}
- C07K 14/7156 {for interferons [{\[IFN\]}](#)}
- U C07K 14/745 . . Blood coagulation or fibrinolysis factors
- C07K 14/755 . . . Factors VIII, {e.g. factor VIII C (AHF), factor VIII Ag (VWF)}
- C07K 14/78 . . Connective tissue peptides, e.g. collagen, elastin, laminin, fibronectin, vitronectin, cold insoluble globulin [{\[CIG\]}](#)

U C07K 16/00 Immunoglobulins [IGs], e.g. monoclonal or polyclonal antibodies
{{antibodies with enzymatic activity, e.g. abzymes [C12N 9/0002](#)}}

NOTES

1. Documents characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified in [C07K 16/00](#) to [C07K 16/065](#) or [C07K 16/46](#) to [C07K 16/468](#)
2. Documents not characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified only according to their specificity, where necessary accompanied by one or more appropriate indexing codes

- U C07K 16/08 . . against material from viruses
- C07K 16/10 . . . from RNA viruses, {e.g. hepatitis E virus}
- U C07K 16/12 . . against material from bacteria
- U C07K 16/1203 . . {from Gram-negative bacteria}
- C07K 16/1253 . . . {from Mycoplasmatales, e.g. Pleuropneumonia-like organisms [{\[PPLO\]}](#)}
- U C07K 16/18 . . against material from animals or humans
- U C07K 16/22 . . against growth factors; {against growth regulators}

- U C07K 16/24 · · against cytokines, lymphokines or interferons
- U C07K 16/241 · · · {Tumor Necrosis Factors}
- C07K 16/242 · · · · {Lymphotoxin [\(LT\)](#)}
- C07K 16/244 · · · {Interleukins [\(IL\)](#)}
- U C07K 16/26 · · against hormones; {against hormone releasing or inhibiting factors}
- U C07K 16/28 · · against receptors, cell surface antigens or cell surface determinants
- C07K 16/2857 · · · {against nuclear receptors, e.g. retinoic acid receptor [\(RAR\)](#), RXR, orphan receptor}
- C07K 16/44 · against material not provided for elsewhere, {e.g. haptens, metals, DNA, RNA, amino acids}

- U C07K 2317/00 Immunoglobulins specific features**
- U C07K 2317/50 · characterized by immunoglobulin fragments
- U C07K 2317/56 · · variable (Fv) region , i.e. VH and/or VL
- C07K 2317/565 · · · Complementarity determining region [\(CDR\)](#)
- C07K 2317/567 · · · Framework region [\(FR\)](#)
- U C07K 2317/70 · characterized by effect upon binding to a cell or to an antigen
- U C07K 2317/73 · · Inducing cell death, e.g. apoptosis, necrosis or inhibition of cell proliferation
- C07K 2317/732 · · · Antibody-dependent cellular cytotoxicity [\(ADCC\)](#)
- C07K 2317/734 · · · Complement-dependent cytotoxicity [\(CDC\)](#)
- U C07K 2317/80 · remaining in the (producing) cell, i.e. intracellular antibodies or intrabodies
- C07K 2317/81 · · functional in the endoplasmatic reticulum [\(ER\)](#) or the Golgi apparatus

- U C07K 2319/00 Fusion polypeptide**
- C07K 2319/60 · containing spectroscopic/fluorescent detection, e.g. green fluorescent protein [\(GFP\)](#)

Project: N/A (C08B)

- U C08B 3/00 Preparation of cellulose esters of organic acids {(rendering cellulose suitable for esterification [C08B 1/02](#))}**
- C08B 3/08 · of monobasic organic acids with 3 or more carbon atoms, {e.g. propionate or butyrate}
- C08B 3/10 · · with five or more carbon-atoms, {e.g. valerate}
- C08B 3/16 · Preparation of mixed organic cellulose esters, {e.g. cellulose aceto-formate or cellulose aceto-propionate}

- C08B 5/00 Preparation of cellulose esters of inorganic acids, {e.g. phosphates (rendering cellulose suitable for esterification [C08B 1/02](#))}**
- C08B 5/02 · Cellulose nitrate, {i.e. nitrocellulose (rendering cellulose suitable for the preparation of cellulose nitrate [C08B 1/04](#))}
- C08B 5/04 · · Post-esterification treatments, {e.g. densification of powders}, including purification
- U C08B 5/08 · · · Stabilisation (by addition of stabilisers [C08K](#)); {Post-treatment, e.g. phlegmatisation}

- U C08B 11/00 Preparation of cellulose ethers {(rendering cellulose suitable for etherification [C08B 1/06](#))}**
- U C08B 11/02 · Alkyl or cycloalkyl ethers
- U C08B 11/04 · · with substituted hydrocarbon radicals
- U C08B 11/10 · · · substituted with acid radicals

- C08B 11/12
- • • substituted with carboxylic radicals, {e.g. carboxymethylcellulose [{\[CMC\]}](#)}
- U C08B 11/14
- • • with nitrogen-containing groups
- C08B 11/15
- • • with carbamoyl groups, {i.e. -CO-NH₂}
- C08B 11/20
- Post-etherification treatments of chemical or physical type, {e.g. mixed etherification in two steps}, including purification
- C08B 15/00**
- Preparation of other cellulose derivatives or modified cellulose, {e.g. complexes}**
- U C08B 15/05
- Derivatives containing elements other than carbon, hydrogen, oxygen, halogens or sulfur (esters or phosphorous acids [C08B 5/00](#))
- C08B 15/06
- • containing nitrogen, {e.g. carbamates}
- U C08B 30/00**
- Preparation of starch, degraded or non-chemically modified starch, amylose, or amylopectin**
- C08B 30/10
- Working-up residues from the starch extraction, {e.g. potato peel or steeping water}, including pressing water from the starch-extracted material
- 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](#))}
- C08B 30/18
- • Dextrin, {e.g. yellow canari, white dextrin, amylopectin or maltodextrin; Methods of depolymerisation, e.g. by irradiation or mechanically}
- U C08B 31/00**
- Preparation of derivatives of starch (derivatives of amylose [C08B 33/00](#) ; derivatives of amylopectin [C08B 35/00](#))**
- U C08B 31/02
- Esters
- C08B 31/04
- • of organic acids, {e.g. alkenyl-succinated starch}
- U C08B 31/08
- Ethers
- C08B 31/12
- • having alkyl or cycloalkyl radicals substituted by heteroatoms, {e.g. hydroxyalkyl or carboxyalkyl starch}
- U C08B 37/00**
- Preparation of polysaccharides not provided for in groups [C08B 1/00](#) to [C08B 35/00](#); Derivatives thereof (cellulose [D21](#) ; { microbiological processes [C12P](#)})**
- U C08B 37/0006
- {Homoglycans, i.e. polysaccharides having a main chain consisting of one single sugar, e.g. colominic acid}
- U C08B 37/0009
- • {alpha-D-Glucans, e.g. polydextrose, alternan, glycogen; (alpha-1,4) (alpha-1,6)-D-Glucans; (alpha-1,3)(alpha-1,4)-D-Glucans, e.g. isolichenan or nigeran; (alpha-1,4)-D-Glucans; (alpha-1,3)-D-Glucans, e.g. pseudonigeran; Derivatives thereof}
- C08B 37/0012
- • • {Cyclodextrin [{\[CD\]}](#), e.g. cycle with 6 units (alpha), with 7 units (beta) and with 8 units (gamma), large-ring cyclodextrin or cycloamylose with 9 units or more; 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. $\text{para-C}_6\text{H}_4\text{Cl}(\text{CH}=\text{CH}_2)$ 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. ~~[N-]~~ 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](#) to [C08F 8/00](#)). Processes for the preparation of macromolecular compounds are also classified in the groups for the types of reactions employed, if of interest;
- b. subject matter relating to both homopolymers and copolymers is classified in groups [C08F 10/00](#) to [C08F 38/00](#) ;
- c. subject matter limited to homopolymers is classified only in groups [C08F 110/00](#) to [C08F 138/00](#) ;
- d. subject matter limited to copolymers is classified only in groups [C08F 210/00](#) to [C08F 246/00](#) ;
- e. in groups [C08F 210/00](#) to [C08F 238/00](#) , in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.

5. This subclass covers also compositions based on monomers which form macromolecular compounds classifiable in this subclass (paints [C09D 4/00](#) ; adhesives [C09J 4/00](#)). In this subclass:

- a. if the monomers are defined, classification is made according to the polymer to be formed:
 - in groups [C08F 10/00](#) to [C08F 246/00](#) if no preformed polymer is present;
 - in groups [C08F 251/00](#) to [C08F 291/00](#) if a preformed polymer is present, considering the reaction to take place as a graft or cross-linking reaction;
- b. if the presence of compounding ingredients is of interest, classification is made in group [C08F 2/44](#) (sensitising agents [C08F 2/50](#) ; catalysts [C08F 4/00](#));
- c. if the compounding ingredients are of interest per se, classification is also made in subclass [C08K](#).

U C08F 2/00

Processes of polymerisation

NOTE

Group [C08F 2/00](#) and subgroups can be incomplete according to the following classification rules:

- if a process of polymerisation is specifically used for only one type of polymer, it is not classified in [C08F 2/00](#) ;

- in such a case, the classification symbol of [C08F 2/00](#) providing for the process of polymerisation may be used in the form of Combination Set in the groups providing for the polymer, e.g. ([C08F 36/04](#) , [C08F 2/14](#))
- this method of classification is applied only when a note after the group providing for the polymer explicitly indicates which symbols of [C08F 2/00](#) may be used for forming the Combination Set.

C08F 2/38 • Polymerisation using regulators, e.g. chain terminating agents, {e.g. telomerisation}

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.~~

- *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](#) to [C08F 4/64](#) , the term "component" comprises the transition metal or a compound thereof, pretreated or not { (pretreating per se [C08F 4/61](#) , [C08F 4/63](#) and [C08F 4/65](#)) }

2. Group [C08F 4/60003](#) takes precedence over groups [C08F 4/602](#) to [C08F 4/619](#)

C08F 4/605 • • • Component covered by group [C08F 4/60](#) with a metal or compound covered by group [C08F 4/44](#) , not provided for in a single group of groups [C08F 4/602](#) or [C08F 4/603](#) {([C08F 4/60003](#) - [C08F 4/60196](#) take precedence)}

C08F 4/606 • • • Catalyst comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by groups [C08F 4/60](#) {([C08F 4/60003](#) - [C08F 4/60196](#) take precedence)}

C08F 4/61 • • • Pretreating the metal or compound covered by group [C08F 4/60](#) before the final contacting with the metal or compound covered by group [C08F 4/44](#) {([C08F 4/60003](#) - [C08F 4/60196](#) take precedence)}

- U C08F 4/62 Refractory metals or compounds thereof
- NOTE
Group [C08F 4/62003](#) takes precedence over groups [C08F 4/622](#) to [C08F 4/639](#)
- C08F 4/625 Component covered by group [C08F 4/62](#) with a metal or compound covered by group [C08F 4/44](#) , not provided for in a single group of groups [C08F 4/622](#) or [C08F 4/623](#) {([C08F 4/62003](#) - [C08F 4/62196](#) take precedence)}
- C08F 4/626 Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group [C08F 4/62](#) {([C08F 4/62003](#) - [C08F 4/62196](#) take precedence)}
- C08F 4/63 Pretreating the metal or compound covered by group [C08F 4/62](#) before the final contacting with the metal or compound covered by group [C08F 4/44](#) {([C08F 4/62003](#) - [C08F 4/62196](#) take precedence)}
- U C08F 4/64 Titanium, zirconium, hafnium or compounds thereof
- NOTE
Group [C08F 4/64003](#) takes precedence over groups [C08F 4/642](#) to [C08F 4/659](#)
- C08F 4/645 Component covered by group [C08F 4/64](#) with a metal or compound covered by group [C08F 4/44](#) , not provided for in a single group of groups [C08F 4/642](#) to [C08F 4/643](#) {([C08F 4/60003](#) - [C08F 4/60196](#) take precedence)}
- C08F 4/646 Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group [C08F 4/64](#) {([C08F 4/64003](#) - [C08F 4/64196](#) take precedence)}
- C08F 4/65 Pretreating the metal or compound covered by group [C08F 4/64](#) before the final contacting with the metal or compound covered by group [C08F 4/44](#) {([C08F 4/64003](#) - [C08F 4/64196](#) take precedence)}
- U C08F 16/00 Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal or ketal radical**
- U C08F 16/02 . by an alcohol radical
- U C08F 16/04 . . Acyclic compounds
- U C08F 16/06 . . . Polyvinyl alcohol; {Vinyl alcohol}
- U C08F 116/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal or ketal radical**
- U C08F 116/02 . by an alcohol radical
- U C08F 116/04 . . Acyclic compounds
- U C08F 116/06 . . . Polyvinyl alcohol; {Vinyl alcohol}
- U C08F 216/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal or ketal radical**
- U C08F 216/02 . by an alcohol radical
- U C08F 216/04 . . Acyclic compounds
- U C08F 216/06 . . . Polyvinyl alcohol; {Vinyl alcohol}

C08F 283/00 **Macromolecular compounds obtained by polymerising monomers on to polymers provided for in subclass [C08G](#) {(on to polymers modified by introduction of aliphatic unsaturated end or side groups [C08F 290/00](#))}**

Project: N/A (C08G)

- U C08G 18/00** **Polymeric products of isocyanates or isothiocyanates (preparatory processes of porous or cellular materials, in which the monomers or catalysts are not specific [C08J](#))**
- U C08G 18/06 · with compounds having active hydrogen
 - U C08G 18/83 · · Chemically modified polymers
 - U C08G 18/831 · · · {by oxygen-containing compounds inclusive of carbonic acid halogenides, carboxylic acid halogenides and epoxy halides (by aldehydes [C08G 18/84](#), by peroxides [C08G 18/86](#))}
 - C08G 18/832 · · · · {by water acting as hydrolizing agent (reaction of isocyanates with water [C08G 18/302](#); reaction of isocyanate prepolymers with water [C08G 18/10](#) + [C08G 18/302](#))}

C08G 73/00 **Macromolecular compounds obtained by reactions forming a linkage containing nitrogen with or without oxygen or carbon in the main chain of the macromolecule, not provided for in groups [C08G 12/00](#) to [C08G 71/00](#) {(polycarbodiimides prepared from isocyanates [C08G 18/025](#), [C08G 18/797](#))}**

- U C08G 2261/00** **Macromolecular compounds obtained by reactions forming a carbon-to-carbon link in the main chain of the macromolecule**
- U C08G 2261/40 · Polymerisation processes
 - U C08G 2261/41 · · Organometallic coupling reactions
 - C08G 2261/418 · · · Ring opening metathesis polymerisation ~~{(ROMP)}~~
 - C08G 2261/419 · · · Acyclic diene metathesis ~~{(ADMET)}~~

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](#)

- [Lignin or lignin derivatives, C07G 1/00](#)

Project: N/A (C08J)

- U C08J 3/00** **Processes of treating or compounding macromolecular substances**
- U C08J 3/20 · Compounding polymers with additives, e.g. colouring
 - C08J 3/205 · · in the presence of a {continuous} liquid phase
- U C08J 9/00** **Working-up of macromolecular substances to porous or cellular articles or materials; After-treatment thereof (mechanical aspects [B29C 44/00](#) ; foamed polymeric products of isocyanates or isothiocyanates characterised by the monomers or catalysts used [C08G 18/00](#))**
- U C08J 9/04 · using blowing gases generated by a previously added blowing agent
 - U C08J 9/06 · · by a chemical blowing agent
 - C08J 9/10 · · · developing nitrogen, {the blowing agent being a compound containing a nitrogen-to-nitrogen bond}

- U C08J 2300/00** Characterised by the use of unspecified polymers
- U C08J 2300/20 · Polymers characterized by their physical structure
- C08J 2300/208 · · Interpenetrating networks (~~IPN~~)
- U C08J 2355/00** Characterised by the use of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups [C08J 2323/00](#) to [C08J 2353/00](#)
- C08J 2355/02 · Acrylonitrile-Butadiene-Styrene (~~ABS~~) polymers
- U C08J 2400/00** Characterised by the use of unspecified polymers
- U C08J 2400/20 · Polymers characterized by their physical structure
- C08J 2400/208 · · Interpenetrating networks (~~IPN~~)
- U C08J 2455/00** Characterised by the use of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups [C08J 2423/00](#) to [C08J 2453/00](#)
- C08J 2455/02 · Acrylonitrile-Butadiene-Styrene (~~ABS~~) polymers

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

- 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](#) to [C08L 99/00](#). Example: Polystyrene containing a carboxylic amide is classified in ([C08K 5/20](#), [C08L 25/06](#)).
- 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](#) to [C08L 99/00](#). Example: Polystyrene containing a carboxylic amide is classified in ([C08K 5/20](#), [C08L 25/06](#)).
- In this subclass, in the absence of an indication to the contrary, an ingredient is classified in the last appropriate place.
- 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
- In this subclass, organic acid salts, alcoholates, phenolates or mercaptides are classified in the groups or subgroups of the parent compounds
- 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](#) to [C08L 99/00](#).

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 ~~C08F8/~~[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

COMPOSITIONS OF MACROMOLECULAR COMPOUNDS (pesticides, herbicides [A01N](#); pharmaceuticals, cosmetics [A61K](#); explosives [C06B](#); compositions based on polymerisable monomers [C08F](#), [C08G](#); paints, inks, varnishes, dyes, polishes, adhesives [C09](#); lubricants [C10M](#); detergents [C11D](#); artificial filaments or fibres [D01F](#); textile treating compositions [D06](#))

NOTES

1. Compositions classified in [C08K](#) according to note 3 of [C08K](#), are not classified in [C08L](#).

2. Documents classified before 09.2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set. List of ~~M08L~~[C08L](#) codes: [C08L 23/00](#) , [C08L 23/26](#) , [C08L 25/00](#) , [C08L 27/00](#) , [C08L 27/04](#) , [C08L 27/12](#) , [C08L 29/00](#) , [C08L 31/00](#) , [C08L 33/00](#) , [C08L 35/00](#) , [C08L 37/00](#) , [C08L 51/00](#) , [C08L 53/00](#) , [C08L 55/02](#) , [C08L 61/04](#) , [C08L 61/20](#) , [C08L 63/00](#) , [C08L 67/00](#) , [C08L 67/02](#) , [C08L 67/025](#) , [C08L 67/03](#) , [C08L 67/04](#) , [C08L 67/06](#) , [C08L 67/07](#) , [C08L 69/00](#) , [C08L 69/005](#) , [C08L 71/00](#) , [C08L 75/04](#) , [C08L 77/00](#) , [C08L 77/08](#) , [C08L 77/12](#) , [C08L 79/08](#) , [C08L 79/085](#) , [C08L 81/00](#) , [C08L 83/00](#) , [C08L 85/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/00](#) - [C08L 2666/86](#) . Documents from group [C08L 23/00](#) - [C08L 23/36](#) , [C08L 45/00](#) - [C08L 45/02](#) and [C08L 49/00](#) have all been reclassified following Note 3 below. An additive is classified in the last appropriate place in the list as selected for each [C08L](#) group. Examples:

- a. A composition based on a polyamide and a graft polymer is classified in ([C08L 77/00](#) , [C08L 2666/24](#)).
- b. A composition based on polyvinylchloride and containing CaCO₃ is classified according to note 4 of [C08K](#), i.e. in ([C08K 3/26](#) , [C08L 27/06](#)). If this composition contains also a polyamide, then the classification will be ([C08L 27/06](#) , [C08L 77/00](#) , [C08K 3/26](#)).

- c. A composition based on a polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/04](#) , [C08L 2666/34](#) , [C08L 2666/58](#)).
3. From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) class, and the minor components are characterised by Indexing Codes taken from [M08L](#)[C08L](#) or [M08K](#)[C08K](#) and they are linked or unlinked. The polymer in majority is always first in the C-Set. List of [M08L](#)[C08L](#) codes in the C-Set: [C08L 1/00](#) , [C08L 81/00](#) , [C08L 83/00](#) , [C08L 91/06](#) , [C08L 95/00](#) or [C08L 2666/02](#) - [C08L 2666/08](#) , [C08L 2666/14](#) - [C08L 2666/26](#) . Examples:
- A blend of 60 parts polyvinylchloride ([C08L 27/06](#)) and 40 parts polyamide is classified in ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08L 77/00](#) .
 - A blend of 50 parts polyvinylchloride ([C08L 27/06](#)) and 50 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08L 77/00](#) , as well as in ([C08L 77/00](#) , [C08L 2666/04](#)) and [C08L 27/06](#) .
 - A composition based on polyvinylchloride and containing CaCO₃ is classified according to [N: Note 4 of [C08K](#), i.e. in ([C08K 3/26](#) , [C08L 27/06](#))]. If this composition contains also a polyamide, then the classification will be ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08K 3/26](#) .
 - A composition based on a first polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/04](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) .
4. From April 2012 onwards, after the notation [C08L](#), notations concerning the other constituents of the composition may be added, in the form of C-Sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) -~~[C08L555/86](#)~~[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 blend of 60 parts polyvinylchloride ([C08L 27/06](#)) and 40 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 77/00](#)).
 - A blend of 50 parts polyvinylchloride ([C08L 27/06](#)) and 50 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 77/00](#)) and ([C08L 77/00](#) , [C08L 27/06](#)).
 - A composition based on polyvinylchloride and containing CaCO₃ is classified according to [N: Note 4 of [C08K](#), i.e. in ([C08K 3/26](#) , [C08L 27/06](#))]. If this composition contains also a polyamide, then the classification will be ([C08L 27/06](#) , [C08L 77/00](#) , [C08K 3/26](#)).
 - A composition based on a first polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/00](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) .
 - A composition containing a polyamide in majority, a polyester and a polyethylene is classified in ([C08L 77/00](#) , [C08L 67/00](#) , [C08L 23/06](#)) and [C08L 2205/03](#) .
5. "Rubber" includes:
- natural or conjugated diene rubbers;
 - rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for compositions of such macromolecular compounds).
6. In this subclass:
- compositions are classified according to the mutual proportions by weight of only the macromolecular constituents;
 - compositions are classified according to the macromolecular constituent or constituents present in the highest proportion: if all these constituents are present in equal proportions the composition is classified according to each of these constituents.

- U C08L 23/00** **Compositions of homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Compositions of derivatives of such polymers**
- U C08L 23/02 · not modified by chemical after-treatment
- C08L 23/16 · · {Elastomeric} ethene-propene or ethene-propene-diene copolymers, {e.g. EPR and EPDM rubbers}
- NOTE
This group is used for polymers comprising both ethylene and propylene
- U C08L 23/18 · · Homopolymers or copolymers of hydrocarbons having four or more carbon atoms
- U C08L 23/20 · · · having four to nine carbon atoms
- C08L 23/22 · · · · Copolymers of isobutene; Butyl rubber; Homo- or copolymers of other iso-olefins}
- U C08L 101/00** **Compositions of unspecified macromolecular compounds**
- C08L 101/02 · characterised by the presence of specified groups, {e.g. terminal or pendant functional groups}

Project: N/A (C09B)

- U C09B 5/00** **Dyes with an anthracene nucleus condensed with one or more heterocyclic rings with or without carbocyclic rings**
- C09B 5/02 · the heterocyclic ring being {only} condensed in peri position
- C09B 5/24 · the heterocyclic rings being {only} condensed with an anthraquinone nucleus in 1-2 or 2-3 position
- U C09B 11/00** **Diaryl- or thriarylmethane dyes**
- C09B 11/04 · derived from triarylmethanes, {i.e. central C-atom is substituted by amino, cyano, alkyl}
- U C09B 11/06 · · Hydroxy derivatives of triarylmethanes in which at least one OH group is bound to an aryl nucleus {and their ethers or esters}
- U C09B 11/08 · · · Phthaleins; {Phenolphthaleins; Fluorescein}
- U C09B 11/10 · · Amino derivatives of triarylmethanes
- U C09B 11/12 · · · without any OH group bound to an aryl nucleus
- C09B 11/16 · · · · Preparation from diarylketones or diarylcarbinols, {e.g. benzhydrol}
- C09B 11/20 · · · · Preparation from other triarylmethane derivatives, {e.g. by substitution, by replacement of substituents (for dyesalts of triarylmethane dyes [C09B 69/06](#))}
- U C09B 11/24 · · · Phthaleins containing amino groups; {Phthalanes; Fluoranes; Phthalides; Rhodamine dyes; Phthaleins having heterocyclic aryl rings; Lactone or lactame forms of triarylmethane dyes}
- U C09B 11/28 · Pyronines; {Xanthon, thioxanthon, selenoxanthon, telluroxanthon dyes}
- U C09B 23/00** **Methine or polymethine dyes, e.g. cyanine dyes**
- C09B 23/02 · the polymethine chain containing an odd number of >CH- {or >C[alkyl]}- groups
- C09B 23/12 · the polymethine chain being branched {"branched" means that the substituent on the polymethine chain forms a new conjugated system, e.g. most trinuclear cyanine dyes}
- U C09B 23/14 · Styryl dyes

- C09B 23/148 · · {Stilbene dyes containing the moiety $-C_6H_5-CH=CH-C_6H_5$ (stilbene azo dyes [C09B 29/00](#))}
- C09B 27/00 -
C09B 62/00** **Azo dyes**
NOTE
In groups [C09B 27/00](#) to [C09B46/00](#) [C09B 45/00](#) , arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.
- C09B 27/00** **Preparations in which the azo group is formed in any way other than by diazotising and coupling, {e.g. oxidation}**
- U C09B 44/00** **Azo dyes containing onium groups**
- U C09B 44/10 · containing cyclammonium groups attached to an azo group by a carbon atom of the ring system
- C09B 44/16 · · 1, 3-Diazoles or hydrogenated 1,3-diazoles {(Benz)imidazolium}
- U C09B 47/00** **Porphines; Azaporphines {(non-dyeing compounds [C07D 487/22](#))}**
- U C09B 47/04 · Phthalocyanines {abbreviation: Pc}
- C09B 47/06 · · Preparation from carboxylic acids or derivatives thereof, {e.g. anhydrides, amides, mononitriles, phthalimide, o-cyanobenzamide}
- C09B 47/073 · · · Preparation from isoindolenines, {e.g. pyrrolenines}
- C09B 47/08 · · Preparation from other phthalocyanine compounds, {e.g. cobaltphthalocyanineamine complex}
- U C09B 49/00** **Sulfur dyes**
- C09B 49/10 · from diphenylamines, indamines, or indophenols, {e.g. p-aminophenols or leucoindophenols}
- C09B 49/12 · from other compounds, {e.g. other heterocyclic compounds}
- C09B 61/00** **Dyes of natural origin prepared from natural sources, {e.g. vegetable sources}**
- U C09B 69/00** **Dyes not provided for by a single group of this subclass**
- C09B 69/08 · Dyes containing a splittable water solubilizing group {(Dyes containing an onium group attached to the dye molecule via a bridge are to be considered as cationic dyes and are classified with the respective dyes such as [C09B 44/02](#) to [C09B 44/08](#) ; ~~[C009B69/00B](#) - [C009B69/00B6](#) ; [C09B 69/001](#) to [C09B 69/005](#)~~)}

Project: N/A (C09C)**C09C**

TREATMENT OF INORGANIC MATERIALS, OTHER THAN FIBROUS FILLERS, TO ENHANCE THEIR PIGMENTING OR FILLING PROPERTIES (preparation of inorganic compounds or non-metallic elements [C01](#); treatment of materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone [C04B 14/00](#), [C04B 18/00](#), [C04B 20/00](#)); PREPARATION OF CARBON BLACK; {Preparation of inorganic materials which are no single chemical compounds and which are mainly used as pigments or fillers}

NOTES

1. In this subclass, in the absence of an indication to the contrary, a compound is classified in the last appropriate place
2. Treatment by polymerisation onto particle is classified in [C08F 292/00](#). Only treatment by already polymerised agents is classified in [C09C](#)
3. Whenever in groups [C09C 1/00](#) to [C09C 1/66](#) the materials consist of a particulate core bearing a coating or any other deposit, classification is done only according to the composition of the core, unless otherwise stated, e.g. [C09C 1/0015](#), [C09C 1/0078](#)
4. Preparations of those materials which are no single chemical compounds comprise those of many ceramic pigments ([C09C 1/0009](#)), consisting of solid solutions or polycrystalline structures, and those defined as composite materials ([C09C 1/0081](#))
5. Preparation and treatment steps are not always easy to distinguish from each other, e.g. preparation in the presence of treating agents (by precipitation or calcination), precise reacting conditions, affecting pigmentary effects. It is common practice to include these complex topics in [C09C 1/00](#) while avoiding redundancy
6. When classifying in this subclass, the indexing codes of subclass **M01PC01P** are used to identify structural or physical aspects of solid inorganic compounds

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:

[C09C 1/68](#) covered by [C09K 3/14](#)

U C09C 2200/00

Compositional and structural details of pigments exhibiting interference colours

NOTE

When indexing codes [C09C 2200/00](#) to [C09C 2220/20](#) are used, no codes are given for the particle morphology according to the indexing codes [C01P 2004/10](#) to [C01P 2004/42](#) or [C01P 2004/80](#) to [C01P 2004/88](#)

U C09C 2200/10
C09C 2200/1062

- Interference pigments characterized by the core material
- • the core consisting of an organic compound, e.g. Liquid Crystal Polymers **{[LCP]}**, Polymers or natural pearl essence

Project: N/A (C09D)

C09D

COATING COMPOSITIONS, e.g. PAINTS, VARNISHES OR LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOVERS; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR (cosmetics [A61K](#) ; processes for applying liquids or other fluent materials to surfaces, in general, [B05D](#) ; staining wood [B27K 5/02](#) ; glazes or vitreous enamels [C03C](#) ; organic macromolecular compounds [C08](#) ; organic dyes or closely-related compounds for producing dyes, mordants or lakes, per se , [C09B](#) ; treatment of inorganic materials other than fibrous fillers used as pigments or fillers [C09C](#) ; natural resins, French polish, drying-oils, driers, turpentine, per se , [C09F](#) ; polishing compositions other than French polish, ski waxes [C09G](#) ; preparation of glue or gelatine [C09H](#), {[C08H 1/06](#)} ; adhesives or use of materials as adhesives [C09J](#) ; materials for sealing or packing joints or covers [C09K 3/10](#) ; materials for stopping leaks [C09K 3/12](#) ; processes for the electrolytic or electrophoretic production of coatings [C25D](#) ; textile-treating compositions [D06](#) ; paper-making [D21](#) ; conductors, insulators [H01B](#))

NOTES

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

- "use of materials for coating compositions" means the use of known or new polymers or products;
- "rubber" includes:
 - a. natural or conjugated diene rubbers;
 - b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for coating compositions based on such macromolecular compounds);
- "based on" is defined by means of Note 3, below;
- "filling pastes" means materials used to fill up the holes or cavities of a substrate in order to smooth its surface prior to coating.

2. In this subclass, coating compositions containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

Example: a coating composition containing polyethene and amino-propyltrimethoxysilane is classified in group [C09D 123/06](#) .

However, coating compositions containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09D 159/00](#) to [C09D 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09D 4/00](#) .

Example: a coating composition containing polyethene and styrene monomer is classified in group [C09D 4/06](#) .

Aspects relating to the physical nature of the coating compositions or to the effects produced, as defined in group [C09D 5/00](#) , if clearly and explicitly stated, are also classified in this subclass.

Coating compositions characterised by other features, e.g. additives, are classified in group [C09D 7/00](#) , unless the macromolecular constituent is specified.

3. In this subclass, coating compositions comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the composition is based. If the composition is based on two or more constituents, present in equal proportions, the composition is classified according to each of these constituents.

Examples:

A coating composition containing 80 parts of polyethene and 20 parts of polyvinylchloride

is classified in group [C09D 123/06](#) ;

A coating composition containing 40 parts of polyethene and 40 parts of polyvinylchloride

is classified in groups [C09D 123/06](#) and [C09D 127/06](#) .

4. Documents classified up until 04.2012: after the notation of group [C09D 4/06](#) , and separated therefrom by a + sign, notations concerning the macromolecular compound may be added. The notations are selected from the main groups [C08F 251/00](#) to [C08F 291/00](#) and from the subgroups of [C08F 290/00](#) to [C08F 290/048](#) and [C08F 290/08](#) to [C08F 290/128](#) .

Example: a paint based on a mixture of methylmethacrylate monomer and a polymer of vinylchloride is classified in [C09D 4/06](#) + [C08F 259/04](#) .

5. From April 2012 onwards, after the notation [C09D 4/00](#) , classification concerning the monomer may be added, in the form of C-sets. The notation is selected from [C08F 210/00](#) to [C08F 246/00](#) , [C08G 77/00](#) to [C08G 77/04](#) or [C08G 77/20](#) to [C08G 77/30](#) . Ex.: A paint based on a mixture of methylmethacrylate monomer and a polymer of vinylchloride is classified ([C09D 4/06](#) , [C08F 259/04](#)).

6. Documents classified up until 09-2003: Classification is given in the form of C-Sets. The polymer in majority is given a [C09D 101/00](#) - [C09D 201/10](#) symbol, and the minor components are characterised by Indexing Codes taken from the list below. The Indexing Codes are linked. The polymer in majority is always first in the C-set. List of ~~M08L~~[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 ~~M08L~~[C08L](#) or ~~M08K~~[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](#) to [C09D 201/00](#), notations concerning the other constituents of the coating composition may be added, in the form of C-Sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) - [C08L 555/86](#) [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	covered by	C09D 4/00	,
C08F 220/00			
C09D 4/04	covered by	C09D 4/00	,
C08F 222/00			
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 161/10	covered
by	C09D 161/06		
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 123/00** **Coating compositions based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Coating compositions based on derivatives of such polymers**
- U C09D 123/02
- C09D 123/16
- not modified by chemical after-treatment
 - · {Elastomeric} ethene-propene or ethene-propene-diene copolymers, {e.g. EPR and EPDM rubbers}

NOTE

This group is used for polymers comprising both ethylene and propylene

- U C09D 201/00** **Coating compositions based on unspecified macromolecular compounds**
 C09D 201/02 · characterised by the presence of specified groups, {e.g. terminal or pendant functional groups}

Project: N/A (C09J)

C09J

ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES (surgical adhesives [A61L 24/00](#) ; processes for applying liquids or other fluent materials to surfaces in general [B05D](#); adhesives on the basis of non specified organic macromolecular compounds used as bonding agents in layered products [B32B](#); organic labelling fabrics or comparable materials or articles with deformable surface using adhesives and thermo-activatable adhesives respectively [B65C 5/02](#) , [B65C 5/04](#) ; organic macromolecular compounds [C08](#); production of multi-layer textile fabrics [D06M 17/00](#) ; preparation of glue or gelatine [C09H](#) ; adhesive labels, tag tickets or similar identification of indication means [G09F 3/10](#))

NOTES

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

- "use of materials as adhesives" means the use of known or new polymers or products;
- "rubber" includes:
 - a. natural or conjugated diene rubbers;
 - b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for adhesives based on such macromolecular compounds);
- "based on" is defined by means of Note 3, below.

2. In this subclass, adhesives containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

Example: an adhesive containing polyethene and amino-propyltrimethoxysilane is classified in group [C09J 123/06](#) .

However, adhesives containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09J 159/00](#) to [C09J 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09J 4/00](#) .

Example: an adhesive containing polyethene and styrene monomer is classified in group [C09J 4/06](#) .

Aspects relating to the physical nature of the adhesives or to the effects produced, as defined in group [C09J 9/00](#) , if clearly and explicitly stated, are also classified in this subclass. Adhesives characterised by other features, e.g. additives, are classified in group [C09J 11/00](#) , unless the macromolecular constituent is specified.

3. In this subclass, adhesives comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the adhesive is based. If the adhesive is based on two or more constituents, present in equal proportions, the adhesive is classified according to each of these constituents.

Examples: An adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in group [C09J 123/06](#) ;

An adhesive containing 40 parts of polyethylene 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 ~~M08L~~[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](#) to [C08F 246/00](#) , [C08G 77/00](#) to [C08G 77/04](#) or [C08G 77/20](#) to [C08G 77/30](#) .

Ex. 1: An adhesive based on methylmethacrylate monomer is classified in ([C09J 4/00](#) , [C08F 220/00](#)).

Ex. 2: An adhesive based on a dialkoxysilane monomer compound is classified in ([C09J 4/00](#) , [C08G 77/04](#)).

7. From 01.09.2003 until April 2012: Classification is given in the form of C-Sets. The polymer in majority is given a [C08L](#) class, and the minor components are characterised by Indexing Codes taken from ~~M08L~~[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](#) to [C09J 201/00](#) , notations concerning the other constituents of the adhesive

composition may be added, in the form of C-sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) - [C08L555/86](#) [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 polyethylene and 20 parts of polyvinylchloride is classified in group ([C09J 123/06](#), [C08L 27/06](#)).
- c. An adhesive containing 40 parts of polyethylene 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](#)

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

C09J 7/04

· · on paper or textile fabric (adhesive bandages, dressings or adsorbent pads, {e.g. plasters} , [A61F 13/02](#))

U C09J 123/00

Adhesives based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Adhesives based on derivatives of such polymers

U C09J 123/02

· not modified by chemical after-treatment

C09J 123/16

· · {Elastomeric} ethene-propene or ethene-propene-diene copolymers, {e.g. EPR and EPDM rubbers}

NOTE

This group is used for polymers comprising both ethylene and propylene

U C09J 201/00

Adhesives based on unspecified macromolecular compounds

C09J 201/02

· characterised by the presence of specified groups, {e.g. terminal or pendant functional groups}

U C09J 2205/00

Other features

U C09J 2205/10

· of adhesive tapes; Production process thereof

C09J 2205/102

· · additives as essential feature of the adhesive layer, the additive itself being indicated with the corresponding code of **M08K**[C08K](#)

C09J 2205/106

· · additives as essential feature of the substrate, the additive itself being indicated by the corresponding code of **M08K**[C08K](#)

Project: N/A (C09K)

- U C09K 3/00** **Materials not provided for elsewhere**
- NOTE
When classifying in groups [C09K 3/10](#) to [C09K 3/1028](#) the properties and uses of the material can be further indexed by using indexing codes chosen from [C09K 2003/1034](#) to [C09K 2003/1096](#) and the chemical nature of the materials can be further indexed by using indexing codes chosen from [C09K 2200/00](#) to [C09K 2200/0697](#)
- C09K 3/10 · {Materials in mouldable or extrudable form} for sealing or packing joints or covers (filling pastes [C09D 5/34](#))
- 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
- NOTE
When classifying in groups [C09K 5/042](#) , [C09K 5/044](#) and [C09K 5/045](#) the chemical nature of the material can be further indexed by using indexing codes chosen from [C09K 2205/00](#) to **C09K2205/480** [C09K 2205/48](#)
- U C09K 15/00** **Anti-oxidant composition; Compositions inhibiting chemical change** ({for use in well-specified applications, see the relevant places, e.g. in etching or pickling compositions [C09K 13/00](#) , [C23G](#)} , in foodstuffs [A21D](#) , [A23](#) , { in association with organic compounds [C07C](#) , [C07D](#)} , in macromolecular compositions [C08](#) ; in liquid fuels or lubricants [C10](#) ; in fats, fatty substances, fatty oils or waxes [C11B 5/00](#) ; in detergents [C11D](#) ; { coating or impregnating carbon or graphite based bodies to protect them from oxidation [C04B 41/45](#)} ; corrosion inhibiting compositions for metallic material [C23F 11/00](#))
- NOTE
In groups [C09K 15/02](#) to [C09K 15/34](#) , in the absence of an indication to the contrary, a composition is classified in the last appropriate place.
- U C09K 15/04 · containing organic compounds
- C09K 15/32 · · containing {two or more of} boron, silicon, phosphorus, selenium, tellurium or a metal
- U C09K 19/00** **Liquid crystal materials**
- NOTES
1. In groups [C09K 19/02](#) to [C09K 19/60](#) , { with the exception of groups [C09K 19/0208](#) to [C09K 19/0283](#)} ,in the absence of an indication to the contrary, materials are classified in the last appropriate place.
 2. Mixtures containing two or more liquid crystal compounds covered individually by the same one of groups [C09K 19/04](#) to [C09K 19/40](#) are classified only in that group.
 3. If liquid crystal components of the mixtures classified in groups [C09K 19/42](#) to [C09K 19/50](#) are of importance as such, they should also be classified according to the compounds in groups [C09K 19/04](#) to [C09K 19/40](#) .
- C09K 19/04 · characterised by the chemical structure of the liquid crystal components, {e.g. by a specific unit}

- U C09K 2208/00** Aspects relating to compositions of drilling or well treatment fluids
C09K 2208/30
- Viscoelastic surfactants [{\[VES\]}](#)
- C09K 2219/00** Aspects relating to the form of the liquid crystal [{\[LC\]}](#) material, or by the technical area in which LC material are used

Project: N/A (C10B)

- U C10B 53/00** Destructive distillation, specially adapted for particular solid raw materials or solid raw materials in special form (wet carbonising of peat [C10F](#))
C10B 53/07
- {of solid raw materials consisting} of synthetic polymeric materials, e.g. tyres [{waste in general, e.g. household waste C10B-53/00}](#) [{waste in general, e.g. household waste C10B 53/00;}](#) recovery or working-up of waste materials of organic macromolecular compounds or compositions based thereon by dry-heat treatment for obtaining partially depolymerised materials [C08J 11/10](#); production of liquid hydrocarbon mixtures from rubber or rubber waste [C10G 1/10](#))

Project: N/A (C10C)

- U C10C 1/00** Working-up tar [{\(petroleum \(oil\) tar C10C 3/00\)}](#)
C10C 1/02
- Removal of water (by distillation [C10C 1/06](#) {de-watering of hydrocarbon oils [C10G 33/00](#)})

Project: N/A (C10G)

- 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 2300/30
- • Physical properties of feedstocks or products
- C10G 2300/305
- • • Octane number, e.g. motor octane number [{\[MON\]}](#), research octane number [{\[RON\]}](#)

Project: N/A (C10J)

- U C10J 2300/00** Details of gasification processes
- U C10J 2300/16
- Integration of gasification processes with another plant or parts within the plant
- U C10J 2300/164
- • with conversion of synthesis gas
- U C10J 2300/1643
- • • Conversion of synthesis gas to energy
- C10J 2300/1653
- • • • integrated in an gasification combined cycle [{\[IGCC\]}](#) (engines driven by heat coming from a gasification or pyrolysis unit [F01K 23/067](#))

Project: N/A (C10L)

- U C10L 1/00** Liquid carbonaceous fuels
- U C10L 1/10
- containing additives
- U C10L 1/14
- • Organic compounds
- U C10L 1/18
- • • Containing oxygen
- C10L 1/188
- • • • Carboxylic acids; {metal} salts thereof [{\(C10L 1/1802 , C10L 1/1805 , C10L 1/1808 , C10L 1/1811 , C10L 1/1814 , C10L 1/1817 take precedence\)}](#)
- U C10L 1/22
- • • containing nitrogen
- U C10L 1/234
- • • • Macromolecular compounds [{\(C10L 1/221 takes precedence\)}](#)

- U C10L 1/238 obtained otherwise than by reactions involving only carbon-to-carbon unsaturated bonds {(C10L 1/221 takes precedence)}
- C10L 1/2383 Polyamines or polyimines, or derivatives thereof {(poly)amines and imines; derivatives thereof (substituted by a macromolecular group containing 30C) (C10L 1/221 takes precedence)}
- C10L 1/2387 Polyoxyalkyleneamines {(poly)oxyalkylene amines and derivatives thereof (substituted by a macromolecular group containing 30C) (C10L 1/221 takes precedence)}
- U C10L 3/00 Gaseous fuels; Natural gas; Synthetic natural gas obtained by processes not covered by subclass C10G , C10K; Liquefied petroleum gas**
- C10L 3/06 . Natural gas; Synthetic natural gas obtained by processes not covered by C10G , C10K 3/02 or C10K 3/04 {(liquefying by pressure and cold treatment F25J)}
- U C10L 5/00 Solid fuels (produced by solidifying fluid fuels C10L 7/00)**
- C10L 5/02 . {Solid fuels such as} briquettes consisting mainly of carbonaceous materials of mineral {or non-mineral} origin (peat briquettes C10F)
- C10L 5/04 . . Raw material {of mineral origin} to be used; Pretreatment thereof {(pretreatment of fuels of non-mineral origin C10L 5/40)}
- C10L 5/06 . . Methods of {shaping, e.g. pelletizing or} briquetting (mechanical part of pressing briquettes B30B 11/00)
- C10L 5/24 . . Combating dust during {shaping or} briquetting; Safety devices against explosion
- C10L 5/26 . . After-treatment of the {shaped fuels, e.g.} briquettes
- C10L 5/28 . . . Heating the {shaped fuels, e.g.} briquettes; Coking the binders
- C10L 5/30 . . . Cooling the {shaped fuels, e.g.} briquettes
- C10L 5/34 . . Other details of the {shaped fuels, e.g.} briquettes
- U C10L 5/40 . essentially based on materials of non-mineral origin
- C10L 5/42 . . on animal substances or products obtained therefrom, {e.g. manure}

Project: N/A (C10M)**C10M**

LUBRICATING COMPOSITIONS (well drilling compositions C09K 8/02); USE OF CHEMICAL SUBSTANCES EITHER ALONE OR AS LUBRICATING INGREDIENTS IN A LUBRICATING COMPOSITION ({lubricants for medical use A61} ; mould release, i.e. separating, agents for metals B22C 3/00 , for plastics or substances in a plastic state, in general B29C 33/56 , for glass C03B 40/02 ; use of particular substances in particular apparatus or conditions, see F16N or the relevant groups for the application, e.g. A21D 8/08 , B21C 9/00 , H01B 3/18 ; immersion oils for microscopy G02B 21/33)

NOTES

- In this subclass, the following terms are used with the meanings indicated:
 - "lubricant" or "lubricating composition" includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
 - "aliphatic" includes "cycloaliphatic".
- In respect of the classification of mixtures, attention is drawn to Note (4) (e) below.
- In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place. Thus, a compound having an aromatic ring is classified as aromatic regardless of whether the substituent(s) of interest are on the ring or on an aliphatic part of the molecule.
- In this subclass:
 - metal or ammonium salts of a compound are classified as that compound;

- 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 **M10M**[C10M](#), relating to the chemical constitution of individual compounds of the lubricating compositions;
 - subclass **M10N**[C10N](#), relating to physico-chemical aspects of the lubricating compositions or of their compounding ingredients.

For more information about the way of allocating these indexing codes, see the notes after the titles of the respective subclasses.

6. In this subclass, until May 2003, indexing codes were added, relating to:
- each of the essential ingredients of a mixture. However, in the case of an aqueous lubricating composition covered by group [C10M 173/00](#) , the presence of water is not indicated;
 - each of the essential reactants of a reaction product covered by groups [C10M 109/02](#) , [C10M 121/04](#) or [C10M 159/12](#)

The indexing codes, which are chosen from groups [C10M 101/00](#) to [C10M 109/00](#) , [C10M 113/00](#) to [C10M 121/00](#) , [C10M 125/00](#) to [C10M 139/00](#) , [C10M 143/00](#) to [C10M 155/00](#) , [C10M 159/00](#) or [C10M 163/00](#) to [C10M 167/00](#) , were given using Combination Sets.

7. In this subclass, until May 2003, the indexing codes of subclass [C10N](#) were added.

Documents classified with Combination Sets according to internal Notes 2), 3) and 5) are in the state of being reclassified according to Note 1).

WARNING

The following groups are no longer used for the classification of new documents from January, 1978:

- [C10M 1/00](#) to [C10M 7/00](#)

The backlog of these groups is continuously being reclassified in groups [C10M 101/00](#) to [C10M 177/00](#) .

U C10M 2213/00 Organic macromolecular compounds containing halogen as ingredients in lubricant compositions

- U C10M 2213/06 · Perfluoro polymers
- C10M 2213/062 · · Polytetrafluoroethylene ([PTFE](#))

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](#) to [C10N 2210/08](#) are only to be used as linked codes in combination with codes chosen from subclass **M10M C10M** identifying the chemical nature of the compounds concerned:

Example: [C10M 2201/084](#) + [C10N 2210/02](#)

U C10N 2240/00 Specified uses or applications of lubricating compositions

- U C10N 2240/04 · Gear oil
- C10N 2240/045 · · for Continuous Variable Transmission ([CVT](#))

Project: N/A (C11D)**C11D DETERGENT COMPOSITIONS (preparations specially adapted for washing the hair [A61Q 5/02](#), [A61K 8/00](#); methods or apparatus for disinfection or sterilisation [A61L](#); special washing compositions for cleaning semi-permeable membranes [B01D 65/06](#)); USE OF SINGLE SUBSTANCES AS DETERGENTS; SOAP OR SOAP-MAKING; RESIN SOAPS; RECOVERY OF GLYCEROL**NOTE

Documents classified in groups [C11D 1/37](#), [C11D 1/645](#) to [C11D 1/655](#), [C11D 1/825](#) to [C11D 1/86](#), [C11D 1/94](#) to [C11D 1/945](#) and [C11D 10/00](#) to **~~C11D10/06~~**[C11D 10/047](#), are indexed using codes chosen from [C11D 1/00](#) to [C11D 1/92](#) to provide information on the individual ingredients on the compositions

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:

C11D 1/68	covered by	C11D 3/2003
C11D 1/70	covered by	C11D 3/2003
C11D 3/44	covered by	C11D 3/43
C11D 3/46	covered by	C11D 3/2079 , C11D 9/48
C11D 3/60	covered by	C11D 3/00
C11D 7/18	covered by	C11D 3/39
C11D 7/38	covered by	C11D 3/39
C11D 7/42	covered by	C11D 3/386
C11D 7/52	covered by	C11D 7/50
C11D 7/54	covered by	C11D 3/395
C11D 7/56	covered by	C11D 3/395
C11D 7/60	covered by	C11D 7/00
C11D 9/20	covered by	partly covered by C11D 9/444
C11D 9/50	covered by	C11D 3/48
C11D 9/60	covered by	C11D 9/00
C11D 10/02	covered by	C11D 3/00
C11D 10/06	covered by	C11D 9/00

- 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
- U C11D 3/20 · · containing oxygen {([C11D 3/162](#), [C11D 3/164](#), [C11D 3/166](#), [C11D 3/168](#) take precedence)}
- U C11D 3/2075 · · · {Carboxylic acids-salts thereof}
- C11D 3/2079 · · · · {Monocarboxylic acids-salts thereof (soaps ~~C11D10/06~~[C11D 10/00](#) to [C11D 10/04](#))}
- 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 Note before group [C11D 3/00](#)) and indexed for the individual functional groups using codes chosen from [C11D 3/3409](#) to ~~C11E3/349~~[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.

Project: N/A (C12C)

- U C12C 1/00** Preparation of malt
- U C12C 1/027 · Germinating
- U C12C 1/047 · · Influencing the germination by chemical or physical means
- C12C 1/053 · · · by irradiation or electric {or wave energy} treatment
- U C12C 7/00** Preparation of wort (malt extract [C12C 1/18](#))
- U C12C 7/14 · Clarifying wort (Läuterung)
- U C12C 7/16 · · by straining
- C12C 7/17 · · · in lautertuns, {e.g. in a tub with perforated false bottom}
- C12C 7/28 · After-treatment, {e.g. sterilisation ([C12C 11/00](#) takes precedence)}

Project: N/A (C12M)

- 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 G05N~~; ~~controlling or regulating in general G06N~~)}

Project: N/A (C12N)

C12N

MICRO-ORGANISMS OR ENZYMES; COMPOSITIONS THEREOF (biocides, pest repellants or attractants, or plant growth regulators, containing micro-organisms, viruses, microbial fungi, enzymes, fermentates or substances produced by or extracted from micro-organisms or animal material [A01N 63/00](#) ; food compositions [A21](#) , [A23](#) ; medicinal preparations [A61K](#) ; chemical aspects of, or use of materials for, bandages, dressings, absorbent pads or surgical articles [A61L](#) ; fertilisers [C05](#)); **PROPAGATING, PRESERVING OR MAINTAINING MICRO-ORGANISMS** (preservation of living parts of humans or animals [A01N 1/02](#)); **MUTATION OR GENETIC ENGINEERING; CULTURE MEDIA** (micro-biological testing media [C12Q](#))

NOTES

1. Documents relating to the use of vectors or hosts for the preparation of specific peptides, e.g. enzymes, are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes.
2. Attention is drawn to Notes (1) to (3) following the title of Class [C12](#) .
3. When classifying in this group, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

WARNING

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

[C12N 1/11](#) covered by [C12N 15/79](#)
[C12N 1/13](#) covered by [C12N 15/79](#)
[C12N 1/15](#) covered by [C12N 15/80](#)
[C12N 1/19](#) covered by [C12N 15/81](#)
[C12N 1/21](#) covered by [C12N 15/74](#)
[C12N 5/02](#) covered by [C12N 5/00](#), [C12N 5/04](#) to [C12N 5/166](#)
[C12N 5/07](#) - [C12N 5/095](#) covered by [C12N 5/06](#) and subgroups
[C12N 5/18](#) - [C12N 5/28](#) covered by [C12N 5/16](#) and subgroups
~~[C12N 5/08](#) covered by [C12N 5/06](#) to [C12N 5/06R](#)~~
[C12N 5/18](#) covered by [C12N 5/16](#)

[C12N 5/20](#) covered by [C12N 5/163](#)

[C12N 5/22](#) covered by [C12N 5/16](#)

[C12N 5/24](#) covered by [C12N 5/163](#)

[C12N 5/26](#) covered by [C12N 5/166](#)

[C12N 5/28](#) covered by [C12N 5/166](#)

[C12N 7/01](#) covered by [C12N 7/00](#)

[C12N 9/26](#) covered by [C12N 9/2408](#)

[C12N 9/38](#) covered by [C12N 9/2468](#)

[C12N 9/42](#) covered by [C12N 9/2434](#)

[C12N 9/44](#) covered by [C12N 9/2451](#)

[C12N 9/70](#) covered by [C07K 14/3153](#)

C12N 15/05 covered by [C12N 5/14](#)
C12N 15/06 covered by [C12N 5/16](#)
C12N 15/07 covered by [C12N 5/16](#)
C12N 15/08 covered by [C12N 5/166](#)
C12N 15/12 covered by [C07K 14/435](#)
C12N 15/13 covered by [C07K 16/00](#)
C12N 15/14 covered by [C07K 14/765](#)
C12N 15/15 covered by [C07K 14/81](#)
C12N 15/16 covered by [C07K 14/575](#)
C12N 15/17 covered by [C07K 14/62](#)
C12N 15/18 covered by [C07K 14/61](#)
C12N 15/19 covered by [C07K 14/52](#)
C12N 15/20 covered by [C07K 14/555](#)
C12N 15/21 covered by [C07K 14/56](#)
C12N 15/22 covered by [C07K 14/565](#)
C12N 15/23 covered by [C07K 14/57](#)
C12N 15/24 covered by [C07K 14/54](#)
C12N 15/25 covered by [C07K 14/545](#)
C12N 15/26 covered by [C07K 14/55](#)
C12N 15/27 covered by [C07K 14/53](#)
C12N 15/28 covered by [C07K 14/525](#)
C12N 15/29 covered by [C07K 14/415](#)
C12N 15/30 covered by [C07K 14/44](#)
C12N 15/31 covered by [C07K 14/195](#), [C07K 14/005](#)
C12N 15/32 covered by [C07K 14/325](#)
C12N 15/33 covered by [C07K 14/005](#)
C12N 15/34 covered by [C07K 14/01](#)
C12N 15/35 covered by [C07K 14/015](#)
C12N 15/36 covered by [C07K 14/02](#)
C12N 15/37 covered by [C07K 14/025](#)
C12N 15/38 covered by [C07K 14/03](#)

C12N 15/39 covered by [C07K 14/065](#)
C12N 15/40 covered by [C07K 14/08](#)
C12N 15/41 covered by [C07K 14/085](#)
C12N 15/42 covered by [C07K 14/09](#)
C12N 15/43 covered by [C07K 14/105](#)
C12N 15/44 covered by [C07K 14/11](#)
C12N 15/45 covered by [C07K 14/115](#)
C12N 15/46 covered by [C07K 14/14](#)
C12N 15/47 covered by [C07K 14/145](#)
C12N 15/48 covered by [C07K 14/15](#)
C12N 15/49 covered by [C07K 14/155](#)
C12N 15/50 covered by [C07K 14/165](#)
C12N 15/51 covered by [C07K 14/02](#), [C07K 14/10](#), [C07K 14/18](#)
C12N 15/53 covered by [C12N 9/02](#)
C12N 15/54 covered by [C12N 9/10](#)
C12N 15/55 covered by [C12N 9/14](#)
C12N 15/56 covered by [C12N 9/24](#)
C12N 15/57 covered by [C12N 9/48](#)
C12N 15/58 covered by [C12N 9/6456](#)
C12N 15/59 covered by [C12N 9/6483](#)
C12N 15/60 covered by [C12N 9/88](#)
C12N 15/61 covered by [C12N 9/90](#)
C12N 15/83 covered by [C12N 15/82](#)
C12N 15/84 covered by [C12N 15/82](#)

U C12N 5/00

Undifferentiated human, animal or plant cells, e.g. cell lines; Tissues; Cultivation or maintenance thereof; Culture media therefor; (plant reproduction by tissue culture techniques [A01H 4/00](#))

NOTE

In this group, the following words are used with the meanings indicated:

- a "totipotent" cell can differentiate into all somatic lineages (ectoderm, mesoderm, endoderm), the germ line and extra-embryonic tissues such as the placenta;
- a "pluripotent" cell is a somatic stem cell which can differentiate into cells of at least two of the three somatic lineages (ectoderm, mesoderm, endoderm);
- a "multipotent" cell is restricted to one lineage;

- "progenitor" and "precursor" cells are further restricted within the lineage. If not explicitly foreseen, totipotent cells are classified with pluripotent cells. Multipotent cells should not be classified with pluripotent cells. Unless provided for otherwise, committed progenitors are classified with their progeny.

- U C12N 5/06 · Animal cells or tissues; {Human cells or tissues (preservation of living cells or tissues [A01N 1/02](#)); Not used, see subgroups}

NOTE

In this group, the following words are used with the meanings indicated:

- a "totipotent" cell can differentiate into all somatic lineages (ectoderm, mesoderm, endoderm), the germ line and extra-embryonic tissues such as the placenta;
- a "pluripotent" cell is a somatic stem cell which can differentiate into cells of at least two of the three somatic lineages (ectoderm, mesoderm, endoderm);
- a "multipotent" cell is restricted to one lineage.

"Progenitor" and "precursor" cells are further restricted within the lineage. If not explicitly foreseen, totipotent cells are classified with pluripotent cells. Multipotent cells should not be classified with pluripotent cells

- U C12N 5/0602 · · {Vertebrate cells}

NOTE

Three-dimensional culture, tissue culture or organ culture are classified with the corresponding cells, if not specially provided for

- U C12N 5/0608 · · · {Germ cells (production of embryos, nuclear transfer [A01K 67/027](#)); Not used, see subgroups}

C12N 5/0611 · · · · {Primordial germ cells, e.g. embryonic germ cells [\(EG\)](#)}

- U C12N 5/0634 · · · {Cells from the blood or the immune system}

NOTE

Committed progenitors are classified with their progeny

- U C12N 5/0636 · · · · {T lymphocytes}

C12N 5/0638 · · · · · {Cytotoxic T lymphocytes [\(CTL\)](#), lymphokine activated killer cells [\(LAK\)](#)}

C12N 5/0646 · · · · · {Natural killers cells [\(NK\)](#), NKT cells}

- U C12N 5/0652 · · · {Cells of skeletal and connective tissues; Mesenchyme}

- U C12N 5/0662 · · · · {Stem cells}

C12N 5/0667 · · · · · {Adipose-derived stem cells [\(ADSC\)](#); Adipose stromal stem cells}

- U C12N 7/00 **Viruses; Bacteriophages; Compositions thereof; Preparation or purification thereof (preparing medicinal viral antigen or antibody composition, e.g. virus vaccines, [A61K 39/00](#))****

WARNING

From March 15, 2012 groups [C12N 7/02](#) - [C12N 7/08](#) and subgroups thereof are no longer used for the classification of new documents. The documents in these (sub)groups are being reclassified to the corresponding codes in the range [C12N 2710/00-C12N 2795/00](#).

- U C12N 7/04 · Inactivation or attenuation; Producing viral sub-units

C12N 7/06 · · {Inactivation or attenuation} by chemical treatment

C12N 7/08 · · {Inactivation or attenuation} by serial passage of virus

- 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.

- U C12N 9/0004 · {Oxidoreductases (1.)}
- U C12N 9/0012 · · {acting on nitrogen containing compounds as donors (1.4, 1.5, 1.6, 1.7)}
- U C12N 9/0026 · · · {acting on CH-NH groups of donors (1.5)}
- U C12N 9/0028 · · · · {with NAD or NADP as acceptor (1.5.1)}
- C12N 9/003 · · · · · {Dihydrofolate reductase ~~{(DHFR)}~~ (1.5.1.3)}
- U C12N 9/14 · Hydrolases (3)
- U C12N 9/16 · · acting on ester bonds (3.1)
- C12N 9/18 · · · Carboxylic ester hydrolases {(3.1.1)}
- U C12N 9/78 · · acting on carbon to nitrogen bonds other than peptide bonds (3.5)
- C12N 9/80 · · · acting on amide bonds in linear amides {(3.5.1)}
- C12N 9/82 · · · · Asparaginase {(3.5.1.1)}
- C12N 9/84 · · · · Penicillin amidase {(3.5.1.11)}
- C12N 9/86 · · · acting on amide bonds in cyclic amides, e.g. penicillinase {(3.5.2)}
- U C12N 9/90 · Isomerases (5.)
- C12N 9/92 · · Glucose isomerase {(5.3.1.5; 5.3.1.9; 5.3.1.18)}

- U C12N 15/00** **Mutation or genetic engineering; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification; Use of hosts therefor (mutants or genetically engineered micro-organisms, per se [C12N 1/00](#) , [C12N 5/00](#) , [C12N 7/00](#) ; new plants per se [A01H](#) ; plant reproduction by tissue culture techniques [A01H 4/00](#) ; new animals per se [A01K 67/00](#) ; use of medicinal preparations containing genetic material which is inserted into cells of the living body to treat genetic diseases, gene therapy [A61K 48/00](#))**

- U C12N 15/09 · Recombinant DNA-technology
- C12N 15/10 · · Processes for the isolation, preparation or purification of DNA or RNA (chemical preparation of DNA or RNA [C07H 21/00](#) ; preparation of non-structural polynucleotides from micro-organisms or with enzymes [C12P 19/34](#))

NOTE

After the symbol [C12N 15/10](#) to [C12N 15/1096](#), and separated therefrom by a + sign, it is desirable to add the indexing codes selected from groups [C12Q 2500/00](#) to ~~[C12Q599/00](#)~~ [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](#) + ~~[C12Q537/125](#)~~ [C12Q 2537/125](#) + ~~[C12Q521/537](#)~~ [C12Q 2521/537](#)

- U C12N 15/1034 · · · {Isolating an individual clone by screening libraries}
- C12N 15/1044 · · · · {Preparation or screening of libraries displayed on scaffold proteins}s

- C12N 15/1068 {Template (nucleic acid) mediated chemical library synthesis, e.g. chemical and enzymatical DNA-templated organic molecule synthesis, libraries prepared by non ribosomal polypeptide synthesis ([\[NRPS\]](#)), DNA/RNA-polymerase mediated polypeptide synthesis}
- C12N 15/11 . . DNA or RNA fragments; Modified forms thereof (DNA or RNA not used in recombinant technology, [C07H 21/00](#)); {Non-coding nucleic acids having a biological activity}
- NOTE
Documents relating to DNA or its corresponding RNA and their use in recombinant DNA technology or the preparation of specific peptides, e.g. enzymes, are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in recombinant technology. Groups [C12N 15/11](#) to [C12N 15/117](#) cover also the use of non-coding nucleic acids as active ingredients in medicinal preparations. The ~~C12N2300/00~~[C12N 2303/00](#) ICO scheme has to be applied to these groups. When documents classifiable in one or more subgroups disclose general principles of the technology applicable to the whole field, classification is also made in group [C12N 15/111](#)
- U C12N 15/113 . . . Non-coding nucleic acids modulating the expression of genes, e.g. antisense oligonucleotides; {Antisense DNA or RNA; Triplex- forming oligonucleotides; Catalytic nucleic acids, e.g. ribozymes; Nucleic acids used in co-suppression or gene silencing (when used in plants [C12N 15/8218](#))}
- U C12N 15/115 . . . Aptamers, i.e. nucleic acids binding a target molecule specifically and with high affinity without hybridising therewith; {Nucleic acids binding to non-nucleic acids, e.g. aptamers}
- NOTE
Aptamers fused to compounds which are already classified in groups [C12N 15/11](#) to [C12N 15/117](#) , are classified with the corresponding compound
- U C12N 15/63 . . Introduction of foreign genetic material using vectors; Vectors; Use of hosts therefor; Regulation of expression
- U C12N 15/79 . . . Vectors or expression systems specially adapted for eukaryotic hosts
- NOTE
This group covers the use of eukaryotes as hosts.
- C12N 15/82 for plant cells, {e.g. plant artificial chromosomes (PACs)}
- WARNING
Documents are being continuously reclassified into this new classification scheme. See Warning notes below
- U C12N 15/85 for animal cells
- U C12N 15/86 Viral vectors
- WARNING
From March 15, 2012 groups [C12N 15/861](#) - [C12N 15/869](#) and subgroups thereof are no longer used for the classification of new documents. The documents in these (sub)groups are being reclassified to the corresponding codes in the range [C12N 2710/00](#)-[C12N 2795/00](#)
- C12N 15/863 Poxviral vectors, {e.g. entomopoxvirus}
- C12N 15/864 Parvoviral vectors, {e.g. parvovirus, densovirus}

- U C12N 15/87
- Introduction of foreign genetic material using processes not otherwise provided for, e.g. co-transformation
- C12N 15/88
- • • using micro-encapsulation, e.g. using {amphiphile} liposome vesicle

U C12N 2500/00 Specific components of cell culture medium

- C12N 2500/50
- Soluble polymers, e.g. polyethyleneglycol {[PEG]}

U C12N 2501/00 Active agents used in cell culture processes, e.g. differentiation

NOTE

Whenever possible, indexation is done by signalling pathway and not by chemical structure, e.g. the group of a protein covers not only peptide analogs of it and the corresponding nucleic acids, as in [C07K 14/00](#), but also antibodies, anti-idiotypic antibodies, non-peptide ligands of the receptor, the receptor itself, antibodies against the receptor or inhibitors of the conversion enzyme which processes the protein precursor. Unless otherwise provided for, ligands and substrates take precedence over receptors and enzymes.

- U C12N 2501/05
- Adjuvants
- C12N 2501/052
- • Lipopolysaccharides {[LPS]}
- U C12N 2501/10
- Growth factors
- C12N 2501/105
- • Insulin-like growth factors {[IGF]}
- C12N 2501/11
- • Epidermal growth factor {[EGF]}
- C12N 2501/12
- • Hepatocyte growth factor {[HGF]}
- C12N 2501/125
- • Stem cell factor {[SCF]}, c-kit ligand {[KL]}
- C12N 2501/13
- • Nerve growth factor {[NGF]}; Brain-derived neurotrophic factor {[BDNF]}; Ciliary neurotrophic factor {[CNTF]}; Glial-derived neurotrophic factor {[GDNF]}; Neurotrophins {[NT]}; Neuregulins
- C12N 2501/135
- • Platelet-derived growth factor {[PDGF]}
- C12N 2501/14
- • Erythropoietin {[EPO]}
- C12N 2501/145
- • Thrombopoietin {[TPO]}
- C12N 2501/148
- • Transforming growth factor alpha {[TGF-a]}
- C12N 2501/155
- • Bone morphogenic proteins {[BMP]}; Osteogenins; Osteogenic factor; Bone inducing factor
- C12N 2501/165
- • Vascular endothelial growth factor {[VEGF]}
- C12N 2501/19
- • Growth and differentiation factors {[GDF]}
- U C12N 2501/20
- Cytokines; Chemokines
- C12N 2501/23
- • Interleukins {[IL]}
- C12N 2501/235
- • • Leukemia inhibitory factor {[LIF]}
- C12N 2501/237
- • Oncostatin M {[OSM]}
- C12N 2501/24
- • Interferons {[IFN]}
- C12N 2501/25
- • Tumour necrosing factors {[TNF]}
- U C12N 2501/30
- Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [C12N 2501/85](#))
- C12N 2501/305
- • Growth hormone {[GH]}, aka. somatotropin
- C12N 2501/31
- • Pituitary sex hormones, e.g. follicle-stimulating hormone {[FSH]}, luteinising hormone {[LH]}; Chorionic gonadotropins
- C12N 2501/32
- • Angiotensins {[AT]}, angiotensinogen
- C12N 2501/335
- • Glucagon; Glucagon-like peptide {[GLP]}; Exendin
- C12N 2501/34
- • Calcitonin; Calcitonin-gene related peptide {[CGRO]}; Amylin

- C12N 2501/345 • • Gastrin; Cholecystokinins [{CCK}](#)
- C12N 2501/35 • • Vasoactive intestinal peptide [{VIP}](#); Pituitary adenylate cyclase activating polypeptide [{PACAP}](#)
- C12N 2501/37 • • Parathyroid hormone [{PTH}](#)
- C12N 2501/375 • • Thyroid stimulating hormone [{TSH}](#)
- U C12N 2501/38 • • with nuclear receptors
- C12N 2501/385 • • of the family of the retinoic acid receptor, e.g. RAR, RXR; Peroxisome proliferator-activated receptor [{PPAR}](#)
- U C12N 2501/80 • Neurotransmitters; Neurohormones
- C12N 2501/835 • • Neuropeptide Y [{NPY}](#); Peptide YY [{PYY}](#)
- C12N 2501/845 • • Gamma amino butyric acid [{GABA}](#)
- U C12N 2501/85 • Hormones derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin
- C12N 2501/855 • • Corticotropin [{ACTH}](#)
- C12N 2501/86 • • Melanocyte-stimulating hormone [{MSH}](#)
- U C12N 2502/00 Coculture with; Conditioned medium produced by**
- U C12N 2502/13 • connective tissue cells; generic mesenchyme cells, e.g. so-called "embryonic fibroblasts"
- U C12N 2502/1352 • • Mesenchymal stem cells
- C12N 2502/1382 • • • Adipose-derived stem cells [{ADSC}](#), adipose stromal stem cells
- U C12N 2506/00 Differentiation of animal cells from one lineage to another; Differentiation of pluripotent cells**
- NOTE
- This scheme indexes the starting point of a differentiation process and is used in combination with classification in [C12N 5/06](#) for the end product. Differentiation of a restricted progenitor cell into its expected progeny is not indexed. Differentiation of totipotent cells and dedifferentiation are always indexed.
- U C12N 2506/13 • from connective tissue cells, from mesenchymal cells
- U C12N 2506/1346 • • from mesenchymal stem cells
- C12N 2506/1384 • • • from adipose-derived stem cells [{ADSC}](#), from adipose stromal stem cells

Project: N/A (C12P)

- U C12P 7/00 Preparation of oxygen-containing organic compounds**
- U C12P 7/64 • Fats; Fatty oils; Ester-type waxes; Higher fatty acids, i.e. having at least seven carbon atoms in an unbroken chain bound to a carboxyl group; Oxidised oils or fats
- U C12P 7/6409 • • {Fatty acids}
- C12P 7/6427 • • • {Polyunsaturated fatty acids [{PUFA}](#), i.e. having 2 or more double bonds in their backbone}
- U C12P 7/6436 • • {Fatty acid esters}
- U C12P 7/6445 • • • {Glycerides}
- C12P 7/6472 • • • • {containing polyunsaturated fatty acid [{PUFA}](#) residues, i.e. having 2 or more double bonds in their backbone}
- U C12P 17/00 Preparation of heterocyclic carbon compounds with only O, N, S, Se or Te as ring hetero atoms ([C12P 13/04](#) to [C12P 13/24](#) take precedence)**
- U C12P 17/02 • Oxygen as only ring hetero atom
- C12P 17/04 • • containing a five-membered hetero ring, e.g. griseofulvin, {vitamin C}

U C12P 19/00 Preparation of compounds containing saccharide radicals (keto-aldehydic acids [C12P 7/58](#))

NOTE

Attention is drawn to the term "saccharide radical" in the first Note following the title of subclass [C07H](#).

- C12P 19/14
- produced by the action of a carbohydrase $\{(EC\ 3.2.x)\}$, e.g. by alpha-amylase, $\{e.g.\}$ by cellulase, hemicellulase

Project: N/A (C12Q)

C12Q

MEASURING OR TESTING PROCESSES INVOLVING ENZYMES OR MICRO-ORGANISMS (immunoassay [G01N 33/53](#)); COMPOSITIONS OR TEST PAPERS THEREFOR; PROCESSES OF PREPARING SUCH COMPOSITIONS; CONDITION RESPONSIVE CONTROL IN MICROBIOLOGICAL OR ENZYMOLOGICAL PROCESSES

NOTES

1. This subclass does not cover the observation of the progress or of the result of processes specified in this subclass by any of the methods specified in groups [G01N 3/00](#) to [G01N 29/00](#), which is covered by subclass [G01N](#).
2. In this subclass, the following expression is used with the meaning indicated: "involving", when used in relation to a substance, includes the testing for the substance as well as employing the substance as a determinant or reactant in a test for a different substance.
3. Attention is drawn to Notes (1) to (3) following the title of class [C12](#).
4. In this subclass, test media are classified in the appropriate group for the relevant test process.
5. Documents describing the use of an electrode for analysis of a specific analyte are classified in [C12Q 1/001](#) or subgroups and not according to the last place rule
6. Documents relating to new peptides, e.g. enzymes, or new DNA or its corresponding mRNA, encoding for the peptides, and their use in measuring or testing processes are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in diagnostics. However where the new nucleic acids are principally used in diagnostic processes, e.g. PCR, hybridisation reactions, the documents are also classified in group [C12Q 1/68](#)
7. When classifying in groups [C12Q 1/68](#) to [C12Q 1/70](#) it is desirable to classify with symbols from groups [C12Q 2500/00](#) to ~~[C12Q 599/00](#)~~[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](#) to [C12Q 2600/178](#) which reflect the use of the product in combination with the virus groups only if the application refers to products.

C12Q 1/00

Measuring or testing processes involving enzymes, $\{nucleic\ acids\}$ or micro-organisms (measuring or testing apparatus with condition measuring or sensing means, e.g. colony counters [C12M 1/34](#)); Compositions therefor; Processes of preparing such compositions

- U C12Q 1/68
- involving nucleic acids

NOTE

In subgroups of [C12Q 1/68](#), classification is made according to the most relevant feature rather than according to the last-place-rule

- U C12Q 1/6844
- $\{Nucleic\ acid\ amplification\ reactions\}$

C12Q 1/686	• • • {Polymerase Chain Reaction {PCR} }
C12Q 1/6862	• • • {Ligase Chain Reaction {LCR} }
U C12Q 1/6869	• • {Methods for sequencing}
C12Q 1/6874	• • • {involving nucleic acid arrays, e.g. Sequencing By Hybridisation {SBH} }
U C12Q 2531/00	Reactions of nucleic acids characterised by
U C12Q 2531/10	• the purpose being amplify/increase the copy number of target nucleic acid (Not used)
C12Q 2531/119	• • Strand displacement amplification {SDA} }
C12Q 2531/137	• • Ligase Chain Reaction {LCR} }
U C12Q 2535/00	{Reactions characterised by the assay type for determining the identity of a nucleotide base}
U C12Q 2535/10	• the purpose being to determine the identity or sequence oligonucleotides characterised by (Not used)
C12Q 2535/137	• • Amplification Refractory Mutation System {ARMS} }
C12Q 2535/138	• • Amplified fragment length polymorphism {AFLP} }
C12Q 2535/139	• • Random amplification polymorphism detection {RAPD} }
	(not to be used with C12Q 2525/179)
U C12Q 2539/00	{Reactions characterised by analysis of gene expression or genome comparison}
U C12Q 2539/10	• The purpose being sequence identification by analysis of gene expression or genome comparison characterised by
C12Q 2539/103	• • Serial analysis of gene expression {SAGE} }
C12Q 2539/107	• • Representational Difference Analysis {RDA} }
C12Q 2539/113	• • Differential Display Analysis {DDA} }
C12Q 2539/115	• • Comparative genomic hybridisation {CGH} }
U C12Q 2561/00	Nucleic acid detection characterised by assay method (not used)
U C12Q 2561/10	• Characterised by assay method (Not used)
C12Q 2561/108	• • Hybridisation protection assay {HPA} }
C12Q 2561/125	• • Ligase Detection Reaction {LDR} }
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 2565/601	• • being a microscope, e.g. atomic force microscopy {AFM} }

Project: N/A (C12Y)

U C12Y 101/00	Oxidoreductases acting on the CH-OH group of donors (1.1)
U C12Y 101/01	• with NAD ⁺ or NADP ⁺ as acceptor (1.1.1)
C12Y 101/0105	• • 3α-α-hydroxysteroid 3-dehydrogenase (B-specific) (1.1.1.50)
C12Y 101/01062	• • Estradiol 17β-estradiol 17-β-dehydrogenase (1.1.1.62)
D C12Y 101/01063	• • Testosterone 17-β-dehydrogenase (1.1.1.63)
D C12Y 101/01128	• • L-Idonate 2-dehydrogenase (1.1.1.128)
C12Y 101/01153	• • Sepiapterin reductase (<i>L-erythro-7,8-dihydrobiopterin forming</i>) (1.1.1.153)
D C12Y 101/01161	• • Cholestanetetraol 26-dehydrogenase (1.1.1.161)
C12Y 101/0117	• • Sterol 3β-4α-hydroxy-α-4α-carboxylate carboxy-sterol 3-dehydrogenase (decarboxylating) (1.1.1.170)
C12Y 101/01212	• • 3-Oxoacyl-[acyl-carrier-protein] reductase (NADH) (1.1.1.212)

- C12Y 101/01213 • • **33Alpha-Alpha**-hydroxysteroid **3**-dehydrogenase (**A-specific**) (1.1.1.213)
- C12Y 101/01239 • • **3-Alpha-3Alpha(17-beta 17beta)**-hydroxysteroid dehydrogenase (NAD+) (1.1.1.239), *i.e. testosterone 17beta-dehydrogenase*
- C12Y 101/01264 • • L-Idonate 5-dehydrogenase (1.1.1.264), *i.e. L-idonate 2-dehydrogenase*
- C12Y 101/0127 • • **3Beta-hydroxysteroid 3-Keto-steroid reductase dehydrogenase** (1.1.1.270)
- N C12Y 101/01318 • • *Eugenol synthase* (1.1.1.318)
- N C12Y 101/01319 • • *Isoeugenol synthase* (1.1.1.319)
- N C12Y 101/0132 • • *Benzil reductase [(S)-benzoin forming]* (1.1.1.320)
- N C12Y 101/01321 • • *Benzil reductase [(R)-benzoin forming]* (1.1.1.321)
- N C12Y 101/01322 • • *(-)-Endo-fenchol dehydrogenase* (1.1.1.322)
- N C12Y 101/01323 • • *(+)-Thujan-3-ol dehydrogenase* (1.1.1.323)
- N C12Y 101/01324 • • *8-Hydroxygeraniol dehydrogenase* (1.1.1.324)
- N C12Y 101/01325 • • *Sepiapterin reductase (L-threo-7,8-dihydrobiopterin forming)* (1.1.1.325)
- N C12Y 101/01326 • • *Zerumbone synthase* (1.1.1.326)
- N C12Y 101/01327 • • *5-Exo-hydroxycamphor dehydrogenase* (1.1.1.327)
- N C12Y 101/01328 • • *Nicotine blue oxidoreductase* (1.1.1.328)
- N C12Y 101/01329 • • *2-Deoxy-scylo-inosamine dehydrogenase* (1.1.1.329)
- N C12Y 101/0133 • • *Very-long-chain 3-oxoacyl-CoA reductase* (1.1.1.330)
- N C12Y 101/01331 • • *Secoisolariciresinol dehydrogenase* (1.1.1.331)
- N C12Y 101/01332 • • *Chanoclavine-I dehydrogenase* (1.1.1.332)
- N C12Y 101/01333 • • *Decaprenylphospho-beta-D-erythro-pentofuranosid-2-ulose 2-reductase* (1.1.1.333)
- N C12Y 101/01334 • • *Methylecgonone reductase* (1.1.1.334)
- N C12Y 101/01335 • • *UDP-N-acetyl-2-amino-2-deoxyglucuronate dehydrogenase* (1.1.1.335)
- N C12Y 101/01336 • • *UDP-N-acetyl-D-mannosamine dehydrogenase* (1.1.1.336)
- N C12Y 101/01337 • • *L-2-Hydroxycarboxylate dehydrogenase (NAD+)* (1.1.1.337)
- N C12Y 101/01338 • • *(2R)-3-Sulfolactate dehydrogenase (NADP+)* (1.1.1.338)
- N C12Y 101/01339 • • *dTDP-6-deoxy-L-talose 4-dehydrogenase (NAD+)* (1.1.1.339)
- N C12Y 101/0134 • • *1-Deoxy-11beta-hydroxypentalenate dehydrogenase* (1.1.1.340)
- N C12Y 101/01341 • • *CDP-abequose synthase* (1.1.1.341)
- N C12Y 101/01342 • • *CDP-paratose synthase* (1.1.1.342)
- U C12Y 101/03 • • with a oxygen as acceptor (1.1.3)
- N C12Y 101/03043 • • *Paromamine 6'-oxidase* (1.1.3.43)
- N C12Y 101/03044 • • *6'''-Hydroxyneomycin C oxidase* (1.1.3.44)
- U C12Y 101/98 • • with other, known, acceptors (1.1.98)
- N C12Y 101/98003 • • *Decaprenylphospho-beta-D-ribofuranose 2-oxidase* (1.1.98.3)
- U C12Y 101/99 • • with other acceptors (1.1.99)
- N C12Y 101/99038 • • *2-Deoxy-scylo-inosamine dehydrogenase (SAM-dependent)* (1.1.99.38)
- U C12Y 102/00 Oxidoreductases acting on the aldehyde or oxo group of donors (1.2)**
- U C12Y 102/01 • • with NAD+ or NADP+ as acceptor (1.2.1)
- D C12Y 102/0104 • • **3-Alpha,7-alpha,12-alpha-trihydroxycholestan-26-al 26-oxidoreductase** (1.2.1.40)
- C12Y 102/01074 • • **AbietadienalAbieta-7,13-dien-18-al** dehydrogenase (1.2.1.74)
- C12Y 102/0108 • • Long-chain acyl-[acyl-carrier-protein] reductase (1.2.1.80)
- N C12Y 102/01083 • • **3-Succinoylsemialdehyde-pyridine dehydrogenase** (1.2.1.83)

- N C12Y 102/01084 . . Alcohol-forming fatty acyl-CoA reductase (1.2.1.84)
- N C12Y 102/01085 . . 2-Hydroxymuconate-6-semialdehyde dehydrogenase (1.2.1.85)
- N C12Y 102/01086 . . Geranial dehydrogenase (1.2.1.86)
- U C12Y 102/03 . . with oxygen as acceptor (1.2.3)
- C12Y 102/03001 . . Aldehyde oxidase (1.2.3.1), *i.e. retinal oxidase*
- D C12Y 102/03011 . . Retinal oxidase (1.2.3.11)
- U C12Y 103/00 Oxidoreductases acting on the CH-CH group of donors (1.3)**
- U C12Y 103/01 . . with NAD⁺ or NADP⁺ as acceptor (1.3.1)
- D C12Y 103/01004 . . Cortisone-alpha-reductase (1.3.1.4)
- C12Y 103/01022 . . **Cholestenone-5~~3~~-Oxo-5alpha-steroid 4-alpha-reductase dehydrogenase (NADP⁺)** (1.3.1.22), *i.e. cortisone alpha-reductase*
- D C12Y 103/0103 . . Progesterone 5-alpha-reductase (1.3.1.30), *i.e. steroid-5-alpha-reductase*
- C12Y 103/01039 . . Enoyl-[acyl-carrier-protein] reductase (NADPH, A-specific)(1.3.1.39)
- D C12Y 103/01052 . . 2-Methyl-branched-chain-enoyle-CoA reductase (1.3.1.52)
- N C12Y 103/01092 . . Artemisinic aldehyde DELTA11(13)-reductase (1.3.1.92)
- N C12Y 103/01093 . . Very-long-chain enoyl-CoA reductase (1.3.1.93)
- N C12Y 103/01094 . . Polyprenol reductase (1.3.1.94)
- N C12Y 103/01095 . . Acrylyl-CoA reductase (NADH) (1.3.1.95)
- N C12Y 103/01096 . . Botryococcus squalene synthase (1.3.1.96)
- N C12Y 103/01097 . . Botryococcene synthase (1.3.1.97)
- U C12Y 103/07 . . with an iron-sulfur protein as acceptor (1.3.7)
- N C12Y 103/0701 . . Pentalenolactone synthase (1.3.7.10)
- U C12Y 103/08 . . with flavin as acceptor (1.3.8)
- N C12Y 103/08003 . . (R)-Benzylsuccinyl-CoA dehydrogenase (1.3.8.3)
- N C12Y 103/08004 . . Isovaleryl-CoA dehydrogenase (1.3.8.4)
- N C12Y 103/08005 . . 2-Methyl-branched-chain-enoyle-CoA reductase (1.3.8.5)
- N C12Y 103/08006 . . Glutaryl-CoA dehydrogenase (1.3.8.6)
- N C12Y 103/08007 . . Medium-chain acyl-CoA dehydrogenase (1.3.8.7)
- N C12Y 103/08008 . . Long-chain acyl-CoA dehydrogenase (1.3.8.8)
- N C12Y 103/08009 . . Very-long-chain acyl-CoA dehydrogenase (1.3.8.9)
- U C12Y 103/99 . . with other acceptors (1.3.99)
- C12Y 103/99003 . . Acyl-CoA dehydrogenase (1.3.99.3) (*C12Y 103/08007, C12Y 103/08008 and C12Y 103/08009 take precedence*)
- C12Y 103/99005 . . 3-Oxo-5~~5~~alpha-alpha-steroid 4-dehydrogenase (*acceptor*) (1.3.99.5), *i.e. steroid-5~~5~~alpha-alpha-reductase*
- D C12Y 103/99007 . . Glutaryl-CoA dehydrogenase (1.3.99.7)
- D C12Y 103/9901 . . Isovaleryl-CoA dehydrogenase (1.3.99.10)
- D C12Y 103/99013 . . Long-chain-acyl-CoA dehydrogenase (1.3.99.13)
- D C12Y 103/99021 . . (R)-Benzylsuccinyl-CoA dehydrogenase (1.3.99.21)
- N C12Y 103/99032 . . Glutaryl-CoA dehydrogenase (*non-decarboxylating*) (1.3.99.32)
- U C12Y 104/00 Oxidoreductases acting on the CH-NH₂ group of donors (1.4)**
- U C12Y 104/01 . . with NAD⁺ or NADP⁺ as acceptor (1.4.1)
- N C12Y 104/01023 . . Valine dehydrogenase (NAD⁺) (1.4.1.23)
- N C12Y 104/01024 . . 3-Dehydroquininate synthase II (1.4.1.24)

- U C12Y 104/03 • with oxygen as acceptor (1.4.3)
- N C12Y 104/03024 • • *Pseudooxynicotine oxidase (1.4.3.24)*
- U C12Y 105/00 Oxidoreductases acting on the CH-NH group of donors (1.5)**
- U C12Y 105/01 • with NAD+ or NADP+ as acceptor (1.5.1)
- N C12Y 105/01043 • • *Carboxynorspermidine synthase (1.5.1.43)*
- N C12Y 105/01044 • • *Festuelavine dehydrogenase (1.5.1.44)*
- N C12Y 105/01045 • • *FAD reductase [NAD(P)H] (1.5.1.45)*
- U C12Y 105/03 • with oxygen as acceptor (1.5.3)
- N C12Y 105/03019 • • *4-Methylaminobutanoate oxidase (formaldehyde-forming) (1.5.3.19)*
- N C12Y 105/0302 • • *N-Alkylglycine oxidase (1.5.3.20)*
- N C12Y 105/03021 • • *4-Methylaminobutanoate oxidase (methylamine-forming) (1.5.3.21)*
- U C12Y 105/08 • with a flavin as acceptor (1.5.8)
- N C12Y 105/08003 • • *Sarcosine dehydrogenase (1.5.8.3)*
- N C12Y 105/08004 • • *Dimethylglycine dehydrogenase (1.5.8.4)*
- U C12Y 105/99 • with other acceptors (1.5.99)
- D C12Y 105/99001 • • *Sarcosine dehydrogenase (1.5.99.1)*
- D C12Y 105/99002 • • *Dimethylglycine dehydrogenase (1.5.99.2)*
- N C12Y 105/99014 • • *6-Hydroxypseudooxynicotine dehydrogenase (1.5.99.14)*
- U C12Y 107/00 Oxidoreductases acting on other nitrogenous compounds as donors (1.7)**
- U C12Y 107/02 • with a cytochrome as acceptor (1.7.2)
- N C12Y 107/02006 • • *Hydroxylamine dehydrogenase (1.7.2.6)*
- U C12Y 113/00 Oxidoreductases acting on single donors with incorporation of molecular oxygen (oxygenases) (1.13)**
- U C12Y 113/11 • with incorporation of two atoms of oxygen (1.13.11)
- D C12Y 113/11013 • • *Ascorbate 2,3-dioxygenase (1.13.11.13)*
- N C12Y 113/11063 • • *Beta-carotene 15,15'-dioxygenase (1.13.11.63)*
- N C12Y 113/11064 • • *5-Nitrosalicylate dioxygenase (1.13.11.64)*
- N C12Y 113/11065 • • *Carotenoid isomeroxygenase (1.13.11.65)*
- N C12Y 113/11066 • • *Hydroquinone 1,2-dioxygenase (1.13.11.66)*
- N C12Y 113/11067 • • *8'-Apo-beta-carotenoid 14',13'-cleaving dioxygenase (1.13.11.67)*
- N C12Y 113/11068 • • *9-Cis-beta-carotene 9',10'-cleaving dioxygenase (1.13.11.68)*
- N C12Y 113/11069 • • *Carlactone synthase (1.13.11.69)*
- N C12Y 113/1107 • • *All-trans-10'-apo-beta-carotenal 13,14'-cleaving dioxygenase (1.13.11.70)*
- N C12Y 113/11071 • • *Carotenoid-9',10'-cleaving dioxygenase (1.13.11.71)*
- N C12Y 113/11072 • • *2-Hydroxyethylphosphonate dioxygenase (1.13.11.72)*
- N C12Y 113/11073 • • *Methylphosphonate synthase (1.13.11.73)*
- U C12Y 113/12 • with incorporation of one atom of oxygen (internal monooxygenases or internal mixed function oxidases)(1.13.12)
- D C12Y 113/12012 • • *Apo-beta-carotenoid-14',13'-dioxygenase (1.13.12.12)*
- U C12Y 114/00 Oxidoreductases acting on paired donors, with incorporation or reduction of molecular oxygen (1.14)**
- U C12Y 114/11 • with 2-oxoglutarate as one donor, and incorporation of one atom each of oxygen into both donors (1.14.11)
- C12Y 114/11027 • • *[Histone H3]-lysine-36 demethylase (1.14.11.27)*

- N C12Y 114/11035 . . 1-Deoxypentalenic acid 11beta-hydroxylase (1.14.11.35)
- N C12Y 114/11036 . . Pentalenolactone F synthase (1.14.11.36)
- U C12Y 114/12 . with NADH or NADPH as one donor, and incorporation of two atoms of oxygen into one donor (1.14.12)
- C12Y 114/12013 . . 2-ChlorobenzoateHalobenzoate 1,2-dioxygenase (1.14.12.13)
- U C12Y 114/13 . with NADH or NADPH as one donor, and incorporation of one atom of oxygen (1.14.13)
- C12Y 114/13039 . . Nitric-oxide synthase (NADPH dependent) (1.14.13.39), i.e. NOS
- C12Y 114/13059 . . L-Lysine 6N6-monooxygenase (NADPH) (1.14.13.59)
- C12Y 114/13108 . . AbietadieneAbieta-7,13-diene hydroxylase (1.14.13.108)
- C12Y 114/13109 . . AbietadienolAbieta-7,13-dien-18-ol hydroxylase (1.14.13.109)
- N C12Y 114/13137 . . Indole-2-monooxygenase (1.14.13.137)
- N C12Y 114/13138 . . Indolin-2-one monooxygenase (1.14.13.138)
- N C12Y 114/13139 . . 3-Hydroxyindolin-2-one monooxygenase (1.14.13.139)
- N C12Y 114/1314 . . 2-Hydroxy-1,4-benzoxazin-3-one monooxygenase (1.14.13.140)
- N C12Y 114/13141 . . Cholest-4-en-3-one 26-monooxygenase (1.14.13.141)
- N C12Y 114/13142 . . 3-Ketosteroid 9alpha-monooxygenase (1.14.13.142)
- N C12Y 114/13143 . . Ent-isokaurene C2-hydroxylase (1.14.13.143)
- N C12Y 114/13144 . . 9Beta-pimara-7,15-diene oxidase (1.14.13.144)
- N C12Y 114/13145 . . Ent-cassa-12,15-diene 11-hydroxylase (1.14.13.145)
- N C12Y 114/13146 . . Taxoid 14beta-hydroxylase (1.14.13.146)
- N C12Y 114/13147 . . Taxoid 7beta-hydroxylase (1.14.13.147)
- N C12Y 114/13148 . . Trimethylamine monooxygenase (1.14.13.148)
- N C12Y 114/13149 . . Phenylacetyl-CoA 1,2-epoxidase (1.14.13.149)
- N C12Y 114/1315 . . Alpha-humulene 10-hydroxylase (1.14.13.150)
- N C12Y 114/13151 . . Linalool 8-monooxygenase (1.14.13.151)
- N C12Y 114/13152 . . Geraniol 8-hydroxylase (1.14.13.152)
- N C12Y 114/13153 . . (+)-Sabinene 3-hydroxylase (1.14.13.153)
- N C12Y 114/13154 . . Erythromycin 12 hydroxylase (1.14.13.154)
- N C12Y 114/13155 . . Alpha-pinene monooxygenase (1.14.13.155)
- N C12Y 114/13156 . . 1,8-Cineole 2-endo-monooxygenase (1.14.13.156)
- N C12Y 114/13157 . . 1,8-Cineole 2-exo-monooxygenase (1.14.13.157)
- N C12Y 114/13158 . . Amorpha-4,11-diene 12-monooxygenase (1.14.13.158)
- N C12Y 114/13159 . . Vitamin D 25-hydroxylase (1.14.13.159)
- N C12Y 114/1316 . . (2,2,3-Trimethyl-5-oxocyclopent-3-enyl)acetyl-CoA 1,5-monooxygenase (1.14.13.160)
- N C12Y 114/13161 . . (+)-Camphor 6-exo-hydroxylase (1.14.13.161)
- N C12Y 114/13162 . . 2,5-Diketocamphane 1,2-monooxygenase (1.14.13.162), i.e. camphor 1,2-monooxygenase
- N C12Y 114/13163 . . 6-Hydroxy-3-succinoylpyridine 3-monooxygenase (1.14.13.163)
- N C12Y 114/13165 . . Nitric-oxide synthase [NAD(P)H-dependent] (1.14.13.165)
- N C12Y 114/13166 . . 4-Nitrocatechol 4-monooxygenase (1.14.13.166)
- N C12Y 114/13167 . . 4-Nitrophenol 4-monooxygenase (1.14.13.167)
- N C12Y 114/13168 . . Indole-3-pyruvate monooxygenase (1.14.13.168)
- N C12Y 114/13169 . . Sphinganine C4-monooxygenase (1.14.13.169)

- N C12Y 114/1317 • • *Pentalenolactone D synthase (1.14.13.170)*
- N C12Y 114/13171 • • *Neopentalenolactone D synthase (1.14.13.171)*
- U C12Y 114/14 • with reduced flavin or flavoprotein as one donor, and incorporation of one atom of oxygen (1.14.14)
- N C12Y 114/14013 • • *4-(L-Gamma-glutamylamino)butanoyl-[Btrl acyl-carrier protein] monooxygenase (1.14.14.13)*
- U C12Y 114/15 • with reduced iron-sulfur protein as one donor, and incorporation of one atom of oxygen (1.14.15)
- D C12Y 114/15002 • • *Camphor 1,2-monooxygenase (1.14.15.2)*
- N C12Y 114/15009 • • *Spheroidene monooxygenase (1.14.15.9)*
- N C12Y 114/1501 • • *(+)-Camphor 6-endo-hydroxylase (1.14.15.10)*
- N C12Y 114/15011 • • *Pentalenic acid synthase (1.14.15.11)*
- U C12Y 114/18 • with another compound as one donor, and incorporation of one atom of oxygen (1.14.18)
- C12Y 114/18001 • • **Monophenol monooxygenase** *Tyrosinase* (1.14.18.1)
- U C12Y 114/20 • with 2-oxoglutarate as one donor, and the other dehydrogenated (1.14.20)
- N C12Y 114/20002 • • *2,4-Dihydroxy-1,4-benzoxazin-3-one-glucoside dioxygenase (1.14.20.2)*
- U C12Y 114/99 • Miscellaneous (1.14.99)
- D C12Y 114/99028 • • *Linalool 8-monooxygenase (1.14.99.28)*
- N C12Y 114/99046 • • *Pyrimidine oxygenase (1.14.99.46)*
- N C12Y 114/99047 • • *(+)-Larreatricin hydroxylase (1.14.99.47)*
- U C12Y 116/00 Oxidoreductases oxidizing metal ions (1.16)**
- U C12Y 116/01 • with NAD⁺ or NADP⁺ as acceptor (1.16.1)
- C12Y 116/01008 • • *[Methionine synthase] reductase (1.16.1.8)*
- U C12Y 117/00 Oxidoreductases acting on CH or CH₂ groups (1.17)**
- U C12Y 117/02 • with a cytochrome as acceptor (1.17.2)
- N C12Y 117/02002 • • *Lupanine 17-hydroxylase (cytochrome c) (1.17.2.2)*
- U C12Y 118/00 Oxidoreductases acting on iron-sulfur proteins as donors (1.18)**
- U C12Y 118/01 • with NAD⁺ or NADP⁺ as acceptor (1.18.1)
- N C12Y 118/01005 • • *Putidaredoxin—NAD⁺ reductase (1.18.1.5)*
- N C12Y 118/01006 • • *Adrenodoxin-NADP⁺ reductase (1.18.1.6)*
- U C12Y 121/00 Oxidoreductases acting on X-H and Y-H to form an X-Y bond (1.21)**
- U C12Y 121/03 • with oxygen as acceptor (1.21.3)
- N C12Y 121/03007 • • *Tetrahydrocannabinolic acid synthase (1.21.3.7)*
- N C12Y 121/03008 • • *Cannabidiolic acid synthase (1.21.3.8)*
- U C12Y 197/00 Other oxidoreductases (1.97)**
- U C12Y 197/01 • other oxidoreductases (1.97.1)
- C12Y 197/01004 • • *[Formate-C-acetyltransferase] activating enzyme (1.97.1.4)*
- U C12Y 201/00 Transferases transferring one-carbon groups (2.1)**
- U C12Y 201/01 • Methyltransferases (2.1.1)
- C12Y 201/01059 • • *[Cytochrome c] lysine N-methyltransferase (2.1.1.59)*
- C12Y 201/0109 • • *Methanol--5-hydroxybenzimidazolylcobamide—corrinoide protein* Co-methyltransferase (2.1.1.90)
- C12Y 201/01123 • • *[Cytochrome c] methionine S-methyltransferase (2.1.1.123)*

C12Y 201/01124	• • [Cytochrome <i>c</i>]-arginine N-methyltransferase (2.1.1.124)
C12Y 201/01126	• • [Myelin basic protein]-arginine N-methyltransferase (2.1.1.126)
C12Y 201/01127	• • [Ribulose-bisphosphate carboxylase]-lysine N-methyltransferase (2.1.1.127)
C12Y 201/01233	• • [Phosphatase 2A protein]-leucine-carboxy methyltransferase (2.1.1.233)
N C12Y 201/01239	• • <i>L</i> -Olivosyl-oleandolide 3-O-methyltransferase (2.1.1.239)
N C12Y 201/0124	• • <i>Trans</i> -resveratrol di-O-methyltransferase (2.1.1.240)
N C12Y 201/01241	• • 2,4,7-Trihydroxy-1,4-benzoxazin-3-one-glucoside 7-O-methyltransferase (2.1.1.241)
N C12Y 201/01242	• • 16S rRNA (guanine1516-N2)-methyltransferase (2.1.1.242)
N C12Y 201/01243	• • 2-Ketoarginine methyltransferase (2.1.1.243)
N C12Y 201/01244	• • Protein N-terminal methyltransferase (2.1.1.244)
N C12Y 201/01245	• • 5-Methyltetrahydrosarcinapterin:corrinoide/iron-sulfur protein Co-methyltransferase (2.1.1.245)
N C12Y 201/01246	• • [Methyl-Co(III) methanol-specific corrinoide protein]:coenzyme M methyltransferase (2.1.1.246)
N C12Y 201/01247	• • [Methyl-Co(III) methylamine-specific corrinoide protein]:coenzyme M methyltransferase (2.1.1.247)
N C12Y 201/01248	• • Methylamine—corrinoide protein Co-methyltransferase (2.1.1.248)
N C12Y 201/01249	• • Dimethylamine—corrinoide protein Co-methyltransferase (2.1.1.249)
N C12Y 201/0125	• • Trimethylamine—corrinoide protein Co-methyltransferase (2.1.1.250)
N C12Y 201/01251	• • Methylated-thiol—coenzyme M methyltransferase (2.1.1.251)
N C12Y 201/01252	• • Tetramethylammonium—corrinoide protein Co-methyltransferase (2.1.1.252)
N C12Y 201/01253	• • [Methyl-Co(III) tetramethylammonium-specific corrinoide protein]:coenzyme M methyltransferase (2.1.1.253)
N C12Y 201/01254	• • Erythromycin 3"-O-methyltransferase (2.1.1.254)
N C12Y 201/01255	• • Geranyl diphosphate 2-C-methyltransferase (2.1.1.255)
N C12Y 201/01256	• • tRNA (guanine6-N2)-methyltransferase (2.1.1.256)
N C12Y 201/01257	• • tRNA (pseudouridine54-N1)-methyltransferase (2.1.1.257)
N C12Y 201/01258	• • 5-Methyltetrahydrofolate:corrinoide/iron-sulfur protein Co-methyltransferase (2.1.1.258)
N C12Y 201/01259	• • [Fructose-bisphosphate aldolase]-lysine N-methyltransferase (2.1.1.259)
N C12Y 201/0126	• • rRNA small subunit pseudouridine methyltransferase Nep1 (2.1.1.260)
N C12Y 201/01261	• • 4-Dimethylallyltryptophan N-methyltransferase (2.1.1.261)
N C12Y 201/01262	• • Squalene methyltransferase (2.1.1.262)
N C12Y 201/01263	• • Botryococcene C-methyltransferase (2.1.1.263)
N C12Y 201/01264	• • 23S rRNA (guanine2069-N7)-methyltransferase (2.1.1.264)
N C12Y 201/01265	• • Tellurite methyltransferase (2.1.1.265)
U C12Y 202/00	Transferases transferring aldehyde or ketonic groups (2.2)
U C12Y 202/01	• Transketolases and transaldolases (2.2.1)
N C12Y 202/0101	• • 2-Amino-3,7-dideoxy-D-threo-hept-6-ulosonate synthase (2.2.1.10)
N C12Y 202/01011	• • 6-Deoxy-5-ketofructose 1-phosphate synthase (2.2.1.11)
U C12Y 203/00	Acyltransferases (2.3)
U C12Y 203/01	• transferring groups other than amino-acyl groups (2.3.1)
C12Y 203/01038	• • [Acyl-carrier-protein] S-acetyltransferase (2.3.1.38)
C12Y 203/0104	• • Acyl-[acyl-carrier-protein]-phospholipid O-acyltransferase (2.3.1.40)

C12Y 203/01049	• • Deacetyl-[citrate-(pro-3S)-lyase] S-acetyltransferase (2.3.1.49)
C12Y 203/011	• • [Myelin-proteolipid] O-palmitoyltransferase (2.3.1.100)
C12Y 203/01177	• • Biphenyl3,5-Dihydroxybiphenyl synthase (2.3.1.177)
N C12Y 203/01197	• • dTDP-3-amino-3,6-dideoxy-alpha-D-galactopyranose 3-N-acetyltransferase (2.3.1.197)
N C12Y 203/01198	• • Glycerol-3-phosphate 2-O-acyltransferase (2.3.1.198)
N C12Y 203/01199	• • Very-long-chain 3-oxoacyl-CoA synthase (2.3.1.199)
N C12Y 203/012	• • Lipoyl amidotransferase (2.3.1.200)
N C12Y 203/01201	• • UDP-2-acetamido-3-amino-2,3-dideoxy-glucuronate N-acetyltransferase (2.3.1.201)
N C12Y 203/01202	• • UDP-4-amino-4,6-dideoxy-N-acetyl-beta-L-altrosamine N-acetyltransferase (2.3.1.202)
N C12Y 203/01203	• • UDP-4-amino-4,6-dideoxy-N-acetyl-alpha-D-glucosamine N-acetyltransferase (2.3.1.203)
N C12Y 203/01204	• • Octanoyl-[GcvH]:protein N-octanoyltransferase (2.3.1.204)
N C12Y 203/01205	• • Fumigaclavine B O-acetyltransferase (2.3.1.205)
N C12Y 203/01206	• • 3,5,7-Trioxododecanoyl-CoA synthase (2.3.1.206)
N C12Y 203/01207	• • Beta-ketodecanoyl-[acyl-carrier-protein] synthase (2.3.1.207)
N C12Y 203/01208	• • 4-Hydroxycoumarin synthase (2.3.1.208)
N C12Y 203/01209	• • dTDP-4-amino-4,6-dideoxy-D-glucose acyltransferase (2.3.1.209)
N C12Y 203/0121	• • dTDP-4-amino-4,6-dideoxy-D-galactose acyltransferase (2.3.1.210)
U C12Y 203/02	• Aminoacyltransferases (2.3.2)
N C12Y 203/02019	• • Ribostamycin:4-(gamma-L-glutamylamino)-(S)-2-hydroxybutanoyl-[Btrl acyl-carrier protein] 4-(gamma-L-glutamylamino)-(S)-2-hydroxybutanoate transferase (2.3.2.19)
U C12Y 204/00	Glycosyltransferases (2.4)
U C12Y 204/01	• Hexosyltransferases (2.4.1)
D C12Y 204/01119	• • Dolichyl-diphosphooligosaccharide--protein glycotransferase (2.4.1.119)
C12Y 204/01131	• • GDP-Man:Man(3)GlcNAc2Man:Man3GlcNAc2-PP-Dol dolichol alpha-1,2-mannosyltransferase (2.4.1.131)
C12Y 204/01132	• • GDP-Man:Man(1)GlcNAc2Man:Man1GlcNAc2-PP-Dol dolichol alpha-1,3-mannosyltransferase (2.4.1.132)
C12Y 204/01229	• • [Skp1-protein]-hydroxyproline N-acetylglucosaminyltransferase (2.4.1.229)
C12Y 204/01256	• • Dol Dolichyl -P-Glc:Glc2Man9GlcNAc2-PP-Dol dolichol alpha-1,2-glucosyltransferase (2.4.1.256)
C12Y 204/01257	• • GDP-Man:Man2GlcNAc2-PP-Dol dolichol alpha-1,6-mannosyltransferase (2.4.1.257)
C12Y 204/01258	• • Dol Dolichyl -P-Man:Man5GlcNAc2-PP-Dol dolichol alpha-1,3-mannosyltransferase (2.4.1.258)
C12Y 204/01259	• • Dol Dolichyl -P-Man:Man6GlcNAc2-PP-Dol dolichol alpha-1,2-mannosyltransferase (2.4.1.259)
C12Y 204/0126	• • Dol Dolichyl -P-Man:Man7GlcNAc2-PP-Dol dolichol alpha-1,6-mannosyltransferase (2.4.1.260)
C12Y 204/01261	• • Dol Dolichyl -P-Man:Man8GlcNAc2-PP-Dol dolichol alpha-1,2-mannosyltransferase (2.4.1.261)
C12Y 204/01265	• • Dol Dolichyl -P-Glc:Glc1Man9GlcNAc2-PP-Dol dolichol alpha-1,3->3-glucosyltransferase (2.4.1.265)

- C12Y 204/01267 • • *DelDolichyl*-P-Glc:Man9GlcNAc2-PP-*Deldolichol* alpha-1,3->3-glucosyltransferase (2.4.1.267)
- N C12Y 204/01278 • • *Desosaminyl transferase EryCIII* (2.4.1.278)
- N C12Y 204/01279 • • *Nigerose phosphorylase* (2.4.1.279)
- N C12Y 204/0128 • • *N,N'-Diacetylchitobiose phosphorylase* (2.4.1.280)
- N C12Y 204/01281 • • *4-O-Beta-D-mannosyl-D-glucose phosphorylase* (2.4.1.281)
- N C12Y 204/01282 • • *3-O-Alpha-D-glucosyl-L-rhamnose phosphorylase* (2.4.1.282)
- N C12Y 204/01283 • • *2-Deoxystreptamine N-acetyl-D-glucosaminyltransferase* (2.4.1.283)
- N C12Y 204/01284 • • *2-Deoxystreptamine glucosyltransferase* (2.4.1.284)
- N C12Y 204/01285 • • *UDP-GlcNAc:ribostamycin N-acetylglucosaminyltransferase* (2.4.1.285)
- N C12Y 204/01286 • • *Chalcone 4'-O-glucosyltransferase* (2.4.1.286)
- N C12Y 204/01287 • • *Rhamnopyranosyl-N-acetylglucosaminyl-diphospho-decaprenol beta-1,3/1,4-galactofuranosyltransferase* (2.4.1.287)
- N C12Y 204/01288 • • *Galactofuranosylgalactofuranosylrhamnosyl-N-acetylglucosaminyl-diphospho-decaprenol beta-1,5/1,6-galactofuranosyltransferase* (2.4.1.288)
- N C12Y 204/01289 • • *N-Acetylglucosaminyl-diphospho-decaprenol L-rhamnosyltransferase* (2.4.1.289)
- N C12Y 204/0129 • • *N,N'-Diacetylbacillosaminyl-diphospho-undecaprenol alpha-1,3-N-acetylgalactosaminyltransferase* (2.4.1.290)
- N C12Y 204/01291 • • *N-Acetylgalactosamine-N,N'-diacetylbacillosaminyl-diphospho-undecaprenol 4-alpha-N-acetylgalactosaminyltransferase* (2.4.1.291)
- N C12Y 204/01292 • • *GalNAc-alpha-(1→4)-GalNAc-alpha-(1→3)-diNAcBac-PP-undecaprenol alpha-1,4-N-acetyl-D-galactosaminyltransferase* (2.4.1.292)
- N C12Y 204/01293 • • *GalNAc5-diNAcBac-PP-undecaprenol beta-1,3-glucosyltransferase* (2.4.1.293)
- U C12Y 204/02 • Pentosyltransferases (2.4.2)
- C12Y 204/02029 • • *tRNA-guanineguanosine34* transglycosylase (2.4.2.29)
- N C12Y 204/02045 • • *Decaprenyl-phosphate phosphoribosyltransferase* (2.4.2.45)
- N C12Y 204/02046 • • *Galactan 5-O-arabinofuranosyltransferase* (2.4.2.46)
- N C12Y 204/02047 • • *Arabinofuranan 3-O-arabinosyltransferase* (2.4.2.47)
- N C12Y 204/02048 • • *tRNA-guanine15* transglycosylase (2.4.2.48)
- U C12Y 204/99 • transferring other glycosyl groups (2.4.99)
- N C12Y 204/99016 • • *Starch synthase (maltosyl-transferring)* (2.4.99.16)
- N C12Y 204/99017 • • *S-Adenosylmethionine:tRNA ribosyltransferase-isomerase* (2.4.99.17)
- N C12Y 204/99018 • • *Dolichyl-diphosphooligosaccharide—protein glycotransferase* (2.4.99.18)
- N C12Y 204/99019 • • *Undecaprenyl-diphosphooligosaccharide—protein glycotransferase* (2.4.99.19)
- U C12Y 205/00** **Transferases transferring alkyl or aryl groups, other than methyl groups (2.5)**
- U C12Y 205/01 • transferring alkyl or aryl groups, other than methyl groups (2.5.1)
- C12Y 205/01032 • • *Phytoene 15-Cis-phytoene* synthase (2.5.1.32)
- C12Y 205/01095 • • *KetalXanthan ketal* pyruvate transferase (2.5.1.95)
- N C12Y 205/01098 • • *Rhizobium leguminosarum exopolysaccharide glucosyl ketal-pyruvate-transferase* (2.5.1.98)
- N C12Y 205/01099 • • *All-trans-phytoene synthase* (2.5.1.99)
- N C12Y 205/011 • • *Fumigaclavine A dimethylallyltransferase* (2.5.1.100)
- N C12Y 205/01101 • • *N,N'-Diacetyllegionaminate synthase* (2.5.1.101)

- N C12Y 205/01102 . . Geranyl-pyrophosphate—olivetolic acid geranyltransferase (2.5.1.102)
- N C12Y 205/01103 . . Presqualene diphosphate synthase (2.5.1.103)
- U C12Y 206/00 Transferases transferring nitrogenous groups (2.6)**
- U C12Y 206/01 . Transaminases (2.6.1)
- C12Y 206/01019 . . 4-Aminobutyrate—2-oxoglutarate transaminase (2.6.1.19)
- N C12Y 206/01093 . . Neamine transaminase (2.6.1.93)
- N C12Y 206/01094 . . 2'-Deamino-2'-hydroxyneamine transaminase (2.6.1.94)
- N C12Y 206/01095 . . Neomycin C transaminase (2.6.1.95)
- N C12Y 206/01096 . . 4-Aminobutyrate—pyruvate transaminase (2.6.1.96)
- N C12Y 206/01097 . . Archaeosine synthase (2.6.1.97)
- N C12Y 206/01098 . . UDP-2-acetamido-2-deoxy-ribo-hexuluronate aminotransferase (2.6.1.98)
- N C12Y 206/01099 . . L-Tryptophan—pyruvate aminotransferase (2.6.1.99)
- 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)
- N C12Y 207/01173 . . Nicotinate riboside kinase (2.7.1.173)
- N C12Y 207/01174 . . Diacylglycerol kinase (CTP dependent) (2.7.1.174)
- N C12Y 207/01175 . . Maltokinase (2.7.1.175)
- N C12Y 207/01176 . . UDP-N-acetylglucosamine kinase (2.7.1.176)
- N C12Y 207/01177 . . L-Threonine kinase (2.7.1.177)
- U C12Y 207/04 . Phosphotransferases with a phosphate group as acceptor (2.7.4)
- N C12Y 207/04026 . . Isopentenyl phosphate kinase (2.7.4.26)
- N C12Y 207/04027 . . [Pyruvate, phosphate dikinase]-phosphate phosphotransferase (2.7.4.27)
- N C12Y 207/04028 . . [Pyruvate, water dikinase]-phosphate phosphotransferase (2.7.4.28)
- U C12Y 207/07 . Nucleotidyltransferases (2.7.7)
- C12Y 207/07042 . . [Glutamate--ammonia-ligase] adenyllyltransferase (2.7.7.42)
- C12Y 207/07059 . . [Protein-P1I] uridylyltransferase (2.7.7.59)
- C12Y 207/07061 . . Citrate lyase holo-[acyl-carrier-protein] synthase (2.7.7.61)
- C12Y 207/07066 . . Malonate decarboxylase holo-[acyl-carrier-protein] synthase (2.7.7.66)
- N C12Y 207/07081 . . Pseudaminic acid cytidyltransferase (2.7.7.81)
- N C12Y 207/07082 . . CMP-N,N'-diacetyllegionaminic acid synthase (2.7.7.82)
- N C12Y 207/07083 . . UDP-N-acetylgalactosamine diphosphorylase (2.7.7.83)
- U C12Y 207/08 . Transferases for other substituted phosphate groups (2.7.8)
- C12Y 207/08007 . . Holo-[acyl-carrier-protein] synthase (2.7.8.7)
- N C12Y 207/08035 . . UDP-N-acetylglucosamine—decaprenyl-phosphate N-acetylglucosaminephosphotransferase (2.7.8.35)
- N C12Y 207/08036 . . Undecaprenyl phosphate N,N'-diacetylbacillosamine 1-phosphate transferase (2.7.8.36)
- N C12Y 207/08037 . . Alpha-D-ribose 1-methylphosphonate 5-triphosphate synthase (2.7.8.37)
- U C12Y 207/11 . Protein-serine/threonine kinases (2.7.11)
- C12Y 207/11003 . . Dephospho-[reductase kinase] kinase (2.7.11.3)
- C12Y 207/11004 . . [3-Methyl-2-oxobutanoate dehydrogenase (acetyl-transferring)] kinase (2.7.11.4)
- C12Y 207/11005 . . [Isocitrate dehydrogenase (NADP+)] kinase (2.7.11.5)
- C12Y 207/11006 . . [Tyrosine 3-monooxygenase] kinase (2.7.11.6)

- C12Y 207/11007 • • [Myosin-heavy-chain] kinase (2.7.11.7)
- C12Y 207/11015 • • [Beta-adrenergic-receptor] kinase (2.7.11.15)
- C12Y 207/11023 • • [RNA-polymerase-subunit] kinase (2.7.11.23)
- C12Y 207/11027 • • [Acetyl-CoA carboxylase] kinase (2.7.11.27)
- C12Y 207/11029 • • [Low-density-lipoprotein receptor] kinase (2.7.11.29)
- C12Y 207/11031 • • [Hydroxymethylglutaryl-CoA reductase (NADPH)] kinase (2.7.11.31)
- N C12Y 207/11032 • • [Pyruvate, phosphate dikinase] kinase (2.7.11.32)
- N C12Y 207/11033 • • [Pyruvate, water dikinase] kinase (2.7.11.33)

U C12Y 208/00**Transferases transferring sulfur-containing groups (2.8)**

- U C12Y 208/02 • Sulfotransferases (2.8.2)
- C12Y 208/02008 • • [Heparan sulfate]-glucosamine N-sulfotransferase (2.8.2.8)
- C12Y 208/02023 • • [Heparan sulfate]-glucosamine 3-sulfotransferase 1 (2.8.2.23)
- C12Y 208/02029 • • [Heparan sulfate]-glucosamine 3-sulfotransferase 2 (2.8.2.29)
- C12Y 208/0203 • • [Heparan sulfate]-glucosamine 3-sulfotransferase 3 (2.8.2.30)

U C12Y 301/00**Hydrolases acting on ester bonds (3.1)**

- U C12Y 301/01 • Carboxylic ester hydrolases (3.1.1)
- C12Y 301/01085 • • Pimelyl-[acyl-carrier protein] methyl ester esterase (3.1.1.85)
- N C12Y 301/01091 • • 2-Oxo-3-(5-oxofuran-2-ylidene)propanoate lactonase (3.1.1.91)
- N C12Y 301/01092 • • 4-Sulfomuconolactone hydrolase (3.1.1.92)
- N C12Y 301/01093 • • Mycophenolic acid acyl-glucuronide esterase (3.1.1.93)
- U C12Y 301/02 • Thioester hydrolases (3.1.2)
- C12Y 301/02021 • • Dodecanoyl-[acyl-carrier-protein] hydrolase (3.1.2.21)
- U C12Y 301/03 • Phosphoric monoester hydrolases (3.1.3)
- C12Y 301/03017 • • [Phosphorylase] phosphatase (3.1.3.17)
- C12Y 301/03042 • • [Glycogen-synthase-D] phosphatase (3.1.3.42)
- C12Y 301/03043 • • [Pyruvate dehydrogenase (acetyl-transferring)]-phosphatase (3.1.3.43)
- C12Y 301/03044 • • [Acetyl-CoA carboxylase]-phosphatase (3.1.3.44)
- C12Y 301/03047 • • [Hydroxymethylglutaryl-CoA reductase (NADPH)]-phosphatase (3.1.3.47)
- C12Y 301/03049 • • [Pyruvate kinase]-phosphatase (3.1.3.49)
- C12Y 301/03052 • • [3-Methyl-2-oxobutanoate dehydrogenase (2-methylpropanoyl-transferring)]-phosphatase (3.1.3.52)
- C12Y 301/03053 • • [Myosin-light-chain] phosphatase (3.1.3.53)
- N C12Y 301/03087 • • 2-Hydroxy-3-keto-5-methylthiopentenyl-1-phosphate phosphatase (3.1.3.87)
- N C12Y 301/03088 • • 5"-Phosphoribostamycin phosphatase (3.1.3.88)
- U C12Y 301/04 • Phosphoric diester hydrolases (3.1.4)
- C12Y 301/04014 • • [Acyl-carrier-protein] phosphodiesterase (3.1.4.14)
- C12Y 301/04015 • • Adenylyl-[glutamate--ammonia ligase] hydrolase (3.1.4.15)
- U C12Y 301/07 • Diphosphoric monoester hydrolases (3.1.7)
- N C12Y 301/0701 • • (13E)-Labda-7,13-dien-15-ol synthase (3.1.7.10)
- N C12Y 301/07011 • • Geranyl diphosphate diphosphatase (3.1.7.11)

U C12Y 302/00**Hydrolases acting on glycosyl compounds, i.e. glycosylases (3.2)**

- U C12Y 302/01 • Glycosidases, i.e. enzymes hydrolysing O- and S-glycosyl compounds (3.2.1)
- C12Y 302/01089 • • Arabinogalactan endo-1,4-beta-galactosidase 1,4-galactanase (3.2.1.89), i.e. endo-1,4-galactanase

- N C12Y 302/01181 . . Galactan endo-beta-1,3-galactanase (3.2.1.181)
- N C12Y 302/01182 . . 4-Hydroxy-7-methoxy-3-oxo-3,4-dihydro-2H-1,4-benzoxazin-2-yl glucoside beta-D-glucosidase (3.2.1.182)
- N C12Y 302/01183 . . UDP-N-acetylglucosamine 2-epimerase (hydrolysing) (3.2.1.183)
- N C12Y 302/01184 . . UDP-N,N'-diacetylbaucillosamine 2-epimerase (hydrolysing) (3.2.1.184)
- U C12Y 304/00 Hydrolases acting on peptide bonds i.e. peptidases (3.4)**
- U C12Y 304/19 . Omega peptidases (3.4.19)
- N C12Y 304/19014 . . Leukotriene-C4 hydrolase (3.4.19.14)
- U C12Y 304/21 . Serine endopeptidases (3.4.21)
- C12Y 304/21014 . . Microbial serine proteases (3.4.21.14) ([C12Y 304/21062](#) - ~~C12Y304/67~~
[C12Y 304/21067](#) takes precedence)
- U C12Y 305/00 Hydrolases acting on carbon-nitrogen bonds, other than peptide bonds (3.5)**
- U C12Y 305/01 . in linear amides (3.5.1)
- N C12Y 305/0111 . . Peroxyureidoacrylate/ureidoacrylate amidohydrolase (3.5.1.110)
- N C12Y 305/01111 . . 2-Oxoglutaramate amidase (3.5.1.111)
- N C12Y 305/01112 . . 2'-N-Acetylparomamine deacetylase (3.5.1.112)
- N C12Y 305/01113 . . 2'''-Acetyl-6'''-hydroxyneomycin C deacetylase (3.5.1.113)
- U C12Y 305/04 . in cyclic amidines (3.5.4)
- N C12Y 305/04032 . . 8-Oxoguanine deaminase (3.5.4.32)
- U C12Y 305/99 . in other compounds (3.5.99)
- N C12Y 305/99009 . . 2-Nitroimidazole nitrohydrolase (3.5.99.9)
- U C12Y 306/00 Hydrolases acting on acid anhydrides (3.6)**
- U C12Y 306/01 . in phosphorus-containing anhydrides (3.6.1)
- C12Y 306/01027 . . Undecaprenyl-diphosphatase diphosphate phosphatase (3.6.1.27)
- C12Y 306/0103 . . ~~M7G~~m7G(5')pppN diphosphatase (3.6.1.30) ([C12Y 306/01059](#) and
[C12Y 306/01062](#) take precedence)
- N C12Y 306/01058 . . 8-Oxo-dGDP phosphatase (3.6.1.58)
- N C12Y 306/01059 . . m7GpppX diphosphatase (3.6.1.59)
- N C12Y 306/0106 . . Diadenosine hexaphosphate hydrolase (AMP-forming) (3.6.1.60)
- N C12Y 306/01061 . . Diadenosine hexaphosphate hydrolase (ATP-forming) (3.6.1.61)
- N C12Y 306/01062 . . m7GpppN-mRNA hydrolase (3.6.1.62)
- N C12Y 306/01063 . . Alpha-D-ribose 1-methylphosphonate 5-triphosphate diphosphatase (3.6.1.63)
- U C12Y 307/00 Hydrolases acting on carbon-carbon bonds (3.7)**
- U C12Y 307/01 . in ketonic substances (3.7.1)
- N C12Y 307/01017 . . 4,5:9,10-Diseco-3-hydroxy-5,9,17-trioxoandrosta-1(10),2-diene-4-oate hydrolase (3.7.1.17)
- N C12Y 307/01018 . . 6-Oxocamphor hydrolase (3.7.1.18)
- N C12Y 307/01019 . . 2,6-Dihydroxypseudooxynicotine hydrolase (3.7.1.19)
- N C12Y 307/0102 . . 3-Fumarylpyruvate hydrolase (3.7.1.20)
- U C12Y 401/00 Carbon-carbon lyases (4.1)**
- U C12Y 401/01 . Carboxy-lyases (4.1.1)
- C12Y 401/01077 . . ~~42-Oxalocrotonate~~Oxo-3-hexenedioate decarboxylase (4.1.1.77)

- N C12Y 401/01094 . . Ethylmalonyl-CoA decarboxylase (4.1.1.94)
- N C12Y 401/01095 . . L-Glutamyl-[BtrI acyl-carrier protein] decarboxylase (4.1.1.95)
- N C12Y 401/01096 . . Carboxynorspermidine decarboxylase (4.1.1.96)
- U C12Y 401/02 . . Aldehyde-lyases (4.1.2)
- N C12Y 401/0205 . . 6-Carboxytetrahydropterin synthase (4.1.2.50)
- U C12Y 402/00 Carbon-oxygen lyases (4.2)**
- U C12Y 402/01 . . Hydro-lyases (4.2.1)
- D C12Y 402/01052 . . Dihydrodipicolinate synthase (4.2.1.52)
- D C12Y 402/01058 . . Crotonoyl-[acyl-carrier-protein] hydratase (4.2.1.58)
- C12Y 402/01059 . . 3-Hydroxyoctanoyl[Hydroxyacyl]-[acyl-carrier-protein] dehydratase (4.2.1.59)
- D C12Y 402/0106 . . 3-Hydroxydecanoyl-[acyl-carrier-protein] dehydratase (4.2.1.60)
- D C12Y 402/01061 . . 3-Hydroxypalmitoyl-[acyl-carrier-protein] dehydratase (4.2.1.61)
- N C12Y 402/01132 . . 2-Hydroxyhexa-2,4-dienoate hydratase (4.2.1.132)
- N C12Y 402/01133 . . Copal-8-ol diphosphate hydratase (4.2.1.133)
- N C12Y 402/01134 . . Very-long-chain (3R)-3-hydroxyacyl-[acyl-carrier protein] dehydratase (4.2.1.134)
- N C12Y 402/01135 . . UDP-N-acetylglucosamine 4,6-dehydratase (configuration-retaining) (4.2.1.135)
- N C12Y 402/01136 . . ADP-dependent NAD(P)H-hydrate dehydratase (4.2.1.136)
- N C12Y 402/01137 . . Sporulenol synthase (4.2.1.137)
- U C12Y 402/03 . . acting on phosphates (4.2.3)
- C12Y 402/03014 . . Pinene synthase (4.2.3.14) (C12Y 402/03119 and C12Y 402/0312 take precedence)
- C12Y 402/03018 . . AbietadieneAbieta-7,13-diene synthase (4.2.3.18)
- N C12Y 402/03094 . . Gamma-curcumene synthase (4.2.3.94)
- N C12Y 402/03095 . . (-)-Alpha-cuprenene synthase (4.2.3.95)
- N C12Y 402/03096 . . Avermitilol synthase (4.2.3.96)
- N C12Y 402/03097 . . (-)-Delta-cadinene synthase (4.2.3.97)
- N C12Y 402/03098 . . (+)-T-Muurolol synthase (4.2.3.98)
- N C12Y 402/03099 . . Labdatriene synthase (4.2.3.99)
- N C12Y 402/031 . . Bicyclogermacrene synthase (4.2.3.100)
- N C12Y 402/03101 . . 7-Epi-sesquithujene synthase (4.2.3.101)
- N C12Y 402/03102 . . Sesquithujene synthase (4.2.3.102)
- N C12Y 402/03103 . . Ent-isokaurene synthase (4.2.3.103)
- N C12Y 402/03104 . . Alpha-humulene synthase (4.2.3.104)
- N C12Y 402/03105 . . Tricyclene synthase (4.2.3.105)
- N C12Y 402/03106 . . (E)-Beta-ocimene synthase (4.2.3.106)
- N C12Y 402/03107 . . (+)-Car-3-ene synthase (4.2.3.107)
- N C12Y 402/03108 . . 1,8-Cineole synthase (4.2.3.108)
- N C12Y 402/03109 . . (-)-Sabinene synthase (4.2.3.109)
- N C12Y 402/0311 . . (+)-Sabinene synthase (4.2.3.110)
- N C12Y 402/03111 . . (-)-Alpha-terpineol synthase (4.2.3.111)
- N C12Y 402/03112 . . (+)-Alpha-terpineol synthase (4.2.3.112)
- N C12Y 402/03113 . . Terpinolene synthase (4.2.3.113)
- N C12Y 402/03114 . . Gamma-terpinene synthase (4.2.3.114)

- N C12Y 402/03115 . . *Alpha-terpinene synthase (4.2.3.115)*
- N C12Y 402/03116 . . *(+)-Camphene synthase (4.2.3.116)*
- N C12Y 402/03117 . . *(-)-Camphene synthase (4.2.3.117)*
- N C12Y 402/03118 . . *2-Methylisoborneol synthase (4.2.3.118)*
- N C12Y 402/03119 . . *(-)-Alpha-pinene synthase (4.2.3.119)*
- N C12Y 402/0312 . . *(-)-Beta-pinene synthase (4.2.3.120)*
- N C12Y 402/03121 . . *(+)-Alpha-pinene synthase (4.2.3.121)*
- N C12Y 402/03122 . . *Beta-pinene synthase (4.2.3.122)*
- N C12Y 402/03123 . . *Beta-sesquiphellandrene synthase (4.2.3.123)*
- N C12Y 402/03124 . . *2-Deoxy-scylo-inosose synthase (4.2.3.124)*
- N C12Y 402/03125 . . *Alpha-muurolene synthase (4.2.3.125)*
- N C12Y 402/03126 . . *Gamma-muurolene synthase (4.2.3.126)*
- N C12Y 402/03127 . . *Beta-copaene synthase (4.2.3.127)*
- N C12Y 402/03128 . . *Beta-cubebene synthase (4.2.3.128)*
- N C12Y 402/03129 . . *(+)-Sativene synthase (4.2.3.129)*
- N C12Y 402/0313 . . *Tetraprenyl-beta-curcumene synthase (4.2.3.130)*
- N C12Y 402/03131 . . *Miltiradiene synthase (4.2.3.131)*
- N C12Y 402/03132 . . *Neobietadiene synthase (4.2.3.132)*
- N C12Y 402/03133 . . *Alpha-copaene synthase (4.2.3.133)*
- N C12Y 402/03134 . . *5-Phosphonooxy-L-lysine phospho-lyase (4.2.3.134)*
- N C12Y 402/03135 . . *DELTA6-protoilludene synthase (4.2.3.135)*
- N C12Y 402/03136 . . *Alpha-isocomene synthase (4.2.3.136)*
- N C12Y 402/03137 . . *(E)-2-Epi-beta-caryophyllene synthase (4.2.3.137)*
- N C12Y 402/03138 . . *(+)-Epi-alpha-bisabolol synthase (4.2.3.138)*
- N C12Y 402/03139 . . *Valerena-4,7(11)-diene synthase (4.2.3.139)*
- N C12Y 402/0314 . . *Cis-abienol synthase (4.2.3.140)*

U C12Y 403/00**Carbon-nitrogen lyases (4.3)**

- U C12Y 403/01 . Ammonia-lyases (4.3.1)
- N C12Y 403/01028 . . *L-Lysine cyclodeaminase (4.3.1.28)*
- U C12Y 403/02 . Amidine-lyases (4.3.2)
- N C12Y 403/02006 . . *Gamma-L-glutamyl-butirosin B gamma-glutamyl cyclotransferase (4.3.2.6)*
- U C12Y 403/03 . Amine-lyases (4.3.3)
- N C12Y 403/03007 . . *4-Hydroxy-tetrahydrodipicolinate synthase (4.3.3.7)*
- U C12Y 403/99 . Other carbon-nitrogen lyases (4.3.99)
- N C12Y 403/99003 . . *7-Carboxy-7-deazaguanine synthase (4.3.99.3)*

U C12Y 404/00**Carbon-sulfur lyases (4.4)**

- U C12Y 404/01 . Carbon-sulfur lyases (4.4.1)
- N C12Y 404/01026 . . *Olivetolic acid cyclase (4.4.1.26)*

U C12Y 501/00**Racemases and epimerases (5.1)**

- U C12Y 501/03 . acting on carbohydrates and derivatives (5.1.3)
- C12Y 501/03014 . . UDP-N-acetylglucosamine 2-epimerase (*non-hydrolysing*) (5.1.3.14)
- N C12Y 501/03025 . . *dTDP-L-rhamnose 4-epimerase (5.1.3.25)*
- U C12Y 501/99 . acting on other compounds (5.1.99)

N	C12Y 501/99006	• • <i>NAD(P)H-hydrate epimerase (5.1.99.6)</i>
U	C12Y 502/00	Cis-trans-isomerases (5.2)
U	C12Y 502/01	• Cis-trans-Isomerases (5.2.1)
N	C12Y 502/01014	• • <i>Beta-carotene isomerase (5.2.1.14)</i>
U	C12Y 503/00	Intramolecular oxidoreductases (5.3)
U	C12Y 503/01	• interconverting aldoses and ketoses (5.3.1)
	C12Y 503/01017	• • <i>5-Dehydro-4-Deoxydeoxy-LD-threo-5-hexosulose-uronate ketol-glucuronate isomerase (5.3.1.17)</i>
U	C12Y 503/02	• interconverting keto- and enol-groups (5.3.2)
N	C12Y 503/02005	• • <i>2,3-Diketo-5-methylthiopentyl-1-phosphate enolase (5.3.2.5)</i>
N	C12Y 503/02006	• • <i>2-Hydroxyruconate tautomerase (5.3.2.6)</i>
U	C12Y 503/03	• transposing C=C bonds (5.3.3)
	C12Y 503/03014	• • <i>Trans-2-decenoyl-[acyl-carrier-protein] isomerase (5.3.3.14)</i>
U	C12Y 503/99	• Other intramolecular oxidoreductases (5.3.99)
N	C12Y 503/9901	• • <i>Thiazole tautomerase (5.3.99.10)</i>
U	C12Y 504/00	Intramolecular transferases (5.4)
U	C12Y 504/03	• transferring amino groups (5.4.3)
N	C12Y 504/03009	• • <i>Glutamate 2,3-aminomutase (5.4.3.9)</i>
U	C12Y 504/99	• transferring other groups (5.4.99)
N	C12Y 504/99057	• • <i>Baruol synthase (5.4.99.57)</i>
N	C12Y 504/99058	• • <i>Methylornithine synthase (5.4.99.58)</i>
U	C12Y 505/00	Intramolecular lyases (5.5)
U	C12Y 505/01	• Intramolecular lyases (5.5.1)
N	C12Y 505/01022	• • <i>(-)-Bornyl diphosphate synthase (5.5.1.22)</i>
U	C12Y 601/00	Ligases forming carbon-oxygen bonds (6.1)
U	C12Y 601/01	• Ligases forming aminoacyl-tRNA and related compounds (6.1.1)
D	C12Y 601/01025	• • <i>Lysine--tRNA(Pyl) ligase (6.1.1.25)</i>
U	C12Y 602/00	Ligases forming carbon-sulfur bonds (6.2)
U	C12Y 602/01	• Acid-Thiol Ligases (6.2.1)
	C12Y 602/0102	• • <i>Long-chain-fatty-acid--[acyl-carrier-protein] ligase (6.2.1.20)</i>
	C12Y 602/01022	• • <i>[Citrate (pro-3S)-lyase] ligase (6.2.1.22)</i>
N	C12Y 602/01038	• • <i>(2,2,3-Trimethyl-5-oxocyclopent-3-enyl)acetyl-CoA synthase (6.2.1.38)</i>
N	C12Y 602/01039	• • <i>[Butirosin acyl-carrier protein]—L-glutamate ligase (6.2.1.39)</i>
U	C12Y 603/00	Ligases forming carbon-nitrogen bonds (6.3)
U	C12Y 603/02	• Acid—amino-acid ligases (peptide synthases)(6.3.2)
D	C12Y 603/02027	• • <i>Aerobactin synthase (6.3.2.27)</i>
N	C12Y 603/02038	• • <i>N2-Citryl-N6-acetyl-N6-hydroxylysine synthase (6.3.2.38)</i>
N	C12Y 603/02039	• • <i>Aerobactin synthase (6.3.2.39)</i>
U	C12Y 603/04	• Other carbon-nitrogen ligases (6.3.4)
	C12Y 603/04009	• • <i>Biotin--[methylmalonyl-CoA-carboxytransferase] ligase (6.3.4.9)</i>
	C12Y 603/0401	• • <i>Biotin--[propionyl-CoA-carboxylase (ATP-hydrolyzing)] ligase (6.3.4.10)</i>
	C12Y 603/04011	• • <i>Biotin--[methylcrotonoyl-CoA-carboxylase] ligase (6.3.4.11)</i>

N C12Y 603/0402 · · 7-Cyano-7-deazaguanine synthase (6.3.4.20)

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}

- U C21C 5/52 · Manufacture of steel in electric furnaces ({C21C 5/005 takes precedence}; electric heating per se H05B)
- C21C 5/5211 · · {in an alternating current ([AC]) electric arc furnace}
- C21C 5/5229 · · {in a direct current ([DC]) electric arc furnace}
- C21C 5/56 · Manufacture of steel by other methods (making liquid steel by direct processes C21B 13/00 {; C21C 5/005 takes precedence}){(C21C 5/005 takes precedence)}

Project: N/A (C21D)

U C21D 8/00 Modifying the physical properties by deformation combined with, or followed by, heat treatment (hardening articles or materials formed by forging or rolling with no further heating beyond that required for the formation C21D 1/02)

- C21D 8/02 · during manufacturing of plates or strips (C21D 8/12 takes precedence)

NOTE

In this group classification is made according to the most important feature in one subgroup only; for other features indexing codes of M21D C21D are added

- C21D 8/04 · · to produce plates or strips for deep-drawing

NOTE

In this group classification is made according to the most important feature in one subgroup only; for other features indexing codes of M21D C21D are added

- C21D 8/12 · during manufacturing of articles with special electromagnetic properties

NOTE

In this group classification is made according to the most important feature in one subgroup only; for other features indexing codes of M21D C21D are added

U C21D 9/00 Heat treatment, e.g. annealing, hardening, quenching, tempering, adapted for particular articles; Furnaces therefor (furnaces in general F27)

- U C21D 9/52 · for wires; for strips; {for rods of unlimited length}

Project: N/A (C22B)

U C22B 1/00 Preliminary treatment of ores or scrap (furnaces, sintering apparatus F27B)

- U C22B 1/14 · Agglomerating; Briquetting; Binding; Granulating

- U C22B 1/24 · · Binding; Briquetting; {Granulating}

U C22B 3/00 Extraction of metal compounds from ores or concentrates by wet processes

NOTE

This group covers methods directed to the extraction of three or more metals. For the recovery of one or two metals, see the other groups of this subclass concerning these metals

- U C22B 3/04 · by leaching (C22B 3/18 takes precedence)

- C22B 3/06
- in inorganic acid solutions, {e.g. with acids generated in situ; in inorganic salt solutions other than ammonium salt solutions}
- C22B 3/08
- • Sulfuric acid, {other sulfurated acids or salts thereof}
- C22B 3/10
- • Hydrochloric acid, {other halogenated acids or salts thereof}
- U C22B 3/20
- Treatment or purification of solutions, e.g. obtained by leaching ([C22B 3/18](#) takes precedence)
- C22B 3/22
- by physical processes, e.g. by filtration, by magnetic means, {by thermal decomposition}{~~C22B3/26~~[C22B 3/005](#) takes precedence}
- 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 9/00
- General processes of refining or remelting of metals; Apparatus for electroslag or arc remelting of metals**
- C22B 9/10
- with refining or fluxing agents; use of materials therefor, {e.g. slagging or scorifying agents}{[C22B 9/18](#) takes precedence}{([C22B 9/006](#) takes precedence)}
- U C22B 19/00
- Obtaining zinc or zinc oxide**
- U C22B 19/20
- Obtaining zinc otherwise than by distilling
- C22B 19/26
- Refining solutions {containing zinc values, e.g.} obtained by leaching zinc ores {(treatment or purification of solutions by liquid-liquid extraction, by ion exchange or by adsorption [C22B 3/00](#))}

Project: N/A (C23C)

C23C

COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; SURFACE TREATMENT OF METALLIC MATERIAL BY DIFFUSION INTO THE SURFACE, BY CHEMICAL CONVERSION OR SUBSTITUTION; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL (applying liquids or other fluent materials to surfaces in general [B05](#); making metal-coated products by extrusion [B21C 23/22](#) ; covering with metal by connecting pre-existing layers to articles, see the relevant places, e.g. [B21D 39/00](#) , [B23K](#); working of metal by the action of a high concentration of electric current on a workpiece using an electrode [B23H](#); metallising of glass [C03C](#); metallising mortars, concrete, artificial stone, ceramics or natural stone [C04B 41/00](#) ; paints varnishes, laquers [C09D](#); enamelling of, or applying a vitreous layer to, metals [C23D](#); inhibiting corrosion of metallic material or incrustation in general [C23F](#); single-crystal film growth [C30B](#); manufacture of semiconductor devices [H01L](#); manufacture of printed circuits [H05K](#))

NOTE

In this subclass, an operation is considered as pre-treatment or after-treatment when it is specially adapted for, but quite distinct from, the coating process concerned and constitutes an independent operation. If an operation results in the formation of a permanent sub- or upper layer, it is not considered as pre-treatment or after-treatment and is classified as a multi-coating process.

WARNINGS

1. ~~1.~~ Groups [C23C 28/30](#) to [C23C 28/44](#) do not correspond to former or current IPC-groups. Concordance CPC : IPC for these groups is as follows - [C23C 28/30](#) - [C23C 28/44](#) : [C23C 28/00](#)
2. The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:

[C23C 14/36](#) to [C23C 14/44](#) covered by
[C23C 14/34](#) + subgr.

The following IPC group is not used in the CPC system.
Subject-matter covered by the group is classified in the
following CPC groups : [C23C 18/28](#) covered by
[C23C 18/2006](#) - [C23C 18/2093](#)

U C23C 2/00 Hot-dipping or immersion processes for applying the coating material in the molten state without affecting the shape; Apparatus therefor

- U C23C 2/14
 - Removing excess of molten coatings; Controlling or regulating the coating thickness (controlling or regulating thickness in general [G05D 5/02](#))
- C23C 2/22
 - • by rubbing, e.g. using knives, {e.g. rubbing solids}

C23C 16/00 Chemical coating by decomposition of gaseous compounds, without leaving reaction products of surface material in the coating, i.e. chemical vapour deposition ({CVD}) processes (reactive sputtering or vacuum evaporation [C23C 14/00](#))

- U C23C 16/44
 - characterised by the method of coating ([C23C 16/04](#) takes precedence)
- C23C 16/4414
 - • {Electrochemical vapour deposition ({EVD})}
- U C23C 16/455
 - • characterised by the method used for introducing gases into reaction chamber or for modifying gas flows in reaction chamber
- U C23C 16/45523
 - • • {Pulsed gas flow or change of composition over time}
- C23C 16/45525
 - • • • {Atomic layer deposition ({ALD})}

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](#) to [C23C 18/1295](#) are not complete pending a reorganisation. See also this group

- U C23C 18/125
 - • • {Process of deposition of the inorganic material}
- C23C 18/1262
 - • • • {involving particles, e.g. carbon nanotubes ({CNT}), flakes}

U C23C 28/00 Coating for obtaining at least two superposed coatings either by methods not provided for in a single one of groups [C23C 2/00](#) to [C23C 26/00](#) or by combinations of methods provided for in subclasses [C23C](#) and [C25C](#) or [C25D](#)

- C23C 28/02
 - only coatings {only including layers} of metallic material

Project: N/A (C23F)

- C23F 14/00
 - Inhibiting incrustation in apparatus for heating liquids for physical or chemical purposes (adding scale preventives or removers to water [C02F 5/00](#) {inhibiting incrustation in polymerisation reactors [C23F 15/005](#)})**

Project: N/A (C25D)**U C25D 3/00**

C25D 3/02

Electroplating: Baths therefor

- from solutions (**C25D5/24** **C25D 5/34** to **C25D5/32** **C25D 5/46** take precedence)

Project: N/A (C40B)**C40B****COMBINATORIAL CHEMISTRY; LIBRARIES, e.g. CHEMICAL LIBRARIES, IN SILICO LIBRARIES**NOTES

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 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 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

Project: N/A (D01D)**U D01D 5/00**

D01D 5/12

D01D 5/14

Formation of filaments, threads, or the like

- Stretch-spinning methods ([D01D 5/098](#) takes precedence) finishing by stretching [D02J 1/22](#))
- • with flowing liquid { or gaseous } stretching media {, e.g. solution-blowing}

D01D 7/00

Collecting the newly-spun products ~~{{(D01D 5/0076 takes precedence)}~~
 ({{D01D 5/0076 takes precedence;}} collecting newly-spun products with the
 imparting of twist [D01H](#))

Project: N/A (D01H)

U 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](#)})

D01H 1/02

· ring type {{(arrangements with two or more spinning or twisting devices in
 combination ~~D01H/90~~[D01H 7/90](#))}}

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](#); ~~braiding {or lace-making}~~
[D04C](#); ~~net-making {or making knotted carpets}~~ [D04G](#); sewing [D05B](#);
 tufting [D05C](#),{ e.g. [D05C 15/04](#)}; finishing non-woven fabrics [D06](#));
 FABRICS MADE BY SUCH PROCESSES OR APPARATUS, e.g. FELTS,
 NON-WOVEN FABRICS; COTTON-WOOL; WADDING {Non-woven fabrics
 from staple fibres, filaments or yarns, bonded with at least one web-
 like material during their consolidation} (non-woven fabrics having an
 intermediate or external layer of a different kind, e.g. of woven fabric,
[B32B](#));{ manufacturing hats [A42C](#); filtering material [B01D 39/00](#) ; making
 board or the like from wood fibre [B27N](#); producing shaped articles from
 mixtures containing fibres [B28B 1/52](#) ; making layered products from
 solid layers, at least one of which contains synthetic resin as an essential
 component [B32B 27/00](#) ; making or treating glass wool and mineral wool
[C03B 37/00](#) ; compounding ingredients used as fillers for mortars and the
 like [C04B 14/38](#) , [C04B 16/06](#) , [C04B 20/0048](#) ; sintering plastics particles
[C08J 9/24](#) ; manufacturing by extrusion of synthetic filaments and fibres
 in general [D01D](#); paper [D21C](#) to [D21H](#); making shaped articles from liquid
 suspensions of cellulose fibres [D21J](#)})**

NOTES

1. In this subclass, the following expression is used with the meaning indicated:
 - "non-woven fabrics" means fabrics formed wholly or partly of textile material by processes comprising operations other than the weaving, knitting, braiding, lacing, or knotting of yarns, threads, or filaments for which provision is made in other subclasses of Section D. This expression includes felts, cotton-wool, and wadding.
2. In this subclass:
 - some of the non-woven fabrics can also be regarded as "layered products" within the meaning of subclass [B32B](#), and further classification in that subclass should be considered in accordance with the notes thereto;
 - in cases where the making of non-woven fabrics involves the use of particular chemical compounds or compositions, e.g. for treating or

bonding fibres, filaments, or yarns, further classification in other appropriate subclasses should also be considered.

3. By varying the proportions of fibres or threads, and the chemical compounds or compositions, the final products may be given the appearance of paper, cardboard, leather or the like.

4. In this subclass, a number of groups, e.g. [D04H 1/067](#), correspond to IPC2012.01

WARNING

Documents of the complete subclass [D04H](#) including all subgroups are in the process of being reorganised to the new groups corresponding to the IPC 2012.01 classification scheme defined below.

U [D04H 1/00](#)

Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres

U [D04H 1/70](#)

· characterised by the method of forming fleeces or layers, e.g. reorientation of fibres

WARNING

Groups [D04H 1/72](#) to [D04H 1/76](#) are not complete pending a reorganisation. See also group [D04H 1/72](#)

[D04H 1/74](#)

· the fibres being orientated, e.g. in parallel $\{(anisotropic\ fleeces)\}$

[D04H 18/00](#)

Needling machines

WARNING

Groups [D04H 18/02](#) and [D04H 18/04](#) are not complete pending a reorganisation. See also group ~~[D04H18/00B](#)~~ [D04H 18/00](#)

Project: N/A (D05B)

[D05B 87/00](#)

Needle- {or looper-} threading devices

Project: N/A (D06H)

[D06H 3/00](#)

Inspecting textile materials (testing physical properties of textile materials [G01N](#); {unwinding or rewinding apparatus incorporating inspecting devices [B65H 16/026](#), ~~[B65H18/02C](#)~~)

Project: N/A (D06M)

[D06M](#)

TREATMENT, NOT PROVIDED FOR ELSEWHERE IN CLASS [D06](#), OF FIBRES, THREADS, YARNS, FABRICS, FEATHERS, OR FIBROUS GOODS MADE FROM SUCH MATERIALS (surface treatment of fibres or filaments from glass, minerals or slags { also in the form of fabrics if the chemical aspects of the treatment are important} [C03C 25/00](#); treatment of textiles by mechanical means, see [D06B](#) to [D06J](#))

NOTES

1. In each of the groups [D06M 11/00](#) to [D06M 15/00](#), in the absence of an indication to the contrary, a substance is classified in the last appropriate place.
2. Within each one of main groups [D06M 11/00](#) to [D06M 15/00](#), a mixture of substances is classified at least according to the essential ingredient. If more than one ingredient is essential, the mixture is classified, in the absence of an

indication to the contrary, according to the essential ingredient which belongs to the last appropriate place in the sequence of substances;

3. Treatment by mixtures of substances covered by two or more of main groups [D06M 11/00](#) to [D06M 15/00](#) is classified in each appropriate main group.

4. In this subclass, the treatment of textiles, not provided for elsewhere in class [D06](#), is classified according to the following principles:

- Treatment of textiles characterised by the treating agent in groups [D06M 11/00](#) to [D06M 16/00](#);
- Treatment of textiles characterised by the process in group [D06M 23/00](#).

Project: N/A (D06Q)

D06Q 1/00

Decorating textiles (partial dyeing [D06B 11/00](#); reserving parts of the material before dyeing or printing textiles [D06P 5/12](#) {; *making patterns or designs on fabrics* [D06C 23/00](#))}~~{(making patterns or designs on fabrics [D06C 23/00](#))}~~

Project: N/A (D07B)

U D07B 2205/00

Rope or cable materials

U D07B 2205/20

• Organic high polymers

U D07B 2205/2046

• • Polyamides, e.g. nylons

U D07B 2205/205

• • • Aramides

D07B 2205/2053

• • • • Polybenzimidazol ~~{(PBI)}~~

D07B 2205/2096

• • Poly-p-phenylenebenzo-bisoxazole ~~{(PBO)}~~

Project: N/A (D10B)

U D10B 2321/00

Fibres made from polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds

U D10B 2321/04

• polymers of halogenated hydrocarbons

D10B 2321/042

• • polymers of fluorinated hydrocarbons, e.g. polytetrafluoroethene ~~{(PTFE)}~~

U D10B 2331/00

Fibres made from polymers obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds, e.g. polycondensation products

D10B 2331/04

• polyesters, e.g. polyethylene terephthalate ~~{(PET)}~~

Project: N/A (D21C)

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 [D12D to \[D12H\]\(#\)](#)~~; *paper-making [D21B to \[D21H\]\(#\)](#)*)}
~~{(making patterns or designs on fabrics [D06C 23/00](#))}~~

U D21C 9/10

• Bleaching; { Apparatus therefor}

D21C 9/1068

• • {with O₂(closed, see [D21C 9/147](#))}

D21C 9/1073

• • {with O₃(closed, see [D21C 9/153](#))}

Project: N/A (D21H)

U D21H 5/00

Special paper or cardboard not otherwise provided for (duplicating or recording paper [B41M](#))

- U 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 relevant sub-groups for this treatment; e.g. parchmentising or vulcanising [D21H 5/08](#), treatment with viscose [D21H 17/25](#)

- D21H 5/0025
- {by contact with a device carrying the treating material ([C8](#) and [C12](#) take precedence)}

Project: N/A (E01C)

- U E01C 5/00
- Pavings made of prefabricated single units (specially adapted for playgrounds or sports grounds [E01C 13/04](#) , for footpaths, sidewalks or cycle tracks [E01C 15/00](#) ; making artificial stones [C04B](#) ; building stones [E04C](#) ; flooring [E04F](#))**
- U E01C 5/06
- made of units with cement or like binders
- U E01C 5/08
- • Reinforced units {with steel frames (with metal upper or under layers [E01C 5/22](#))}
- U E01C 5/10
- • • Prestressed reinforced units; {Prestressed coverings from reinforced or non-reinforced units (prestressed concrete coverings [E01C 7/16](#))}
- E01C 5/20
- made of units of plastics, {e.g. concrete with plastics, linoleum}([E01C 5/18](#) takes precedence; { of textiles made of synthetic fibres [E01C 5/008](#))}
- E01C 5/22
- made of units composed of a mixture of materials covered by two or more of groups {[E01C 5/008](#) , [E01C 5/02](#) to [E01C 5/20](#) {except embedded reinforcing materials}
- U E01C 7/00
- Coherent pavings made in situ (specially adapted for playgrounds or sports grounds [E01C 13/06](#) ; for footpaths, sidewalks or cycle tracks [E01C 15/00](#))**
- U E01C 7/08
- made of road-metal and binders {([E01C 7/36](#) takes precedence)}
- E01C 7/30
- • of road-metal and other binders, e.g. synthetic material, {i.e resin}
- U E01C 7/32
- • of courses of different kind made in situ
- NOTE**
- 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](#)
- U E01C 7/34
- • • made of several courses which are not bound to each other; {Separating means therefor, e.g. sliding layers (in or under concrete coverings [E01C 7/145](#))}
- 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](#))**
- U E01C 9/06
- Pavings adjacent tramways rails; {Pavings comprising railway tracks}
- E01C 9/10
- Steel gratings {; Gratings made of material other than steel} {([E01C 9/001](#) to [E01C 9/02](#) , [E01C 9/06](#) take precedence; metal gratings for bridge floorings [E01D 19/125](#) ; } gully gratings [E03F 5/06](#))}
- 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
 - Arrangement or construction of joints {(for pavings consisting of prefabricated units [E01C 5/00](#))}; Methods of making joints {(machines therefor [E01C 23/02](#) , [E01C 23/09](#) ; removable joint shutterings [E01C 23/021](#))}; Packing for joints (sealing joints not restricted to road or airfield paving [E04B 1/68](#))
- U E01C 11/04
 - • for cement concrete paving {([E01C 9/001](#) takes precedence)}
- E01C 11/10
 - • • Packing of plastic or elastic materials, {e.g. wood, resin ([E01C 11/045](#) takes precedence)}
- U E01C 11/14
 - • • Dowel assembly; {Design or construction of reinforcements in the area of joints (coupling devices for prefabricated units [E01C 5/005](#) ; combined with characteristic packings [E01C 11/08](#) to [E01C 11/12](#) ; removable holders [E01C 23/045](#))}
- U E01C 11/22
 - Gutters; {Surface drainage of streets, roads or like traffic areas (for sports grounds [E01C 13/00](#))}; Kerbs {or like edging members (for sports grounds [E01C 13/00](#))}
- U E01C 13/00**

Pavings or foundations specially adapted for playgrounds or sports grounds; {Drainage, irrigation or heating of sports grounds} (general layout [A63C 19/00](#))
- U E01C 13/08
 - Surfaces simulating grass; {Grass-grown sports grounds (grass-like surfaces for skiing [E01C 13/12](#))}
- U E01C 13/10
 - for artificial surfaces for outdoor or indoor practice of snow or ice sports ([E01C 13/08](#) takes precedence; production of snow or ice for winter sports or similar recreational purposes [F25C 3/00](#))
- E01C 13/12
 - • for snow sports, {e.g. skiing or ski tow track (mechanical ski trails [A63C 19/10](#))}
- 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](#) to [B28C 9/00](#))}
- E01C 19/05
 - • Crushing, pulverising or disintegrating apparatus ({preparing and placing involving breaking [E01C 19/466](#)} ; in general [B02C](#)); Aggregate screening, cleaning, {drying} or heating apparatus; {Dust-collecting arrangements specially adapted therefor}
- E01C 19/08
 - • Apparatus for transporting and {heating or} melting asphalt, bitumen, tar, or the like (stationarily-arranged melting boilers for tar, asphalt, or the like, in general [C10C 3/12](#))
- 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 19/22
 - 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 19/23
 - • Rollers therefor; Such rollers usable also for compacting soil {([E01C 19/41](#) , [E01C 19/43](#) , [E01C 19/52](#) , [E01C 23/065](#) take precedence; specially adapted for agricultural purposes [A01B 29/00](#) ; garden rollers [A01G 1/12](#) ; making or maintaining surfaces of snow or ice [E01H 4/00](#) ; solely for soil compaction [E02D 3/026](#))}

- E01C 19/24
- • • hand propelled ({[E01C 19/235](#) , }[E01C 19/27](#) to [E01C 19/29](#) , {[E01C 19/41](#)}) take precedence)
- E01C 19/28
- • • Vibrated rollers or rollers subjected to impacts, e.g. hammering blows ({[E01C 19/235](#) , }[E01C 19/29](#) , {[E01C 19/41](#)}) take precedence; {combined with non-vibrated elastically-deformable rolling elements [E01C 19/233](#))}
- E01C 19/30
- • 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 19/34
- • • Power-driven rammers or tampers, {e.g. air-hammer impacted shoes for ramming stone-sett paving; Hand-actuated ramming or tamping machines, e.g. tampers with manually hoisted dropping weight}
- E01C 19/38
- • • • with means specifically for generating vibrations, {e.g. vibrating plate compactors, immersion vibrators ([E01C 19/40](#) , [E01C 19/41](#) take precedence)}
- E01C 19/44
- • Hand-actuated tools other than rollers, tampers, or vibrators, specially adapted for imparting a required finish to freshly-laid paving courses ([E01C 19/43](#) , {[E01C 23/02](#)}) take precedence)
- E01C 19/46
- for preparing and placing the materials {e.g. slurry seals} ({[E01C 19/002](#) , }[E01C 19/45](#) , {[E01C 21/00](#) , [E01C 23/065](#)}) take precedence)
- E01C 19/48
- for laying-down the materials and consolidating them, or finishing the surface, {e.g. slip forms therefor, forming kerbs or gutters in a continuous operation in situ ([E01C 19/002](#) , [E01C 23/065](#) take precedence; devices for guiding or controlling the machines along a predetermined path [E01C 19/004](#))}
- 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 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 23/01
- Devices or auxiliary means for setting-out or checking the configuration of new surfacing, e.g. templates, screed {or reference line} supports (form rails [E01C 19/50](#)); Applications of apparatus for measuring, indicating, or recording the surface configuration of existing surfacing, e.g. profilographs ([E01C 23/07](#) takes precedence; measuring roughness or irregularity in general [G01B](#))
- E01C 23/04
- Devices for laying {inserting or positioning} reinforcing elements or dowel bars {with or without joint bodies (installing or inserting joint bodies per se [E01C 23/023](#) , [E01C 23/026](#))}; Removable support for reinforcing {or load transfer} elements (non- removable supports therefor {[E01C 11/02](#)} [E01C 11/16](#) ; side forms adapted to supporting reinforcement [E01C 19/50](#)); Devices, e.g. removable forms, for making essentially horizontal ducts in paving, e.g. for prestressed reinforcements
- E01C 23/06
- Devices or arrangements for working the finished surface (working freshly laid paving [E01C 19/42](#) to [E01C 19/44](#) , [E01C 23/02](#) ; mining picks [E21C 35/18](#)); Devices for repairing {or reconditioning} the surface of damaged paving; {Recycling in place or on the road}

- E01C 23/08
- for roughening or patterning; for removing {the surface down to a predetermined depth} high spots or material bonded to the surface, e.g. markings; {for maintaining earth roads, clay courts or like surfaces by means of surface working tools, e.g. scarifiers, levelling blades} (removing matter not bonded to the surface [E01H 1/00](#) ; roughening or detaching ice [E01H 5/12](#))
- E01C 23/12
- for taking-up, tearing-up, or {full-depth} breaking-up paving, {e.g. sett extractor}(adapted to both placing and removing {preformed} paving {elements} [E01C 19/52](#))

Project: N/A (E01F)

- U E01F 13/00 **Arrangements for obstructing or restricting traffic, e.g. gates, barricades (for railway crossings [B61L](#)); {Preventing passage of vehicles of selected category or dimensions ([E01F 13/12](#), [E01F 13/126](#) take precedence)}**
- U E01F 13/04
- movable to allow or prevent passage {([E01F 13/12](#), [E01F 15/12](#) take precedence; removing part of barrier for occasional passage [E01F 13/024](#); gates for allowing passage through fences [E06B 11/02](#))}
- E01F 13/048
- {with obstructing members moving in a translatory motion, e.g. vertical lift barriers, sliding gates (~~[E0113/04C2](#)~~[E01F 13/046](#), [E01F 13/105](#) take precedence)}

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](#) to [A47L 13/00](#))}**
- E01H 1/02
- Brushing apparatus, { e.g. with auxiliary instruments for mechanically loosening dirt} {([E01H 1/003](#), [E01H 1/005](#), [E01H 1/006](#) and} [E01H 1/08](#) to [E01H 1/14](#) take precedence; { loosening by means of gas jets or streams [E01H 1/0818](#), [E01H 1/0872](#); with brushes functioning under vacuum or combined with independent suction nozzles [E01H 1/0827](#); loosening by means of liquid streams [E01H 1/101](#); mechanical loosening instruments other than brushes [E01H 1/105](#); for railway tracks [E01H 8/00](#)}; brushes in general [A46B](#); { for floors or similar surfaces [A47L 11/22](#), [A47L 11/24](#))}
- E01H 1/05
- with driven brushes ([E01H 1/04](#) takes precedence {rotary brushes for snow removal [E01H 5/092](#)})
- 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; 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](#))}**

E01H 5/02 · Hand implements ([E01H 5/04](#), [E01H 5/10](#), [E01H 5/12](#) take precedence {shovels or spades in general [A01B 1/02](#); brooms, brushes [A46B](#)})

E01H 11/00 Control of undesirable vegetation on roads {or similar surfaces} or permanent ways of railays, {e.g. devices for scorching weeds or for applying herbicides} (destruction of undesirable vegetation in general [A01M 7/00](#) to [A01M 15/00](#), [A01M 21/00](#); weeding involving working the ballast [E01B 27/00](#); mowers for embankments [A01D 34/86](#); hedge shearing machines [A01G 3/04](#)); Applying liquids, e.g. water, weed-killer bitumen, to permanent ways (specially to rails [E01H 8/10](#) {[E01H 8/105](#), [E01H 8/125](#)}); for preserving sleepers [E01B 31/20](#))

Project: N/A (E02B)

U E02B 5/00 Artificial water canals, { e.g. irrigation canals}(for water-power plants [E02B 9/02](#); irrigation of soil [E02B 13/00](#))

U E02B 5/08 · Details, e.g. gates, screens

NOTE

This subdivision is limited to closures, devices for arresting waterborne materials and divisors

E02B 5/085 · · {Arresting devices for waterborne materials, e.g. gratings (fish barrages [E02B 1/006](#); removing sediments [E02B 3/023](#); arresting oil or similar pollutants ~~[E02B15/04B](#)~~ [E02B 15/08](#); for waste water purification [E02F](#); in sewers [E03F 5/14](#)})

U E02B 8/00 Details of barrages or weirs (cleaning or keeping clear the surface of open water [E02B 15/00](#)); {Energy dissipating devices carried by lock or dry-dock gates}

U E02B 8/02 · Sediment base gates; Sand sluices; Structures for retaining arresting waterborne material

E02B 8/023 · · {Arresting devices for waterborne materials ([E02B 1/003](#) takes precedence; in artificial watercourses [E02B 5/085](#); arresting oil or the like ~~[E02B15/04B](#)~~ [E02B 15/08](#); sieving devices for waste water purification [C02F](#); in sewers [E03F 5/14](#)})

U E02B 15/00 Cleaning or keeping clear the surface of open water; Apparatus therefor (construction of ships or other waterborne vessels [B63B](#), e.g. vessels specially adapted for collecting pollution from open water [B63B 35/32](#); in swimming or splash baths or pools [E04H 4/16](#))

U E02B 15/04 · Devices for cleaning or keeping clear the surface of open water from oil or like floating materials by separating or removing these materials ({stopping water-borne material in artificial water canals [E02B 5/085](#); stopping water-borne material at barrages or weirs [E02B 8/023](#)}; other treatment of water, waste water or sewage [C02F](#); materials for treating liquid pollutants; e.g. oil, gasoline, fat, [C09K 3/32](#); {separation of oil in sewage conduits [E03F 5/16](#)})

E02B 15/045 · · {Separating means for recovering oil floating on a surface of open water ([E02B 15/048](#) takes precedence; separation in general [B01D](#))}; ~~[E02B-15/048](#) takes precedence (separation in general [B01D](#))~~

Project: N/A (E02D)

U E02D 5/00 Bulkheads, piles, or other structural elements specially adapted to foundation engineering (engineering elements in general [F16](#))

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](#)})

Project: N/A (E02F)

- U E02F 3/00 Dredgers; Soil-shifting machines (for special purposes [E02F 5/00](#); other machines or apparatus for mining [E21C](#); tunnelling [E21D](#))**
- U E02F 3/04 · mechanically-driven
- 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
- E02F 3/815 · · · · Blades; Levelling {or scarifying} tools {([E02F 3/40](#) takes precedence)}
- U E02F 7/00 Equipment for conveying or separating excavated material (barges adapted for carrying-away material from floating dredgers [B63B 35/28](#))**
- E02F 7/10 · Pipelines for conveying excavated materials (pipes in general [F16L](#); pipe-lines systems [F17D](#) {conveying by liquid pressure [B65G 53/30](#))}
- 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](#) to [E02F 7/00](#)(laying-out or take-up devices for trailing electric cables [B66C](#))**
- U E02F 9/16 · Cabins, platforms, or the like, for drivers {(for motor vehicles in general [B62D 33/06](#)}, for cranes [B66C 13/54](#))}
- E02F 9/163 · · {Structures to protect drivers, e.g. cabins, doors for cabins; Falling object protection structure ~~{(FOPS)}~~; Roll over protection structure ~~{(ROPS)}~~ (for handrails mounted on cabins [E02F 9/0833](#) takes precedence; for vehicles in general [B60R 21/11](#), [B60R 21/13](#), for fork-lift trucks [B66F 9/07545](#))}

Project: N/A (E03B)

- U E03B 3/00 Methods or installations for obtaining or collecting drinking water or tap water (treatment of water [C02F](#))**
- U E03B 3/06 · from underground {(consolidating foundation soil by draining, e.g. by lowering the water level [E02D 3/00](#); subsoil filtering [E21B 43/02](#))}
- U E03B 3/08 · · Obtaining and confining water by means of wells (applicable to a combination of water and other liquids or to other liquids only [E21B 43/00](#))
- E03B 3/15 · · · Keeping wells in good condition, e.g. by cleaning, repairing, regenerating; Maintaining or enlarging the capacity of wells or water-bearing layers (with artificial enrichment [E03B 3/32](#) {; *cleaning, in general [B08B](#)*})~~{(cleaning, in general [B08B](#))}~~

Project: N/A (E03D)

- U E03D 1/00 Water flushing devices with cisterns; {Setting up a range of flushing devices or water-closets; Combinations of several flushing devices}**
- U E03D 1/30 · Valves for high or low level cisterns; Their arrangement (inlet valves, valves in general [F16K](#)){Flushing mechanisms in the cistern, optionally with provisions for a pre-or a post- flushing and for cutting off the flushing mechanism in case of leakage (flushing valves [E03D 1/142](#), [E03D 1/186](#), [E03D 1/266](#), [E03D 1/286](#))}
- E03D 1/32 · · Arrangement of inlet valves (devices for reducing noise [E03D 9/14](#) {noise-reducing means [E03D 11/00](#)})
- E03D 1/38 · Adaptations or arrangements of flushing pipes (noise-absorbing means in pipe systems [F16L 55/00](#) {noise-reducing means in the flushing mechanism not in combination with flushing valves [E03D 11/00](#); provisions in the flushing pipe for evacuating leakage water from the cistern})

- U E03D 9/00** Sanitary or other accessories for lavatories (hand tools for cleaning the toilets bowl [A47K 11/10](#); seats or covers for closets [A47K 13/00](#); body supports, other than seats for closets [A47K 17/02](#); devices for preventing contamination of drinking-water pipes [E03C 1/10](#)){Devices for cleaning or disinfecting the toilet room or the toilet bowl; Devices for eliminating smells (cleaning, disinfecting or deodorising the seat [A47K 13/30](#))}
- E03D 9/14 · Noise-reducing means combined with flushing valves (noise-absorbing means in pipe systems [F16L 55/00](#) {if not in combination with flushing valves [E03D 11/00](#); noise-reducing means in valves in general [F16K 47/00](#))}
- U 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 11/18 · Siphons (for pipes in general [F16L 43/00](#), [F16L 45/00](#) {if as part of the bowl [E03D 11/02](#); connecting the siphon to the bowl})

Project: N/A (E03F)

- U E03F 5/00** Sewerage structures
- U E03F 5/04 · Gullies {inlets, road sinks, floor drains} with or without odour seals or sediment traps
- E03F 5/046 · · adapted to be used with kerbs ([E03F 5/06](#) takes precedence {draining of roads [E01F](#)})
- E03F 9/00** Arrangements or fixed installations {methods or devices} for cleaning {or clearing} sewer pipes, e.g. by flushing (sediment traps, rakes, screens, or the like, arranged in sewer lines [E03F 5/14](#); cleaning pipes in general, devices for cleaning pipes [B08B 9/02](#); {gullies provided with flushing means for cleaning or emptying [E03F 5/0402](#); devices to remove obstructions in waste-pipes or sinks [E03C 1/30](#)})

Project: N/A (E04B)

- U E04B 1/00** Constructions in general; Structures which are not restricted either to walls, e.g. partitions, or floors or ceilings or roofs (scaffolds, shutterings [E04G](#); structures specially adapted for buildings for special purposes, general layout of buildings, e.g. modular co-ordination, [E04H](#); the particular parts of buildings, see the relevant groups for those parts)
- U E04B 1/16 · Structures made from masses, e.g. of concrete, cast or similarly formed 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](#) to [E04B 1/36](#) take precedence)
- E04B 1/165 · · ~~{with elongated load-supporting parts, cast in situ; {with [E04B 1/161](#) elongated load-supporting parts, [E04B 1/163](#) and cast in [E04B 1/164](#) take precedence}~~ *situ ([E04B 1/161](#), [E04B 1/163](#) and [E04B 1/164](#) take precedence)}*
- E04B 1/343 · Structures characterised by movable, separable, or collapsible parts, e.g. for transport (movable roof parts [E04B 7/16](#); floatable buildings [B63B](#); small prefabricated buildings, transportable as a whole [E04H 1/12](#); small garages [E04H 6/02](#); tents or canopies, in general [E04H 15/00](#) {containers [B65G](#)})

- U E04B 5/00** Floors; Floor construction with regard to insulation; Connections specially adapted therefor (elements for floors, e.g. bricks, stones, filling bodies, girders, [E04C](#); flooring as finishing work, insulation of flooring, sectional false floors, e.g. for computers [E04F 15/00](#))
- U E04B 5/16** · Load-carrying floor structures wholly or partly cast or similarly formed in situ ([E04B 5/43](#) to [E04B 5/48](#) take precedence; floors merely characterised by the prefabricated elements [E04C](#))
- U E04B 5/17** · · Floor structures partly formed in situ
- E04B 5/23** · · · with stiffening ribs or other beam-like formations wholly or partly prefabricated (with all load-carrying parts substantially consisting of prefabricated units [E04B 5/02](#) {beams built-up by elements joined in line [E04C 3/22](#)})
- 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 7/02** · with plane sloping surfaces, e.g. saddle roofs ~~{canopies [E04F 10/00](#)}~~ ~~{canopies [E04F 10/00](#);~~ [E04B 7/12](#) takes precedence)
- U E04B 9/00** Ceilings; Construction of ceilings, e.g. false ceilings; Ceiling construction with regard to insulation (ceilings used as forms for making floors [E04B 5/00](#); coverings or linings for ceilings [E04F 13/00](#))
- E04B 9/32** · Translucent ceilings, i.e. permitting both the transmission and diffusion of light ([E04B 9/303](#) and [E04B 9/34](#) take precedence; details of lighting devices, of general application [F21V](#); screens [F21V 11/00](#))

Project: N/A (E04C)

- U E04C 3/00** Structural elongated elements designed for load-supporting (as building aids [E04G](#))
- U E04C 3/02** · Joists; Girders, trusses, or trusslike structures, e.g. prefabricated; Lintels; Transoms; {Braces}{[E04C 3/38](#) takes precedence; for structures characterised by movable, separable, or collapsible parts [E04B 1/343](#); {braced purlins [E04B 7/024](#)}}
- U E04C 3/04** · · of metal ([E04C 3/29](#) takes precedence; as reinforcing elements [E04C 5/06](#); manufacture [B21](#))
- E04C 3/06** · · · with substantially solid, i.e. unapertured, web ([E04C 3/10](#), [E04C 3/11](#) take precedence {honeycomb girders [E04C 3/083](#)})
- U E04C 3/12** · · of wood, e.g. with reinforcements, with tensioning members ([E04C 3/292](#) takes precedence)
- E04C 3/14** · · · with substantially solid, i.e. unapertured, web ({[E04C 3/127](#);} [E04C 3/17](#), [E04C 3/18](#) take precedence)
- U 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](#)

- U 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 [E04G 21/12](#))}
- E04C 5/12
- Anchoring devices (tools or methods for tensioning {in situ} [E04G 21/12](#))

Project: N/A (E04D)

E04D 1/00 Roof covering by making use of tiles, slates, shingles, or other small roofing elements (roofing supports {and underlayers} [E04D 12/00](#))

E04D 11/00 Roof covering, as far as not restricted to features covered by only one of groups [E04D 1/00](#) to [E04D 9/00](#); Roof covering in ways not provided for by groups [E04D 1/00](#) to [E04D 9/00](#), {e.g. built-up roofs, elevated load-supporting roof coverings}

E04D 11/005

- {Supports for elevated load-supporting roof coverings ~~IM1207~~}

E04D 12/00 Non-structural supports for roofing materials, e.g. battens, boards ([E04D 11/02](#) {and [E04D 13/16](#)} take precedence; {self-supporting slabs with non-structural supports for roofing materials [E04B 7/205](#)})

U **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}

E04D 13/03

- Sky-lights; Domes; Ventilating sky-lights ([E04D 13/14](#) takes precedence; structures therefor, {e.g. dormer windows} [E04B 7/18](#); {saw-tooth roofs with light-transmission [E04B 7/12](#)})

Project: N/A (E04F)

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](#))

E04F 13/02

- of plastic materials hardening after applying, e.g. plaster (surface treatment in painting technique [B44D](#); inorganic or bituminous masses [C04B](#); organic plastics [C08L](#) {implements for applying plasticised materials [E04F 21/02](#)})

E04F 15/00 Flooring (stair treads [E04F 11/104](#); coverings not specially adapted for floors [E04F 13/00](#); borders, skirtings [E04F 19/02](#); { implements for laying flooring [E04F 21/20](#);} gratings for cleaning soles of footwear [A47L 23/24](#); { built-in gratings [E04F 19/10](#); removing floor coverings [E04G 23/00](#); carpets [A47G 27/00](#);} of similar materials to roads [E01C](#); basic or rough floors { , structural floors} [E04B 5/00](#))

U E04F 15/02

- Flooring or floor layers composed of a number of similar elements (of webs [E04F 15/16](#))

E04F 15/10

- of other materials, e.g. fibrous or chipped materials, organic plastics, magnesite { tiles}, hardboard { , or with a top layer of other materials}

Project: N/A (E04H)

- U E04H 1/00** **Buildings or groups of buildings for dwelling or office purposes; General lay-out, e.g. modular co-ordination, staggered storeys {small buildings} ([E04H 3/00](#) takes precedence; buildings for two or more purposes, e.g. drive-in buildings [E04H 14/00](#); building construction in general [E04B 1/00](#))**
- E04H 1/02 · Dwelling houses; Buildings for temporary habitation, {e.g. summer houses} (small erections for limited occupation [E04H 1/12](#) {collapsible, erectable or rotatable buildings [E04B 1/343](#)})
- U E04H 15/00** **Tents or canopies, in general**
- U E04H 15/32 · Parts, components, construction details, accessories, interior equipment, specially adapted for tents, e.g. guy-line equipment, skirts, thresholds
- U E04H 15/34 · · Supporting means, e.g. frames
- U E04H 15/44 · · · collapsible, e.g. breakdown type {having connecting nodes}([E04H 15/42](#) takes precedence; building structures having collapsible parts in general [E04B 1/343](#))
- E04H 15/48 · · · · foldable, i.e. having pivoted or hinged means ({[E04H 15/405](#) and} [E04H 15/46](#) takes precedence)

Project: N/A (E05B)

- 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 15/16 · Use of special materials for parts of locks (for handles [E05B 1/00](#) {for reducing friction [E05B 17/007](#); for keys [E05B 19/26](#)})
- U E05B 19/00** **Keys; Accessories therefor (making keys, see the relevant places e.g. [B21D 53/42](#){ or [B23P 15/005](#)}; milling grooves in keys [B23C 3/35](#)}; {([E05B 11/005](#) takes precedence; illuminating devices [E05B 17/103](#); key rings [A44B 15/00](#); key cases [A45C 11/32](#); key holders [A47G 29/10](#)})**
- E05B 19/14 · Double {or multiple} keys, { e.g. with two or more bows or bits (see also [E05B 35/14](#))}
- U E05B 37/00** **Permutation { or combination} locks ({handles with combination locks [E05B 13/103](#); keyhole guards with combination locks [E05B 17/145](#); alarms therefor [E05B 45/061](#)}; electric permutation locks [E05B 49/00](#); { for container closures [B65D 55/145](#); combination switches [H01H 27/10](#)}); **Puzzle locks****
- E05B 37/0068 · {in padlocks ([E05B 37/025](#), [E05B37/06](#), [E05B 37/10](#) and [E05B 37/14](#) take precedence)}
- U E05B 63/00** **Locks {or fastenings} with special structural characteristics**
- 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})
- 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 65/52
- 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: 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})
- 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 7/10
- to allow easy separation {or connection} of the parts at the hinge axis ({[E05D 5/12](#) and [E05D 15/50](#) take precedence } ; substitutes for hinges [E05D 1/06](#))
- E05D 13/00** **Accessories for sliding or lifting wings, e.g. pulleys, safety catches ({closers or openers for horizontally sliding wings [E05F 1/02](#) , [E05F 1/08](#)}; **counterbalance devices {for swinging wings} [E05F 1/00](#) , [E05F 3/00](#)**; **counterbalance devices {for swinging wings} [E05F 1/00](#) , [E05F 3/00](#)**)**

Project: N/A (E05F)

- U E05F 5/00** **Braking devices, e.g. checks; Stops; Buffers; {Dovetails with buffering action}; (construction of pneumatic or liquid braking devices [E05F 3/00](#); combined with devices for holding wings open [E05C 17/00](#); devices for limiting opening of wings or for holding wings open by a movable member extending between frame and wing [E05C 17/04](#))**
- E05F 5/02
- specially for preventing the slamming of {swinging} wings {during final closing movement, e.g. jamb stops}

Project: N/A (E06B)

- E06B 3/00** **Window sashes, door leaves, or like elements for closing {wall or like} openings; Layout of fixed or moving closures, e.g. windows {in wall or like openings}; Features of rigidly-mounted outer frames relating to the mounting of wing frames ([E06B 5/00](#) takes precedence; shutters or the like [E06B 9/00](#) ; glass panes [C03](#))**
- U E06B 3/04
- Wing frames not characterised by the manner of movement (features relating to the manner of movement [E06B 3/32](#))
- U E06B 3/263
- E06B 3/273
- • Frames with special provision for insulation
 - • • with prefabricated insulating elements held in position by deformation of portions of the {metal} frame members
- E06B 3/277
- • • with prefabricated insulating elements held in position by expansion of the {extremities of the} insulating elements
- U E06B 3/54
- E06B 3/56
- • Fixing of glass panes or like plates
 - • by means of putty, cement, or adhesives only ([E06B 3/64](#) {[E06B 3/5427](#)} take precedence)
- U E06B 3/66
- Units comprising two or more parallel glass or like panes permanently secured together {(reforming and uniting glass sheets by fusing [C03B 23/00](#) ; joining glass to glass or to other materials [C03C 27/00](#) ; laminated glass [B32B 17/10](#))}

- U E06B 3/677
 - • Evacuating or filling the gap between the panes; {Equilibration of inside and outside pressure}; Preventing condensation in the gap between the panes (by means of spacing elements [E06B 3/663](#)); Cleaning the gap between the panes
- U E06B 3/70
 - Door leaves (wing frames [E06B 3/04](#))
- E06B 3/72
 - • consisting of frame and panels, {e.g. of raised panel type ([E06B 3/7001](#) to [E06B 3/7015](#) and [E06B 3/82](#) take precedence)}
- E06B 3/82
 - • Flush doors, i.e. with completely flat surface ([E06B 3/02](#) , {[E06B 3/7003](#) and [E06B 3/7015](#)}; 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](#))
- U E06B 7/16
 - Sealing arrangements on wings or parts co-operating with the wings ({specially adapted for fireproof or similar closures [E06B 5/164](#) ; }[E06B 7/098](#) takes precedence; { fixed sealing joints [E04B 1/68](#) ; Devices for fitting sealing strips [E04F 21/00](#)})
- E06B 7/18
 - • by means of movable edgings, e.g. draught sealings additionally used for bolting, {e.g. by spring force or with operating lever}
- E06B 7/20
 - • • automatically withdrawn when the wing is opened, {e.g. by means of magnetic attraction, a pin or an inclined surface, especially for sills}
- 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](#))}
- U E06B 7/32
 - • Serving doors; Passing-through doors; {Pet-doors}
- 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](#))
- U E06B 9/26
 - • Lamellar or like blinds, e.g. venetian blinds {(for vehicles [B60J 1/2088](#))}
- E06B 9/262
 - • • with flexibly-interconnected horizontal or vertical strips; Concertina blinds, {i.e. upwardly folding flexible screens}
- U E06B 9/28
 - • • with horizontal lamellae, e.g. non-liftable (louvre windows or gratings [E06B 7/08](#))
- U E06B 9/34
 - • • roller-type; {Roller shutters with adjustable lamellae}
- U E06B 9/36
 - • • with vertical lamellae; {Supporting rails therefor}
- U E06B 11/00**

Means for allowing passage through fences, barriers or the like, e.g. stiles (general features of doors [E06B 1/00](#) to [E06B 9/00](#) ; { cattle grids [A01K 3/002](#) ; features peculiar to electrified wire fencing [A01K 3/005](#)})
- U E06B 11/08
 - Turnstiles; {Gates for control of entry or exit of persons, e.g. in supermarkets} (control gates on vehicles [B60N 5/00](#) ; [bank protection devices [E05G 5/00](#)]; with registering means [G07C 9/02](#) ; { coin-freed facilities for turnstiles [G07F 17/14](#)})

Project: N/A (E06C)

- 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](#)})
- U E06C 7/00** **Component parts, supporting parts, or accessories**
- U E06C 7/08 · Special construction of longitudinal members, or rungs or other treads
- U E06C 7/082 · · {Connections between rungs or treads and longitudinal members}
- E06C 7/085 · · · {achieved by deforming the rung or the stile ([E06C 7/084](#) takes precedence); [E06C 7/084](#) takes precedence}
- E06C 7/086 · · · {with a connecting piece inserted in a hollow rung ([E06C 7/088](#) takes precedence); [E06C 7/088](#) takes precedence}
- U E06C 7/14 · Holders for pails or other equipment on or for ladders
- E06C 7/146 · · {~~made from wire~~; {[made from wire](#) ([E06C 7/143](#) takes precedence) [E06C 7/143](#) takes precedence}
- E06C 7/18 · Devices for preventing persons from falling (life-saving belts [A62B 1/16](#) {Safety devices for window-cleaners [A47L 3/00](#)})

Project: N/A (E21B)

- U E21B 7/00** **Special methods or apparatus for drilling**
- E21B 7/26 · Drilling without earth removal, e.g. with self-propelled burrowing devices ({[E21B 7/205](#) and} [E21B 7/30](#) take precedence; down-hole drives [E21B 4/00](#), {e.g. self-propelled fluid-operated hammers [E21B 4/145](#)})
- U E21B 10/00** **Drill bits (specially adapted for deflecting the direction of boring [E21B 7/064](#); with means for collecting substances [E21B 27/00](#))**
- E21B 10/36 · Percussion drill bits (characterised by wear resisting parts [E21B 10/46](#) {with helical conveying portion [E21B 10/445](#)})
- U E21B 10/46 · characterised by wear resisting parts, e.g. diamond inserts {(drill bits with self-renewable cutting edge [E21B 10/006](#))}
E21B 10/58 · · Chisel type inserts ({[E21B 10/485](#),} [E21B 10/52](#), [E21B 10/54](#) take precedence)
- U E21B 17/00** **Drilling rods or pipes; Flexible drill strings; Kellies; Drill collars; Sucker rods; {Cables}; Casings; Tubings (rod couplings in general [F16D](#); tubes or tube couplings in general [F16L](#))**
- E21B 17/01 · Risers ({connections between riser sections [E21B 17/085](#); supporting a riser from a drilling or production platform [E21B 19/004](#); ~~riser connectors~~{[on well heads](#)}[E21B 33/038](#); [riser connectors](#) {[on well heads](#)} [E21B 33/038](#))
- U E21B 17/02 · Couplings; joints {(Expandable couplings or joints [E21B 43/106](#))}
E21B 17/04 · · between rod {or the like} and bit or between rod and rod {or the like}
- U E21B 29/00** **Cutting or destroying pipes, packers, plugs, or wire lines, located in boreholes or wells, e.g. cutting of damaged pipes, of windows (perforators [E21B 43/11](#)); Deforming of pipes in boreholes or wells; Reconditioning of well casings while in the ground {(by enlarging drilled holes or counterboring [E21B 7/28](#))}
E21B 29/06 · Cutting windows, e.g. directional window cutters for whipstock operations ({[E21B 29/005](#) and} [E21B 29/08](#) take precedence {; whipstocks [E21B 7/061](#)})**
- U E21B 33/00** **Sealing or packing boreholes or wells**
- U E21B 33/02 · Surface sealing or packing
- U E21B 33/03 · · Well heads; Setting-up thereof (valve arrangements therefor [E21B 34/02](#))

- U E21B 33/04
 - • • Casing heads; Suspending casings or tubings in well heads (setting of casings in wells [E21B 43/10](#))
- E21B 33/043
 - • • • specially adapted for underwater well heads
(~~{E21B 33/0407,}~~ [E21B 33/047](#) take precedence)
- U E21B 33/10
 - in the borehole ~~{(sealing the junction between main bore and laterals [E21B 41/0042](#))}~~
- U E21B 33/13
 - • Methods or devices for cementing, for plugging holes, crevices, or the like (dump bailers [E21B 27/02](#); { methods or apparatus for grouting offshore structures [E02B 17/0008](#)} chemical compositions therefor [C09K 8/00](#))
- E21B 33/14
 - • • for cementing casings into boreholes ~~{(using special cement compositions [E21B33/13B](#);~~ *using special cement compositions [C09K 8/42](#)*; control of cementation quality or level [E21B 47/0005](#))}
- U E21B 43/00

Methods or apparatus for obtaining oil, gas, water, soluble or meltable materials or a slurry of minerals from wells (applicable only to water [E03B](#); obtaining oil-bearing deposits or soluble or meltable materials by mining techniques [E21C 41/00](#); pumps [F04](#))
- U E21B 43/16
 - Enhanced recovery methods for obtaining hydrocarbons (fracturing [E21B 43/26](#); obtaining slurry [E21B 43/29](#); reclamation of contaminated soil in situ [B09C](#); { chemical compositions therefor [C09K 8/58](#)})
- E21B 43/164
 - • {Injecting CO₂ or carbonated water (in combination with organic material [C09K 8/594](#))}
- E21B 43/17
 - • Interconnecting two or more wells by fracturing or otherwise attacking the formation (~~{E21B 43/2405,}~~ [E21B 43/247](#) take precedence)
- 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](#)}~~~~{(in combination with organic material [C09K 8/592](#))}~~
- E21B 43/2406
 - • • {Steam assisted gravity drainage ~~{(SAGD)}~~}
- U E21B 47/00

Survey of boreholes or wells (monitoring pressure or flow of drilling fluid [E21B 21/08](#); geophysical logging [G01V](#))
- E21B 47/0002
 - {Survey of boreholes or wells by visual inspection (photographing internal surfaces, e.g. of pipes [G03B 37/005](#); ~~E21B57/A7B8~~; closed circuit television systems [H04N 7/18](#))}
- E21B 47/04
 - Measuring depth or liquid level (measuring liquid level in general {and telerecorders for level of liquids} [G01F](#); {measuring depth in general [G01B 7/26](#)})
- E21B 47/06
 - Measuring temperature or pressure (measuring temperature in general [G01K](#); measuring pressure in general [G01L](#) {telerecorders for pressure [G01L](#); telerecorders for temperature [G01K](#)})

Project: N/A (E21C)**E21C****MINING OR QUARRYING**NOTES

1. This subclass covers methods or apparatus specific to mining or quarrying
2. This subclass 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
E21C3/08	" "	B25D 9/06 , B25D 15/00
E21C3/10	" "	B25D 15/02
E21C3/12	" "	B25D 11/00
E21C3/14	" "	B25D 11/00
E21C3/20	" "	B25D 9/12
E21C3/22	" "	B25D 9/125
E21C3/28	" "	B25D16/00B
E21C3/30	" "	B25D16/00B2
B25D 11/005	" "	B25D 9/265
E21C3/34	" "	B25D 17/08
E21B 19/081	" "	E21B 19/081
E21B 19/083	" "	E21B 19/083
E21B 19/084	" "	E21B 19/084
E21C5/11	" "	E21B19/08K, E21B19/08L
E21B 19/089	" "	E21B 19/089
E21B 44/08	" "	E21B 44/08
E21B 44/00	" "	E21B 44/00
E21C7/02	" "	E21B21/00P
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](#), ~~[E21C7/00B](#)~~

E21C 7/00 Dust eliminating or dust removing while drilling ({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](#))

Project: N/A (E21D)

- 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 15/50** · Component parts or details of props ([E21D 15/43](#), [E21D 15/58](#), [E21D 15/60](#) take precedence)
- E21D 15/52** · · Extensible units located above or below standard props (~~for allowing step-by-step movement of cap [E21D23/06](#)~~; ~~for allowing step-by-step movement of cap [E21D 23/06](#)~~; setting props or chocks [E21D 15/58](#))

Project: N/A (E21F)

E21F 13/00 Transport specially adapted to underground conditions (mine cars [B61D](#); transport in general, loading {unless specially adapted to underground conditions} [B65G](#))

Project: N/A (F01D)

- 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](#))
- F01D 1/34** · characterised by non-bladed rotor, e.g. with drilled holes ([F01D 1/32](#) takes precedence; sirens [G10K 7/00](#) {impact turbines with buckets [F01D 1/026](#); hand-held tools with a non-bladed rotor [F01D 15/067](#)})
- 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](#)})
- 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](#)})
- F01D 11/00** Preventing or minimising internal leakage of working-fluid, e.g. between stages (sealings in general [F16J](#) {sealing arrangements for transition ducts of combustor cans [F01D 9/023](#)})
- 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 17/10** · Final actuators (valves in general [F16K](#) {blades with variable camber [F01D 5/148](#)})
- U F01D 25/00** Component parts, details, or accessories, not provided for in, or of interest apart from, other groups
- F01D 25/24** · Casings (modified for heating or cooling [F01D 25/14](#)); Casing parts, e.g. diaphragms, casing fastenings (casings for rotary machines or engines in general [F16M](#) {special arrangements in stators dealing with breaking-off of part of rotor [F01D 21/045](#)})

Project: N/A (F01K)

- 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 19/00** Regenerating or otherwise treating steam exhausted from steam engine plant ({[F01K 3/006](#) takes precedence} plants characterised by use of means for storing steam in an alkali to increase steam pressure [F01K 5/00](#); returning condensate to boiler [F22D](#))

Project: N/A (F01L)

- U F01L 1/00** Valve-gear or valve arrangements, e.g. lift-valve gear (lift-valve and valve-seat assemblies 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 1/053** · · · · overhead type
- F01L 2001/0535** · · · · · {Single overhead camshafts ([SOHC](#))}
- F01L 2001/0537** · · · · · {Double overhead camshafts ([DOHC](#))}
- U F01L 1/20** · Adjusting or compensating clearance
- U F01L 1/22** · · automatically, e.g. mechanically
- U F01L 1/24** · · · by fluid means, e.g. hydraulically
- F01L 2001/2444** · · · · {Details relating to the hydraulic feeding circuit, e.g. lifter oil manifold assembly ([LOMA](#))}
- U F01L 1/34** · characterised by the provision of means for changing the timing of the valves without changing the duration of opening {and without affecting the magnitude of the valve lift}
- U F01L 1/344** · · changing the angular relationship between crankshaft and camshaft, e.g. using helicoidal gear
- U F01L 2001/34486** · · · {Location and number of the means for changing the angular relationship}
- F01L 2001/34493** · · · · {Dual independent phasing system ([DIPS](#))}
- U F01L 2800/00** **Methods of operation using a variable valve timing mechanism**
- F01L 2800/10** · Providing exhaust gas recirculation ([EGR](#))

Project: N/A (F01N)

- U F01N 3/00** Exhaust or silencing apparatus having means for purifying, rendering innocuous, or otherwise treating exhaust (electric control [F01N 9/00](#) ; monitoring or diagnostic devices for exhaust-gas treatment apparatus [F01N 11/00](#) ; { collecting or removing exhaust gases of vehicle engines in workshops [B08B 15/00](#) , on highways [E01C 1/005](#)})
- U F01N 3/02** · for cooling, or for removing solid constituents of, exhaust (by means of electric or electrostatic separators [F01N 3/01](#) ; { mixing air with exhaust in tailpipes [F01N 13/082](#) , [F01N 13/20](#)})
- U F01N 3/021** · · by means of filters

- U F01N 3/023
 - • • using means for regenerating the filters, e.g. by burning trapped particles (by electrically controlling the supply of combustible mixture or its constituents only [F02D 41/0235](#))
- F01N 3/0231
 - • • • {using special exhaust apparatus upstream of the filter for producing nitrogen dioxide, e.g. for continuous filter regeneration systems ~~{(CRT)}~~}
- U F01N 3/033
 - • • in combination with other devices {(with adsorbents or absorbents [F01N 3/0821](#))}
- F01N 3/035
 - • • • with catalytic reactors, {e.g. catalysed diesel particulate filters}
- U F01N 3/08
 - for rendering innocuous (using electric or electrostatic separators [F01N 3/01](#) ; chemical aspects [B01D 53/92](#))
- U F01N 3/10
 - • by thermal or catalytic conversion of noxious components of exhaust (by using other chemical processes, chemical aspects of catalytic conversion, e.g. using specified catalysts, [B01D 53/34](#))
- U F01N 3/18
 - • • characterised by methods of operation; Regulation
- U F01N 3/20
 - • • • specially adapted for catalytic conversion; {Methods of operation or regulation of catalytic converters} ([F01N 3/22](#) takes precedence)
- F01N 3/2066
 - • • • • {Selective catalytic reduction ~~{(SCR)}~~}
- F01N 3/208
 - • • • • • {Control of selective catalytic reduction ~~{(SCR)}~~, e.g. dosing of reducing agent}
- F01N 11/00**
 - Monitoring or diagnostic devices for exhaust-gas treatment apparatus, {e.g. for catalytic activity (safety, indicating or supervising devices for internal combustion engines [F02B 77/08](#) ; testing of machines [G01M 13/00](#))}**

Project: N/A (F02B)

- U F02B 31/00**
 - Modifying induction systems for imparting a rotation to the charge in the cylinder (structural features of induction systems [F02M](#))**
- U F02B 31/04
 - by means within the induction channel, e.g. deflectors
- U F02B 31/06
 - • Movable means, e.g. butterfly valves
- F02B 31/08
 - • • having multiple air inlets, {i.e. having main and auxiliary intake passages}
- U F02B 37/00**
 - Engines characterised by provision of pumps driven at least for part of the time by exhaust (characterised by the introduction of liquid fuel into cylinders by use of auxiliary fluid [F02B 13/00](#) ; characterised by after-charging [F02B 29/06](#) ; characterised by passages conducting the charge from the pump to the engine inlet [F02B 33/44](#))**
- F02B 37/007
 - with exhaust-driven pumps arranged in parallel, {e.g. at least one pump supplying alternatively}
- U F02B 37/04
 - Engines with exhaust drive and other drive of pumps, e.g. with exhaust-driven pump and mechanically-driven second pump
- F02B 37/10
 - • at least one pump being alternatively {or simultaneously} driven by exhaust and other drive, {e.g. by pressurised fluid from a reservoir or an engine-driven pump}
- U F02B 37/12
 - Control of the pumps
- F02B 37/14
 - • {Control} of the alternation between {or the operation of} exhaust drive and other drive of a pump, e.g. dependent on speed
- F02B 37/22
 - • by varying cross-section of exhaust passages or air passages, {e.g. by throttling turbine inlets or outlets or by varying effective number of guide conduits ([F02B 37/24](#) takes precedence)}

Project: N/A (F02C)

- U F02C 7/00** **Features, components parts, details or accessories, not provided for in, or of interest apart from groups [F02C 1/00](#) to [F02C 6/00](#); Air intakes for jet-propulsion plants (controlling [F02C 9/00](#))**
- F02C 7/36
- Power transmission arrangements between the different shafts of the gas turbine plant, or between the gas-turbine plant and the power user ([F02C 3/107](#) to [F02C 3/13](#) and [F02C 7/32](#) take precedence; couplings for transmitting rotation [F16D](#); gearing in general [F16H](#))

Project: N/A (F02D)

- F02D 1/00** **Controlling fuel-injection pumps, e.g. of high pressure injection type ([F02D 3/00](#) takes precedence; controlling fuel-injection electrically [F02D 41/30](#) {pumping elements on fuel pressure acting for varying fuel delivery in quantity or timing [F02M](#)})**

NOTE

- in this subclass the following indexing codes are used:
[F02D 2700/0282](#) and [F02D 2700/10](#)

- U F02D 19/00** **Controlling engines characterised by their use of non-liquid fuels, pluralities of fuels, or non-fuel substances added to the combustible mixtures (the non-fuel substances being gaseous [F02D 21/00](#))**
- U F02D 19/06
- peculiar to engines working with pluralities of fuels, e.g. alternatively with light and heavy fuel oil, other than engines indifferent to the fuel consumed
- U F02D 19/0639
- · {characterised by the type of fuels}
- U F02D 19/0642
- · · {at least one fuel being gaseous, the other fuels being gaseous or liquid at standard conditions}
- F02D 19/0647
- · · · {the gaseous fuel being liquefied petroleum gas ([F02D 21/00](#)), liquefied natural gas ([F02D 21/00](#)), compressed natural gas ([F02D 21/00](#)) or dimethyl ether ([F02D 21/00](#))}

Project: N/A (F02K)

- 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](#)})**
- F02K 9/08
- using solid propellants ([F02K 9/72](#) takes precedence; using semi-solid or pulverulent propellants [F02K 9/70](#) {cartridges for producing gas under pressure [F42B 3/04](#)})
- 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 [F04](#) {control of propellant feed pumps [F02K 9/563](#)})

Project: N/A (F02M)

- U F02M 21/00** **Apparatus for supplying engines with non-liquid fuels, e.g. gaseous fuels stored in liquid form**
- NOTE
- in this group the following indexing codes are used: [F02M 2700/12](#) to [F02M 2700/13](#)
- U F02M 21/02
- for gaseous fuels (apparatus for vaporising liquid fuel by heat [F02M 31/00](#); engines with apparatus generating gas from solid fuel, e.g. from wood, [F02B 43/08](#))

- U F02M 21/0203 · · {characterised by the type of gaseous fuel}
- U F02M 21/0209 · · · {Hydrocarbon fuels, e.g. methane or acetylene}
- F02M 21/0212 · · · · {comprising at least 3 C-Atoms, e.g. liquefied petroleum gas ~~{LPG}~~, propane, butane or dimethyl ether ~~{DME}~~}
- U F02M 25/00 Engine-pertinent apparatus for adding non-fuel substances or small quantities of secondary fuel to combustion-air, main fuel, or fuel-air mixture (F02M 43/00 takes precedence; adding secondary air to fuel-air mixture F02M 23/00)**
- U F02M 25/06 · adding lubricant vapours or exhaust gases
- F02M 25/07 · · adding exhaust gases; -{ Exhaust gas recirculation ~~{EGR}~~}
- U F02M 25/0704 · · · {EGR systems specially adapted for supercharged engines}
- F02M 25/0712 · · · · {Constructional details of the exhaust gas circulation ~~{EGR}~~ combined with a supercharger system; Structural combinations of a supercharger with elements of the EGR system; Arrangement of the EGR and supercharger system with respect to the engine}
- F02M 29/00 Apparatus for re-atomising condensed fuel or homogenising fuel-air mixture (combined with secondary-air supply F02M 23/12 ~~{; collecting condensed fuel F02M 33/02}~~){collecting condensed fuel F02M 33/02}**
- 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 31/20 · for cooling (cooling of charging-air or of scavenging-air F02B ~~{; Use of cold F02M 17/52; F02M 31/005 takes precedence}~~){Use of cold F02M 17/52; F02M 31/005 takes precedence}
- 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 35/10222 · · · {Exhaust gas recirculation ~~{EGR}~~; Positive crankcase ventilation ~~{PCV}~~; Additional air admission, lubricant or fuel vapour admission}
- F02M 45/00 Fuel-injection apparatus characterised by having a cyclic delivery of specific time/pressure or time/quantity relationship (fuel-injectors having such deliveries by means of valves furnished at seated ends with pintle- or plug-shaped extensions F02M 61/06 {pumps having such delivery by means of delivery valves F02M 59/462})**
- U F02M 55/00 Fuel-injection apparatus characterised by their fuel conduits or their venting means; { Arrangements of conduits between fuel tank and pump F02M 37/00(venting in general B01D 19/00)}**
- F02M 55/04 · Means for damping vibrations {or pressure fluctuations} in injection pump inlets {or outlets}
- F02M 57/00 Fuel-injectors combined or associated with other devices**
- NOTE
in this group the following indexing codes are used: ~~F02M2700/07J~~;
[F02M 2700/1335](#)

F02M 59/00 Pumps specially adapted for fuel-injection and not provided for in groups [F02M 39/00](#) to [F02M 57/00](#), { e.g. rotary cylinder-block type pumps}(general features of pumps [F04](#))

NOTE

- in this group the following indexing codes are used: ~~F02M2700/07G~~, ~~F02M2700/13E~~, [F02M 2700/1323](#), [F02M 2700/1341](#), [F02M 2700/1352](#), [F02M 2700/1388](#)

U F02M 59/44 · Details, components parts, or accessories not provided for in, or of interest apart from, the apparatus of groups [F02M 59/02](#) to [F02M 59/42](#); {Pumps having transducers, e.g. to measure displacement of pump rack or piston}

F02M 61/00 Fuel-injectors not provided for in groups [F02M 39/00](#) to [F02M 57/00](#) or [F02M 67/00](#)

NOTE

- in this group the following indexing codes are used: [F02M 2700/07](#), ~~F02M2700/07B~~, [F02M 2700/074](#)

F02M 69/00 Low-pressure fuel-injection apparatus (electrically operated [F02M 51/00](#)); { Apparatus with both continuous and intermittent injection; Apparatus injecting different types of fuel}

NOTE

- in this group the following indexing codes are used: ~~F02M2700/43C~~, [F02B 2720/15](#)

Project: N/A (F02N)

U F02N 11/00 Starting of engines by means of electric motors (arrangement or mounting of prime-movers consisting of electric motors and internal combustion engines for mutual or common propulsion [B60K 6/20](#))

F02N 11/08 · Circuits {or control means} specially adapted for starting of engines

U F02N 2200/00 Parameters used for control of starting apparatus

U F02N 2200/06 · said parameters being related to the power supply or driving circuits for the starter

F02N 2200/061 · · Battery state of charge (~~/SOC~~)

U F02N 2300/00 Control related aspects of engine starting

U F02N 2300/10 · characterised by the control output, i.e. means or parameters used as a control output or target

F02N 2300/108 · · Duty cycle control or pulse width modulation (~~/PWM~~)

Project: N/A (F02P)

U F02P 3/00 Other installations

U F02P 3/02 · having inductive energy storage, e.g. arrangements of induction coils {(ignition coils structurally combined with sparking plugs [F02P 13/00](#); constructional details of ignition coils [H01F 38/12](#))}

U F02P 3/04 · · Layout of circuits

U F02P 3/0407 · · · {Opening or closing the primary coil circuit with electronic switching means ([F02P 3/045](#) to [F02P 3/055](#) take precedence)}

F02P 3/0435 · · · · {with semiconductor devices (~~F02P3/045B~~ [F02P 3/0453](#), [F02P 3/051](#), [F02P 3/0552](#) take precedence)}

F02P 15/00

Electric spark ignition having characteristics not provided for in, or of interest apart from, groups [F02P 1/00](#) to [F02P 13/00](#) {and combined with layout of ignition circuits (not combined [F02B](#), [F02C](#), [F02G](#), [F02K](#))}

Project: N/A (F03B)

U 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 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

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"}

Project: N/A (F03C)

U F03C 1/00

Reciprocating-piston liquid engines

U F03C 1/08

- Distributing valve-gear peculiar thereto (for engines with positive-displacement in general [F01L](#); {[F03C 1/06](#) takes precedence})

F03C 1/14

- • by driving liquid of engine (~~[F03C1/18](#) takes precedence~~)

Project: N/A (F04C)

U F04C 2220/00

Application

F04C 2220/30

- Use in a chemical vapor deposition (~~[CVD](#)~~) process or in a similar process

U F04C 2280/00

Arrangements for preventing or removing deposits or corrosion

F04C 2280/02

- Preventing solid deposits in pumps, e.g. in vacuum pumps with chemical vapour deposition (~~[CVD](#)~~) processes

Project: N/A (F04D)

U F04D 29/00

Details, component parts, or accessories (machine elements in general [F16](#))

F04D 29/02

- Selection of particular materials (for handling specific liquids [F04D 7/00](#) {[F04D 23/001](#)})

U F04D 29/04

- Shafts or bearings, or assemblies thereof (specially adapted for elastic fluid pumps [F04D 29/05](#))

F04D 29/042

- • Axially shiftable rotors ~~[F04D 29/041](#) takes precedence~~ {([F04D 29/041](#) takes precedence {; control by creating a by-pass [F04D 15/0027](#)})}

U F04D 29/05

- Shafts or bearings, or assemblies thereof, specially adapted for elastic fluid pumps

F04D 29/052

- • Axially shiftable rotors ~~[F04D 29/051](#) takes precedence~~ {([F04D 29/051](#) takes precedence {; control by creating a by-pass [F04D 27/0246](#)})}

Project: N/A (F05B)

F05B 2210/00

Working fluid

NOTE

Indexing codes of group [F05B 2210/00](#) can be followed by a name for a specific working fluid preceded by the "+" sign, e.g. [F05B 2210/11](#) +water.

U F05B 2250/00**Geometry**NOTE

Geometry indicates the shape or form of a component or the configuration or arrangement of components in a machine or in a plant.

U F05B 2250/80
F05B 2250/84

- Size or power range of the machines
- · Nanomachines ([Nanotechnology for interacting, sensing or actuating Y01N8/00](#) [Nanotechnology for interacting, sensing or actuating B82Y 15/00](#))

U F05B 2280/00**Materials; Properties thereof**

U F05B 2280/40
F05B 2280/4005

- Organic materials
- · PTFE ([PolyTetraFluorEthylene](#))

Project: N/A (F05C)**U F05C 2201/00****Metals**

U F05C 2201/04
U F05C 2201/0433
U F05C 2201/0436
U F05C 2201/0439
U F05C 2201/0442
F05C 2201/0445

- Heavy metals
- · Iron group; Ferrous alloys, e.g. steel
- · · Iron
- · · · Cast iron
- · · · · Spheroidal graphite cast iron, e.g. nodular iron, ductile iron
- · · · · · Austempered ductile iron ([ADI](#))

U F05C 2225/00**Synthetic polymers, e.g. plastics; Rubber**

F05C 2225/04

- PTFE ([PolyTetraFluorEthylene](#))

Project: N/A (F05D)**U F05D 2260/00****Function**

U F05D 2260/60
F05D 2260/61
F05D 2260/94

- Fluid transfer
- · Removal of CO₂ (removal of CO₂ from waste gases [B01D 53/62](#))
- Functionality given by mechanical stress related aspects such as low cycle fatigue ([LCF](#)) of high cycle fatigue ([HCF](#))

U F05D 2300/00**Materials; Properties thereof**

U F05D 2300/40
U F05D 2300/43
F05D 2300/432
U F05D 2300/60
U F05D 2300/603
F05D 2300/6032
F05D 2300/6033

- Organic materials
- · Synthetic polymers, e.g. plastics; Rubber
- · · PTFE ([PolyTetraFluorEthylene](#))
- Properties or characteristics given to material by treatment or manufacturing
- · Composites; e.g. fibre-reinforced
- · · Metal matrix composites ([MMC](#))
- · · Ceramic matrix composites ([CMC](#))

Project: N/A (F15B)

F15B

SYSTEMS ACTING BY MEANS OF FLUIDS IN GENERAL; FLUID-PRESSURE ACTUATORS, e.g. SERVO-MOTORS; DETAILS OF FLUID-PRESSURE SYSTEMS, NOT OTHERWISE PROVIDED FOR ({hydraulically or pneumatically operated lifting devices for soil-working machines [A01B 63/10](#) ; hydraulic drawing presses [B21D](#); hydraulic or pneumatic manipulators [B25J](#); hydraulic or pneumatic tipping devices for vehicles [B60P 1/00](#) ; hydraulic or pneumatic remote control for railway signals [B61L 7/04](#) ; hydraulic or pneumatic mine supports [E21D 15/44](#)}; motors, turbines, compressors, blowers, pumps [F01](#) to [F04](#); {fluid signal amplifiers, relays [F15C](#) } ; fluid dynamics [F15D](#); fluid clutches or brakes [F16D](#); fluid springs [F16E](#); fluid gearing [F16H](#); pistons, cylinders packing [F16J](#); valves, taps, cocks, actuating-floats [F16K](#); safety valves with auxiliary fluid operation of the main valve [F16K 17/10](#) ; fluid-operating means for valves [F16K 31/12](#) ; pipes, pipe joints [F16L](#); lubricating [F16N](#))

NOTE

In this subclass, the following terms are used with the meaning stated:

- "Telemotor" means a system or device in which a substantially constant amount of fluid is trapped between an input member and an output member to act as a fluid link;
- "Servomotor" means a fluid-pressure actuator, e.g. a piston and cylinder, directly controlled by a valve or other device which is responsive to operation of an initial controlling member; "Servomotor" does not cover a telemotor. The initial controlling member may be adjacent to the servomotor or at a distance, and may be, for example a hand lever.

U F15B 9/00

Servomotors with follow-up action, [e.g. obtained by feed-back control], i.e. in which the position of the actuated member conforms with that of the controlling member ({[F15B 11/10](#) takes precedence})

F15B 9/16

• Systems essentially having two or more interacting servomotors, {e.g. multi-stage ([F15B 18/00](#) , [F15B 20/00](#) take precedence; servo-operated pilot valves for the following stage [F15B 13/042](#))}

U F15B 11/00

Servomotor systems without provision for follow-up action; {Circuits therefor} ([F15B 3/00](#) takes precedence)

U F15B 11/02

• Systems essentially incorporating special features for controlling the speed or actuating force of an output member

U F15B 11/04

• • for controlling the speed ([F15B 11/024](#) takes precedence)

F15B 11/042

• • • by regulating means in feed line, {i.e. "meter in"}([F15B 11/046](#) , [F15B 11/05](#) take precedence)

F15B 11/044

• • • by regulating means in return line, {i.e. "meter out"}([F15B 11/046](#) , [F15B 11/05](#) take precedence)

U F15B 11/08

• with only one servomotor

U F15B 11/12

• • providing distinct intermediate positions; with step-by-step action{ with a number of pistons in a single cylinder step-by-step action obtained by combining two or more servomotors [F15B 11/18](#) ; (for restricting the stroke [F15B 15/24](#))}

F15B 11/13

• • • using {separate dosing} chambers of predetermined volume

U F15B 11/16

• with two or more servomotors {(for soil-shifting machines [E02F 9/22](#))}

U F15B 11/161

• • {with sensing of servomotor demand or load}

F15B 11/168

• • • {with an isolator valve (duplicating valve), i.e. at least one load sense ([\[LS\]](#)) pressure is derived from a work port load sense pressure but is not a work port pressure itself}

- F15B 13/00** **Details of servomotor systems ({F15B 1/04 , F15B 1/26 , F15B 3/00 , F15B 7/08 , F15B 11/02 , F15B 11/10 , } F15B 15/00 take precedence){; Valves for servomotor systems}**
- F15B 13/01 · Locking-valves or other detent, {i.e. load-holding}, devices (associated with the actuator [F15B 15/26](#) ; { systems with load-holding valves [F15B 11/003](#)})
- F15B 13/10 · Special arrangements for operating the actuated device {with or} without using fluid pressure, e.g. for emergency use
- F15B 13/16 · Special measures for feedback, {e.g. by a follow-up device (servomotors with follow-up action [F15B 9/00](#) ; devices with means or adapted for load sensing [F15B 13/0416](#))}
U F15B 15/00 **Fluid-actuated devices for displacing a member from one position to another (motors for continuous movement [F01](#) to [F03](#)); Gearing associated therewith**
- U F15B 15/08 · characterised by the construction of the motor unit (pistons, cylinders, packing [F16J](#))
- F15B 15/088 · {the motor using combined actuation, e.g. electric and fluid actuation}
WARNING
 Not complete, see also [F15B 15/08](#) , ~~F15B15/20M~~[F15B 2015/206](#)
- F15B 19/00** **Testing; {Calibrating; Fault detection or monitoring; Simulation or modelling of} fluid-pressure systems or apparatus not otherwise provided for**
- F15B 20/00** **Safety arrangements; Applications of safety devices (safety devices in general [F16P](#), {[F16P 3/22](#)}); Emergency measures**
- U F15B 21/00** **Common features; Fluid-pressure systems, or details thereof, not covered by any preceding group**
- F15B 21/08 · Servomotor systems incorporating electrically operated control means ([F15B 21/02](#) , {[F15B 21/065](#)} take precedence)
- U F15B 21/14 · Energy recuperation means (for vehicles [B60T 1/10](#)); {Means for reducing energy consumption (regenerative circuits [F15B 11/024](#))}
U F15B 2211/00 **Circuits for servomotor systems**
- U F15B 2211/30 · Directional control
- U F15B 2211/32 · · characterised by the type of actuation
- U F15B 2211/327 · · · electrically or electronically
- F15B 2211/328 · · · · with signal modulation, e.g. pulse width modulation ([P](#)WM)
- U F15B 2211/40 · Flow control
- U F15B 2211/42 · · characterised by the type of actuation
- U F15B 2211/426 · · · electrically or electronically
- F15B 2211/427 · · · · with signal modulation, e.g. using pulse width modulation ([P](#)WM)
- U F15B 2211/50 · Pressure control
- U F15B 2211/52 · · characterised by the type of actuation
- U F15B 2211/526 · · · electrically or electronically
- F15B 2211/527 · · · · with signal modulation, e.g. pulse width modulation ([P](#)WM)

Project: N/A (F16B)

- U F16B 35/00** **Screw-bolts; Stay-bolts; Screw-threaded studs; Screws; Set screws** (**{F16B 33/008** takes precedence; joining sheets or plates using screws with two separate threads **F16B 5/0275**; using screws with adjustment sleeves **F16B 5/0283**}; thread cutting screws **F16B 25/00**)

NOTE

The fastening of heads of screws or heads of bolts to surfaces is classified in [F16B 37/04](#)

- U F16B 35/04** · with specially-shaped head or shaft in order to fix the bolt on or in an object (locking the bolt against turning in the object by the use of accessory parts [F16B 39/00](#))
- F16B 35/06** · · Specially-shaped heads (special shape in order to rotate the bolt [F16B 23/00](#) {; separate hook adaptors for bolts [F16B 43/025](#)})~~{(separate hook adaptors for bolts [F16B 43/025](#))}~~

- 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 39/22** · in which the locking takes place during screwing down or tightening ([F16B 39/01](#) takes precedence)
- U F16B 39/28** · · by special members on, or shape of, the nut or bolt ([F16B 39/26](#) takes precedence; locknuts [F16B 39/12](#))
- F16B 39/284** · · · Locking by means of elastic deformation ([F16B 39/2825](#), [F16B 39/36](#),) [F16B 39/38](#) take precedence)

Project: N/A (F16C)

- U F16C 19/00** **Bearings with rolling contact, for exclusively rotary movement (adjustable bearings [F16C 23/00](#), [F16C 25/00](#); { electrically insulating bearings [H02K 5/173](#)})**

- U F16C 19/54** · Systems consisting of a plurality of bearings with rolling friction (spindle bearings [F16C 35/08](#))
- F16C 19/55** · · with intermediate floating {or independently-driven} rings rotating at reduced speed {or with other differential ball or roller bearings}

- U F16C 32/00** **Bearings not otherwise provided for**

- U F16C 32/04** · using magnetic or electric supporting means
- U F16C 32/0406** · · {Magnetic bearings}
- U F16C 32/044** · · · {Active magnetic bearings}
- U F16C 32/0444** · · · · {Details of devices to control the actuation of the electromagnets}
- U F16C 32/0451** · · · · · {Details of controllers, i.e. the units determining the power to be supplied, e.g. comparing elements, feedback arrangements with P.I.D. control}
- F16C 32/0455** · · · · · {including digital signal processing ~~{/DSP}~~} and analog/digital conversion ~~{/A/D, D/A}~~}

- U F16C 2206/00** **Materials with ceramics, cermets, hard carbon or similar non-metallic hard materials as main constituents**

- U F16C 2206/02 · Carbon based material
- F16C 2206/04 · · Diamond like carbon *{[DLC]}*
- U F16C 2206/80 · Cermets, i.e. composites of ceramics and metal (in general [C22C 29/00](#))
- F16C 2206/82 · · based on tungsten carbide *{[WC]}*

- U F16C 2208/00 **Plastics; Synthetic resins, e.g. rubbers****
- U F16C 2208/10 · Elastomers; Rubbers
- F16C 2208/12 · · Polyurethan *{[PU]}*
- U F16C 2208/20 · Thermoplastic resins
- F16C 2208/30 · · Fluoropolymers (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/32 · · · Polytetrafluorethylene *{[PTFE]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/34 · · · Polyvinylidene fluoride *{[PVDF]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/36 · · Polyarylene ether ketones *{[PAEK]}*, e.g. PEK, PEEK (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/40 · · Imides, e.g. polyimide *{[PI]}*, polyetherimide *{[PEI]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/42 · · · Polyamideimide *{[PAI]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/44 · · · Polybenzimidazole *{[PBI]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/48 · · Liquid crystal polymers *{[LCP]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/52 · · Polyphenylene sulphide *{[PPS]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/54 · · Polysulphones, e.g. polysulphone *{[PSU]}*, polyethersulphone *{[PES]}*, polyethersulphone-block copolymer *{[PPSU]}* (~~F16C 2208/58 takes precedence~~*F16C 2208/58 takes precedence*)
- F16C 2208/60 · · Polyamides *{[PA]}*
- F16C 2208/66 · · Acetals, e.g. polyoxymethylene *{[POM]}*
- F16C 2208/70 · · Polyesters, e.g. polyethylene-terephthlate *{[PET]}*, polybutylene-terephthlate *{[PBT]}*
- F16C 2208/72 · · Acrylics, e.g. polymethylmethacrylate *{[PMMA]}*
- F16C 2208/76 · · Polyolefins, e.g. polypropylene *{[PP]}*
- F16C 2208/78 · · · Polyethylene *{[PE]}*, e.g. ultra-high molecular weight polyethylene *{[UHMWPE]}*

- U F16C 2240/00 **Specified values or numerical ranges of parameters; Relations between them (properties of materials [F16C 2202/00](#))****
- U F16C 2240/40 · Linear dimensions, e.g. length, radius, thickness, gap
- U F16C 2240/70 · · Diameters; Radii
- F16C 2240/80 · · · Pitch circle diameters *{[PCD]}*

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](#))****

- U F16D 3/50
 - with the coupling parts connected by one or more intermediate members ([F16D 3/16](#) takes precedence)
- U F16D 3/72
 - · with axially-spaced attachments to the coupling parts ([F16D 3/56](#) takes precedence)
- F16D 3/74
 - · · the intermediate member or members being made of rubber or other {rubber-like} flexible material
- U F16D 25/00** **Fluid-actuated clutches**
- F16D 25/04
 - in which the fluid actuates an elastic clutching, {i.e. elastic actuating} member, e.g. a diaphragm or a pneumatic tube ([F16D 25/02](#) takes precedence; coupling using a pneumatic tube [F16D 3/82](#))
- F16D 25/06
 - in which the fluid actuates a piston incorporated in, {i.e. rotating with} the clutch ([F16D 25/02](#) takes precedence)
- F16D 25/08
 - with fluid-actuated member not rotating with a clutching member ([F16D 25/02](#) takes precedence {[F16D 25/048](#) takes precedence})
- F16D 27/00** **Magnetically- {or electrically-} actuated clutches; Control or electric circuits therefor (clutches with magnetisable particles [F16D 37/02](#) ; { with electro-rheological fluids [F16D 37/008](#)})**
- F16D 35/00** **Fluid clutches in which the clutching is predominantly obtained by fluid adhesion (~~F16D 37/00 takes precedence~~){([F16D 37/00](#) takes precedence {arrangements of viscous clutches in four-wheel drives - [B60K 17/3465](#) and [B60K 17/351](#)})}**
- F16D 41/00** **Freewheels or freewheel clutches (cycle brakes controlled by back-peddalling [B62L 5/00](#) ; { one-way linear clutches ~~F16B7/16~~[F16B 2007/16](#)})**
- U F16D 43/00** **Automatic clutches (varying the relationship between two coaxial shafts [F16D 3/10](#) ; freewheels, freewheel clutches [F16D 41/00](#))**
- U F16D 43/02
 - actuated entirely mechanically
- F16D 43/26
 - · acting at definite angular position or disengaging after {consecutive} definite number of rotations (actuating by means of stationary abutment [F16D 11/02](#) , [F16D 13/02](#) , [F16D 15/00](#) ; control of change-speed or reversing-gearings conveying rotary motion [F16H 59/00](#) to [F16H 63/00](#))
- U F16D 51/00** **Brakes with outwardly-movable braking members co-operating with the inner surface of a drum or the like (similar clutches [F16D 13/14](#))**
- F16D 51/46
 - Self-tightening brakes with pivoted brake shoes, {i.e. the braked member increases the braking action}
- U F16D 55/00** **Brakes with substantially-radial braking surfaces pressed together in axial direction, e.g. disc brakes (similar clutches [F16D 13/38](#))**
- U F16D 55/02
 - with axially-movable discs or pads pressed against axially-located rotating members
- U F16D 55/22
 - · by clamping an axially-located rotating disc between movable braking members, e.g. movable brake discs or brake pads
- U F16D 55/224
 - · · with a common actuating member for the braking members
- U F16D 55/225
 - · · · the braking members being brake pads
- F16D 55/226
 - · · · · in which the common actuating member is moved axially, {e.g. floating caliper disc brakes}
- U F16D 55/2265
 - · · · · the axial movement being guided by one or more pins {engaging bores in the brake support or the brake housing}
- F16D 55/227
 - · · · · · by two {or more} pins

- U F16D 57/00** **Liquid-resistance brakes; {Brakes using the internal friction of fluids or fluid-like media, e.g. powders (for braking drums, barrels or ropes of cranes, lift hoists or winches [B66D 5/026](#))}**
- U F16D 65/00** **Parts or details (similar members for clutches [F16D 13/58](#))**
- U F16D 65/14** · Actuating mechanisms for brakes; Means for initiating operation at a predetermined position (brake control systems, parts thereof [B60T](#))
- U F16D 65/16** · · arranged in or on the brake
- F16D 65/18** · · · adapted for drawing members together, {e.g. for disc brakes}
- F16D 65/22** · · · adapted for pressing members apart, {e.g. for drum brakes}
- U F16D 69/00** **Friction linings; Attachment thereof; Selection of coating friction substances or surfaces (clutching elements [F16D 13/60](#) ; braking members [F16D 65/02](#))**
- U F16D 69/02** · Compositions of linings; {Methods of manufacturing}
- NOTE**
Indexing codes [F16D 69/021](#) to [F16D 2250/0053](#) are used for indexing aspects relating to compositions or manufacturing of friction linings
- U F16D 2121/00** **Type of actuator operation force**
- U F16D 2121/02** · Fluid pressure
- F16D 2121/12** · · for releasing a normally applied brake, the type of actuator being irrelevant or not provided for in groups ~~[F16D121/04](#)~~[F16D 2121/04](#) - ~~[F16D121/10](#)~~[F16D 2121/10](#)
- 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 2500/508** · · Relating driving conditions
- F16D 2500/50833** · · · Control during a stability control operation ([\[ESP\]](#))

Project: N/A (F16F)**F16F****SPRINGS; SHOCK-ABSORBERS; MEANS FOR DAMPING VIBRATION****NOTES**

1. This subclass covers:

- springs, shock-absorbers or vibration-dampers;
- their arrangement in, or adaptation for, particular apparatus if not provided for in the subclasses covering said apparatus.

2. This subclass does not cover inventions concerning the arrangement or adaptation of springs, shock-absorbers or vibration-dampers in, or for, particular apparatus, if provided for in the subclasses concerning the said apparatus, e.g.

[A47C 23/00](#)

to [A47C 27/00](#) Spring mattresses

{[A61F 2/00](#) Prostheses }

[A63C 5/075](#) Vibration dampers in skis

[B60G](#) Vehicle suspensions

[B60R 19/24](#) Mounting of bumpers on vehicles

[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 or shocks	Protection of buildings against vibrations }
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
F41B5/20 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.
{ 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](#) to [F16F 1/3686](#) and [F16F 15/305](#).

WARNING

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

F16F 3/07	covered by	F16F 13/00	
F16F 9/24	covered by	F16F 9/22	
F16F 9/40	covered by	F16F 9/00	to
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](#)

Springs (working with fluid [F16F 5/00](#) , [F16F 9/00](#))

- U F16F 1/02
 - made of steel or other material having low internal friction {(characterised by their special construction from fibre-reinforced plastics [F16F 1/366](#) ; spring units consisting of several springs [F16F 3/02](#) ; making springs from wire [B21F 35/00](#))}; Wound, torsion, leaf, cup, ring or the like springs, the material of the spring not being relevant
- U F16F 1/04
 - • Wound springs {(making springs by coiling wire [B21F 3/00](#))}
- F16F 1/08
 - • • with turns lying in mainly conical surfaces, {i.e. characterised by varying diameter ([F16F 1/10](#) takes precedence)}
- U F16F 1/18
 - • Leaf springs {(planar springs in general [F16F 1/027](#) ; "Belleville"-type springs with generally radial arms [F16F 1/324](#))}
- F16F 1/26
 - • • Attachments or mountings ({[F16F 1/182](#) , [F16F 1/22](#)} [B60G 11/10](#) take precedence)
- F16F 1/36
 - made of rubber or other material having high internal friction, {e.g. thermoplastic elastomers (spring units consisting of several springs [F16F 3/08](#))}
- U F16F 1/3605
 - • {characterised by their material ([F16F 1/362](#) , [F16F 1/364](#) , [F16F 1/366](#) , [F16F 1/37](#) take precedence; composition of macromolecular compounds in general [C08L](#))}
- F16F 1/361
 - • • {comprising magneto-rheological elastomers ([F16F 1/362](#)), (magneto-rheological fluid dampers [F16F 9/535](#))}
- F16F 1/362
 - • made of steel wool, compressed hair, {woven or non-woven textile, or like materials}
- F16F 1/366
 - • made of fibre-reinforced plastics, {i.e. characterised by their special construction from such materials}

NOTE

Attention is drawn to notes following the subclass title regarding interpretation of the term "plastics" in groups [F16F](#) , in particular as regards the subject matter of groups [F16F 1/366](#) to [F16F 1/3686](#) .

- F16F 1/37
 - • of foam-like material, {i.e. micro-cellular material}, e.g. sponge rubber {(padded linings for vehicle interiors [B60R 21/04](#))}
- F16F 1/371
 - • characterised by inserts or auxiliary extension {or exterior} elements, e.g. for rigidification ([F16F 1/387](#) takes precedence; { non-embedded reinforcing elements for flexibly-walled air springs [F16F 9/0436](#))}
- F16F 1/38
 - • with a sleeve of elastic material between a rigid outer sleeve and a rigid inner sleeve or pin, {i.e. bushing-type (hydraulically-damped bushes [F16F 13/14](#) ; suppression of vibrations in rotating systems by making use of elastomeric spring members between rotating elements, driveline torque being transmitted therebetween [F16F 15/126](#) , by making use of a dynamic damping mass attached to a rotating element by means of elastomeric springs [F16F 15/14](#) ; pivots per se [F16C 11/00](#) ; elastic or yielding bearings or bearing supports [F16C 27/00](#) ; parts of sliding-contact bearings, e.g. bushes [F16C 33/04](#))}
- U F16F 3/00

Spring units consisting of several springs, e.g. for obtaining a desired spring characteristic ({[F16F 1/32](#) , [F16F 1/34](#) , [F16F 7/14](#) take precedence } ; if including fluid springs [F16F 5/00](#) , [F16F 13/00](#))

NOTE

In this group, vehicle leaf spring units, i.e. "packets" of individual leaves, are considered as a single spring
- U F16F 3/08
 - with springs made of a material having high internal friction, e.g. rubber {(multi-part grommet-type resilient mountings [F16F 1/3735](#))}
- F16F 3/087
 - • Units comprising several springs made of plastics or the like material ([F16F 1/40](#) , {[F16F 1/545](#)} take precedence)

- F16F 6/00** **Magnetic springs; {(magnetic spring arrangements for the suppression of vibration in systems [F16F 15/03](#))}; Fluid magnetic springs, {i.e. magnetic spring combined with a fluid}**
- 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 [F15B 1/04](#))}
- U F16F 9/10** • using liquid only; using a fluid of which the nature is immaterial
- F16F 9/12** • • Devices with one or more rotary vanes turning in the fluid any throttling effect being immaterial, {i.e. damping by viscous shear effect only ([F16F 9/53](#) takes precedence ; pivoting supports for apparatus or articles placed on stands or trestles [F16M 11/06](#))}
- U F16F 9/14** • • Devices with one or more members, e.g. pistons, vanes, moving to and fro in chambers and using throttling effect
- U F16F 9/16** • • • involving only straight-line movement of the effective parts {(wing closers or openers with liquid piston brakes [E05F 3/04](#))}
- U F16F 9/18** • • • • with a closed cylinder and a piston separating two or more working spaces therein
- F16F 9/20** • • • • • with the piston-rod extending through both ends of the cylinder, {e.g. constant-volume dampers}
- U F16F 9/32** • Details
- F16F 9/43** • • Filling {or drainage} arrangements, e.g. for supply of gas {(filling vessels with, or discharging from vessels, compressed, liquefied, or solidified gases [F17C](#))}
- U F16F 9/44** • • Means on or in the damper for manual or non-automatic adjustment; Such means combined with temperature correction ([F16F 9/53](#) , {[F16F 13/26](#)} take precedence; temperature correction only [F16F 9/52](#))
- F16F 9/46** • • • allowing control from a distance, {i.e. location of means for control input being remote from site of valves, e.g. on damper external wall (attachment of valve units to cylinders [F16F 9/325](#))}
- F16F 9/50** • • Special means providing automatic damping adjustment, {i.e. self-adjustment of damping by particular sliding movements of a valve element, other than flexions or displacement of valve discs}([F16F 9/53](#) takes precedence); {Special means providing self-adjustment of spring characteristics}
- F16F 9/504** • • • Inertia, {i.e. acceleration,}-sensitive means
- F16F 9/512** • • • Means responsive to load action, {i.e. static load} on the damper or {dynamic} fluid pressure {changes} in the damper, {e.g. due to changes in velocity ([F16F 9/504](#) , [F16F 9/516](#) take precedence; non-automatic damper adjustment from a distance using servo control, the servo pressure being created by the flow of damping fluid [F16F 9/465](#) ; self-pumping fluid springs in vehicle suspensions [B60G 17/044](#))}
- F16F 9/516** • • • resulting in the damping effects during contraction being different from the damping effects during extension, {i.e. responsive to the direction of movement ([F16F 9/504](#) takes precedence)}

- U F16F 9/53
 - • Means for adjusting damping characteristics by varying fluid viscosity, e.g. electromagnetically {(F16F 13/30 takes precedence; brakes comprising a medium with electrically or magnetically controlled friction F16D 57/002 ; electrorheological fluids per se C10M 171/001 ; magnetorheological fluids per se H01F 1/447)}
- F16F 9/532
 - • • {Electrorheological (ER) fluid dampers}
- F16F 9/535
 - • • {Magnetorheological (MR) fluid dampers (springs comprising magnetorheological (MR) elastomers F16F 1/361)}
- 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)
- U F16F 13/08
 - • • the plastics spring forming at least a part of the wall of the fluid chamber of the damper (F16F 13/20 to F16F 13/24 take precedence)
- F16F 13/14
 - • • • Units of the bushing type, {i.e. loaded predominantly radially (bushes F16F 1/38 ; mounting brackets therefor F16F 1/3849)}
- F16F 13/20
 - • • characterised by comprising also a pneumatic spring (F16F 13/22 , {F16F 13/26} take precedence)
- 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)
- 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})
- F16F 15/03
 - • using {magnetic or} electromagnetic means (F16F 9/53 , {F16F 15/005} take precedence)
- U F16F 15/10
 - Suppression of vibrations in rotating systems by making use of members moving with the system (by balancing F16F 15/22 ; { yielding couplings F16D 3/00} ; with flywheels acting variably or intermittently F16H ; { construction providing resilience or vibration-damping for gear elements F16H 55/14})
- U F16F 15/12
 - • using elastic members or friction-damping members, e.g. between a rotating shaft and a gyratory mass mounted thereon ({F16F 15/14} , F16F 15/16 take precedence)
- U F16F 15/121
 - • • using springs as elastic members, e.g. metallic springs {(F16F 15/133 takes precedence)}
- F16F 15/124
 - • • • Elastomeric springs (F16F 15/123 , {F16F 15/127} take precedence)
- U F16F 15/131
 - • • the rotating system comprising two or more gyratory masses
- U F16F 15/133
 - • • • using springs as elastic members, e.g. metallic springs
- F16F 15/136
 - • • • • Plastics springs, e.g. made of rubber (F16F 15/134 , {F16F 15/137} take precedence)

- F16F 15/137
 - • • • the elastic members consisting of two or more springs of different kinds, {e.g. elastomeric members and wound springs}
- F16F 15/14
 - • using masses freely rotating with the system, {i.e. uninvolved in transmitting driveline torque, e.g. rotative dynamic dampers (compensation of inertia forces [F16F 15/22](#) ; weights for balancing rotating bodies [F16F 15/32](#))}
- F16F 15/18
 - • using electric, {magnetic or electromagnetic} means {(suppression of vibrations of rotating systems by use of non-rotating magnetic or electromagnetic means [F16F 15/03](#) ; } dynamo-electric devices [H02K](#); { control effected upon generator excitation circuit to reduce harmful effects of overloads or transients [H02P 9/10](#))}
- 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 15/26
 - • of crankshaft systems using solid masses, other than the ordinary pistons, moving with the system, {i.e. masses connected through a kinematic mechanism or gear system ([F16F 15/226](#) takes precedence)}
- F16F 15/28
 - Counterweights, {i.e. additional weights counterbalancing inertia forces induced by the reciprocating movement of masses in the system, e.g. of pistons attached to an engine crankshaft (rotating balancer shafts [F16F 15/264](#) ; correcting-weights for balancing rotating bodies [F16F 15/32](#))}; Attaching or mounting same
- F16F 15/30
 - Flywheels ([F16F 15/16](#) , [F16F 15/28](#) take precedence; suppression of vibrations in rotating systems using elastic members or friction-damping members moving with the system, {i.e. split flywheels or single masses connected to a hub by elastic members or friction-damping members} [F16F 15/12](#) ; rotary-body aspects in general [F16C 13/00](#) , [F16C 15/00](#))
- F16F 15/305
 - • made of plastics, e.g. fibre-reinforced plastics ~~{(FRP)}~~, {i.e. characterised by their special construction from such materials}
- U F16F 15/32
 - Correcting- or balancing-weights or equivalent means for balancing rotating bodies, e.g. vehicle wheels {(suppression of vibrations in rotating systems by using freely rotating masses [F16F 15/14](#) ; compensation of inertia forces [F16F 15/22](#) ; compensating unbalance for testing purposes [G01M 1/30](#))}
- F16F 15/36
 - • operating automatically, {i.e. where, for a given amount of unbalance, there is movement of masses until balance is achieved (damping vibrations of washing machines by displacing, supplying or ejecting a material, e.g. liquid, into or from counterbalancing pockets [D06F 37/245](#))}
- U **F16F 2224/00** **Materials; Material properties**
- U F16F 2224/02
 - solids
- F16F 2224/0241
 - • Fibre-reinforced plastics ~~{(FRP)}~~

Project: N/A (F16G)

- U **F16G 1/00** **Driving-belts (V-belts [F16G 5/00](#); conveyer belt [B65G](#))**
- F16G 1/02
 - made of leather ([F16G 1/28](#) takes precedence; making thereof [C14B 9/00](#) {consisting of several parts [F16G 1/22](#))}
- F16G 1/04
 - made of fibrous material, e.g. textiles, whether rubber-covered or not ([F16G 1/28](#) takes precedence; making thereof [D03D](#) {consisting of several parts [F16G 1/22](#))}
- F16G 1/14
 - made of plastics ([F16G 1/28](#) takes precedence; making thereof [B29D 29/00](#) {consisting of several parts [F16G 1/22](#))}

F16G 1/18 · made of wire (making thereof [B21F 43/00](#) {consisting of several parts [F16G 1/22](#)})

U F16G 5/00 V-belts, i.e. belts of tapered cross-section

F16G 5/04 · made of rubber ([F16G 5/02](#) takes precedence {consisting of several parts [F16G 5/16](#)})

F16G 5/12 · made of plastics ([F16G 5/20](#) takes precedence {consisting of several parts [F16G 5/16](#)})

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 · with gears having orbital motion

F16H 1/46 · · Systems consisting of a plurality of gear trains each with orbital gears, {i.e. systems having three or more central gears}

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

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

U F16H 25/00 Gearings comprising primarily only cams, cam-followers and screw-and-nut mechanisms

U F16H 25/08 · for interconverting rotary motion and reciprocating motion ([F16H 23/00](#) takes precedence)

F16H 25/12 · · with reciprocation along the axis of rotation, e.g. gearings with helical grooves and automatic reversal, {or cams}(screw mechanism without automatic reversal [F16H 25/20](#))

F16H 59/00 Control inputs to {control units of} change-speed-, or reversing-gearings for conveying rotary motion

U F16H 59/36 · Inputs being a function of speed

F16H 59/44 · · dependent on machine speed of the machine, {e.g. the vehicle}

U F16H 59/60 · Inputs being a function of ambient conditions

U F16H 59/66 · · Road conditions, e.g. slope, slippery

F16H 2059/666 · · · {Determining road conditions by using vehicle location or position, e.g. from global navigation systems ({GPS})}

F16H 61/00 Control functions within {control units of} change-speed- or reversing-gearings for conveying rotary motion; {Control of exclusively fluid gearing, friction gearing, gearings with endless flexible members or other particular types of gearing}

F16H 61/16 · Inhibiting {or initiating} shift during unfavourable conditions, {e.g. preventing forward reverse shift at high vehicle speed, preventing engine over speed (unintentional control input [F16H 61/18](#))}

F16H 61/18 · Preventing unintentional or unsafe shift, {e.g. preventing manual shift from highest gear to reverse gear}

- U F16H 61/20 · Preventing gear creeping; {Transmission control during standstill, e.g. hill hold control}
 - U F16H 61/26 · Generation or transmission of movements for final actuating mechanisms
- NOTES**
1. The generation or transmission of movements comprising only the selector apparatus, is classified in group [F16H 59/00](#) .
 2. The generation or transmission of movements, when part of the final output mechanisms, is classified in group [F16H 63/00](#) .
- U F16H 61/28 · · with at least one movement of the final actuating mechanism being caused by a non-mechanical force, e.g. power-assisted
 - F16H 61/30 · · · Hydraulic {or pneumatic} motors {or related fluid control means} therefor
 - F16H 61/32 · · · Electric motors {actuators or related electrical control means} therefor
- F16H 63/00 Control outputs {from the control unit} to change-speed- or reversing-gearings for conveying rotary motion {or to other devices than the final output mechanism}**
- U F16H 63/02 · Final output mechanisms therefor; Actuating means for the final output mechanisms
 - U F16H 63/30 · · Constructional features of the final output mechanisms
 - F16H 63/32 · · · Gear shift yokes, {e.g. shift forks}

Project: N/A (F16K)

- F16K 5/00 {Plug valves;} Taps or cocks comprising only cut-off apparatus having at least one of the sealing faces shaped as a more or less complete surface of a solid of revolution, the opening and closing movement being predominantly rotary (taps of the lift-valve type [F16K 1/00](#))**
- F16K 7/00 Diaphragm {valves or} cut-off apparatus, e.g. with a member deformed, but not moved bodily, to close the passage (container gates or closures operating by deformation of flexible walls [B65D 90/56](#) ; means for plugging pipes or hoses [F16L 55/10](#)){Pinch valves}**
- U F16K 11/00 Multiple-way valves, e.g. mixing valves; Pipe fittings incorporating such valves**
- U F16K 11/02 · with all movable sealing faces moving as one unit
- F16K 11/06 · · comprising only sliding valves, {i.e. sliding closure elements}
- F16K 17/00 Safety valves; Equalising valves, {e.g. pressure relief valves}**
- U F16K 17/02 · opening on surplus pressure on one side; closing on insufficient pressure on one side (check valves [F16K 15/00](#))
- U F16K 17/14 · · with fracturing member
- U F16K 17/16 · · · with fracturing diaphragm; {Rupture discs}
- F16K 21/00 Fluid-delivery valves, {e.g. self-closing valves}{for liquid handling [B67D](#) ; for flushing devices for water-closets or the like [E03D](#)}**
- F16K 31/00 {Actuating devices;} Operating means; Releasing devices {(regulating means [G05D](#))}**
- U F16K 41/00 Spindle sealings**
- U F16K 41/02 · with stuffing-box; {Sealing rings}

- U 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 47/08 · for decreasing pressure {or noise level} and having a throttling member separate from the closure member, {e.g. screens, slots, labyrinths}
- U F16K 99/00** **Subject matter not provided for in other groups of this subclass**
- U F16K 99/0001** · {Micro-valves (micro-devices [B81B 1/00](#) ; manufacture or treatment of devices or systems in or on a substrate [B81C 1/00](#) ; micro-fluidic structures [B01L 3/5027](#) ; micro-pumps [F04B 19/006](#))}
- U F16K 99/0034** · · {Operating means specially adapted for microvalves}
- U F16K 99/0042** · · · {Electric operating means therefor}
- F16K 99/0049 · · · · {using an electroactive polymer ([EAP](#))}
- U F16K 2099/0073** · {Fabrication methods specifically adapted for microvalves}
- F16K 2099/0076 · · {using electrical discharge machining ([EDM](#))}, milling or drilling}

Project: N/A (F16L)

- 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](#))}
- U F16L 21/00** Joints with sleeve or socket ([F16L 13/00](#), {[F16L 15/00](#)}, [F16L 17/00](#), [F16L 19/00](#), {[F16L 25/0027](#), [F16L 27/00](#), [F16L 37/00](#)} take precedence; {specially adapted to be made of plastics or to be used with pipes made of plastics [F16L 47/06](#); specially adapted for pipes of brittle material [F16L 49/08](#); devices for covering leaks in pipes or hoses [F16L 55/16](#))}
- U F16L 21/02** · with elastic sealing rings between pipe and sleeve or between pipe and socket, e.g. with rolling or other prefabricated profiled rings ([F16L 21/06](#), [F16L 21/08](#) take precedence; {sealing ring with radial ribs [F16L 17/025](#); sealing ring with axial lips [F16L 17/03](#)}; if adjustability is essential [F16L 27/00](#))
- F16L 21/03 · · placed in the socket before connection ({[F16L 21/022](#)}, [F16L 21/025](#) take precedence)
- F16L 21/035 · · placed around the spigot end before connection ({[F16L 21/022](#)}, [F16L 21/025](#) take precedence)

Project: N/A (F16M)

- U F16M 11/00** Stands or trestles as supports for apparatus or articles placed thereon {Stands for scientific apparatus such as gravitational force meters}{without heads [F16K 13/00](#) ; easels or stands for blackboard or the like [A47B 97/04](#) ; show-stands [A47F 7/00](#) ; for workmen [E04G 1/32](#) ; { sockets or holders for poles or posts [E04H 12/22](#)} ; supporting, suspending for lighting devices [F21V 21/00](#) ; special modifications for particular apparatus or articles, see the appropriate subclasses)
- U F16M 11/02** · Heads
- U F16M 11/04** · · Means for attachment of apparatus; Means allowing adjustment of the apparatus relatively to the stand
- U F16M 11/06** · · · allowing pivoting
- F16M 11/08 · · · · around a vertical axis, {e.g. panoramic heads ([F16M 11/12](#) takes precedence)}

- U F16M 11/20
F16M 11/24
- Undercarriages with or without wheels
 - • 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)
- U F16M 11/26
- • • by telescoping, with or without folding (details concerning the constructional features of telescoping parts only [F16B 7/10](#))
- U F16M 11/32
F16M 11/34
F16M 11/38
- • • • Undercarriages for supports with three or more telescoping legs
 - • • • • Members limiting spreading of legs, {e.g. "umbrella legs"}
 - • • by folding, {e.g. pivoting or scissors tong mechanisms}
- 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](#))}**
- F16M 13/04
- for supporting on, or holding steady relative to, a person, e.g. by chains, {e.g. rifle butt or pistol grip supports, supports attached to the chest or head (apparatus or arrangements for taking photographs or for projecting or viewing them [G03B](#))}

Project: N/A (F16S)

- U F16S 1/00**
- Sheets, panels, or other members of similar proportions; Constructions comprising assemblies of such members (built-up gratings [F16S 3/00](#); layered products [B32B](#))**
- NOTE
- In general shape the members may be flat or curved, but they may depart from such shape in detail over part or all of their area, e.g. they may be corrugated, ribbed, flanged; ribs, flanges or the like may be separately formed.
- F16S 1/04
- produced by deforming or otherwise working a flat sheet (honeycomb or other core members for layered products [B32B 3/00](#), e.g. [B32B 3/12](#), [B32B3/24](#) [B32B 3/266](#), [B32B 3/26](#))

Project: N/A (F17C)

- U F17C 3/00**
- Vessels not under pressure**
- F17C 3/02
- with provision for thermal insulation (thermal insulation in general [F16L 59/00](#) {refrigerators [F25D](#); insulation specially adapted for cryogenic vessels [F17C 13/001](#); tank vehicles [B60P 3/22](#); railway tank wagons [B61D 5/00](#)})
- U F17C 11/00**
- Use of gas-solvents or gas-sorbents in vessels {(absorbing compositions for acetylene [C10L 3/04](#); absorbing compositions for hydrogen [C01B 3/0005](#))}**
- F17C 11/007
- {for hydrocarbon gases, such as methane or natural gas, propane, butane or mixtures thereof (~~LPG~~)}
- U F17C 13/00**
- Details of vessels or of the filling or discharging of vessels**
- F17C 13/06
- Closures, e.g. cap, breakable member ({for autoclaves [B01J 3/03](#)}; closures for {large} containers in general [B65D](#) {[B65D 90/54](#)}; {for pressure vessels in general [F16J 13/00](#)})

Project: N/A (F21S)

F21S 6/00

Lighting devices intended to be free-standing ([F21S 9/00](#) , [F21S 10/00](#) , [F21S 13/12](#)) take precedence{ lighting devices specially adapted to be transported from place to place, e.g. lighting devices carried on wheeled supports [F21L](#); details of supports for lighting devices [F21V 21/00](#)}}

U F21S 48/00

{Lighting devices or systems specially adapted for vehicles (arrangements or adaptations for ships or waterborne vessels [B63B 45/00](#))}

WARNING

Groups [F21S 48/00](#) to [F21S 48/34](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [F21S 48/00](#) - [F21S 48/34](#) : [F21S 8/10](#)

U F21S 48/10

- {Headlamps}

U F21S 48/11

- · {characterised by the light source}

U F21S 48/1127

- · · {Type of emitted light}

F21S 48/1136

- · · · {Ultraviolet ([F21S 48/1136](#)) or infrared ([F21S 48/1136](#)) light}

U F21S 48/1145

- · · {Type of light source}

F21S 48/1186

- · · · {High intensity discharge ([F21S 48/1186](#)) light source}

Project: N/A (F21V)

U F21V 11/00

Screens not covered by groups [F21V 1/00](#), [F21V 3/00](#), [F21V 7/00](#) or [F21V 9/00](#)(characterised by cooling arrangements [F21V 29/502](#))

F21V 11/16

- using sheets without apertures, { i.e. masks for shielding light,} e.g. fixed ([F21V 11/02](#), [F21V 11/06](#) take precedence; { for vehicle head lamps [F21S 48/145](#)})

Project: N/A (F21W)

F21W

INDEXING SCHEME RELATING TO USES OR APPLICATIONS OF LIGHTING DEVICES OR SYSTEMS

NOTE

This subclass constitutes an internal scheme for indexing only, associated with subclasses [F21L](#), [F21M](#), [F21P](#), [F21Q](#), [F21S](#) and [F21V](#), relating to uses or applications of lighting devices or systems.

Project: N/A (F21Y)

F21Y

INDEXING SCHEME RELATING TO THE FORM OF THE LIGHT SOURCES

NOTE

This subclass constitutes an internal scheme for indexing only, associated with subclasses [F21L](#), [F21M](#), [F21P](#), [F21Q](#), [F21S](#) and [F21V](#), relating to the form of the light sources.

Project: N/A (F23D)

U F23D 2900/00

Special features of, or arrangements for burners using fluid fuels or solid fuels suspended in a carrier gas

F23D 2900/00006

- Liquid fuel burners using pure oxygen or O₂-enriched air as oxidant (for gaseous fuels [F23D 14/32](#))

U F23D 2900/14

- Special features of gas burners

F23D 2900/14002

- · of premix or non premix types, specially adapted for the combustion of low heating value ([F23D 2900/14002](#)) gas

Project: N/A (F23J)

U F23J 15/00 **Arrangement of devices for treating smoke or fumes (treating smoke or fumes, see the relevant class for the treatment, e.g. [B01D 53/00](#))**

F23J 15/02
 • of purifiers, e.g. for removing noxious material (traps for solid {deposits} [F23J 3/04](#))

U F23J 2217/00 **Intercepting solids**

U F23J 2217/10
 F23J 2217/103
 • by filters
 • • ultrafine ([HEPA](#))

Project: N/A (F23K)

U F23K 2900/00 **Special features of, or arrangements for fuel supplies**

F23K 2900/00002
 • Treating the fuel, either liquid or gaseous, with far-infrared radiations ([FIR](#)) to enhance fuel properties

Project: N/A (F23M)

U F23M 2900/00 **Special features of, or arrangements for combustion chambers**

F23M 2900/13004
 • Energy recovery by thermo-photo-voltaic ([TPV](#)) elements arranged in the combustion plant

Project: N/A (F23N)

U F23N 2900/00 **Special features of, or arrangements for controlling combustion**

F23N 2900/01001
 • Micro Electro Mechanical Systems ([MEMS](#)) for controlling fuel supply to burners

Project: N/A (F23R)

U F23R 2900/00 **Special features of, or arrangements for continuous combustion chambers; Combustion processes therefor**

F23R 2900/00002
 • Gas turbine combustors adapted for fuels having low heating value ([LHV](#))

Project: N/A (F24B)

U F24B 1/00 **Stoves or ranges**

U F24B 1/18
 • Stoves with open fires, e.g. fireplaces

U F24B 1/181
 • • Free-standing fireplaces, e.g. for mobile homes; {Fireplaces convertible into stoves}

U F24B 1/185
 • • with air-handling means, heat exchange means, or additional provisions for convection heating ([F24B 1/183](#) takes precedence; component parts or accessories having air-handling means, heat exchange means, or additional provisions for convection heating [F24B 1/191](#)); Regulating combustion; Controls therefor

F24B 1/188
 • • • characterised by use of heat exchange means, {e.g. using a particular heat exchange medium, e.g. oil, gas}([F24B 1/187](#) takes precedence)

F24B 15/00
Implements for use in connection with stoves or ranges (ash sieves {in general} [B07B](#) ; ash sieves {in general} [B07B](#) ; fire lighters [C10L 11/00](#) ; removal of ashes [F23J](#) ; other devices for igniting [F23Q](#))

Project: N/A (F24F)

F24F

AIR-CONDITIONING, AIR-HUMIDIFICATION, VENTILATION, USE OF AIR CURRENTS FOR SCREENING (devices for ventilating greenhouses [A01G](#) {[F24F9/24](#) *air-conditioning systems for greenhouses* [A01G 9/246](#)}; *air-conditioning systems for 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 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~~ [E0417/04](#), [F16L](#); *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, 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.

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 3/06

• characterised by the arrangements for the supply of heat-exchange fluid for the subsequent treatment of primary air in the room units ([F24F 3/02](#) takes precedence. {Arrangement or assembly of components for the regulation of the supply of heating or cooling media for the secondary treatment of air [F24F 11/06](#)})

U F24F 7/00

Ventilation, { e.g. by means of wall-ducts; systems using window or roof apertures}

U F24F 7/04

• with ducting systems {also by double walls; with natural circulation ([F24F 7/02](#) takes precedence)}

U F24F 7/06

• • with forced air circulation, e.g. by fan {positioning of a ventilator in or against a conduit (ventilators per se [F04D 25/08](#))}

F24F 7/10

• • • with air supply, or exhaust, through perforated wall, floor or ceiling, (outlet members for directing or distributing air {into rooms or spaces, e.g. ceiling air-diffusers} [F24F 13/06](#))

- U F24F 13/00** Details common to, or for air-conditioning, air-humidification, ventilation or use of air currents for screening
- U F24F 13/02
F24F 13/04
- Ducting arrangements
 - · Air mixing units (F24F 13/06 takes precedence; mixing gases in general B01F 3/02 {room units for the mixing of pre-treated primary air with recirculated or room air F24F 1/00})

Project: N/A (F24H)

- U F24H 3/00** Air heaters having heat generating means (F24H 7/00, F24H 8/00 take precedence; details F24H 9/00; domestic stoves or ranges with additional provision for convection heating of air F24B, F24C)
- U F24H 3/02
U F24H 3/06
F24H 3/062
- with forced circulation (F24H 3/12 takes precedence)
 - · the air being kept separate from the heating medium, e.g. using forced circulation of air over radiators
 - · · {using electric energy supply; the heating medium being the resistive element; the heating medium being the resistive element (F24H 3/08, F24H 3/10 takes precedence)-F24H 3/08, F24H 3/10 takes precedence}

Project: N/A (F24J)

- F24J 1/00 Apparatus or devices using heat produced by exothermal chemical reactions other than by combustion (for cooking-vessels A47J 36/28; self-heating compresses A61F {A61F 7/03}; materials for the production of heat or cold involving non-reversible chemical reactions, other than by combustion, when used C09K 5/18)

Project: N/A (F25B)

- U F25B 1/00** Compression machines, plant, or systems with non-reversible cycle (F25B 3/00, F25B 5/00, F25B 6/00, F25B 7/00, F25B 9/00 take precedence)
- F25B 1/02
F25B 1/04
F25B 1/06
- with compressor of reciprocating-piston type ({F25B 1/005,} F25B 1/10 take precedence)
 - with compressor of rotary type ({F25B 1/005,} F25B 1/10 take precedence)
 - with compressor of jet type, e.g. using liquid under pressure ({F25B 1/005,} F25B 1/10 take precedence)
- U F25B 2309/00** Gas cycle refrigeration machines
- U F25B 2309/14
F25B 2309/1419
- Compression machines, plant or systems characterised by the cycle used
 - · Pulse-tube cycles with pulse tube having a basic pulse tube refrigerator ({PTR}), i.e. comprising a tube with basic schematic
- U F25B 2315/00** Sorption refrigeration cycles or details thereof
- F25B 2315/002
- Generator absorber heat exchanger ({GAX})

Project: N/A (F25D)

- U F25D 2700/00** Means for sensing or measuring; Sensors therefor
- F25D 2700/08
- Sensors using Radio Frequency Identification ({RFID})

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 1/02
- requiring the use of refrigeration, e.g. of helium or hydrogen { Details and kind of the refrigeration system used; Integration with other units or processes; Controlling aspects of the process (not used)}
- F25J 1/0211
- • {using a multi-component refrigerant ~~(MCR)~~ fluid in a closed vapor compression cycle (not used)}
- 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
- 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 3/0204
- • {characterised by the feed stream (for air F25J 3/04)(not used)}
- F25J 3/0223
- • • {H₂/CO mixtures, i.e. synthesis gas; Water gas or shifted synthesis gas (production of carbon monoxide containing gas in general C01B 31/18, C10J, C10K; production of hydrogen containing gas C01B 3/00)}
- U F25J 3/0228
- • {characterised by the separated product stream (not used)}
- F25J 3/0271
- • • {separation of H₂/CO mixtures, i.e. of synthesis gas (production of carbon monoxide containing gas in general C01B 31/18, C10J, C10K, production of hydrogen containing gas C01B 3/00)}
- F25J 3/0276
- • • {separation of H₂/N₂ mixtures, i.e. of ammonia synthesis gas (in general C01B 3/00)}
- U F25J 3/04
- • for air {(not used)}
- WARNING**
The reclassification has, for the moment, been carried out only down to January 1, 1960.
- U F25J 3/04521
- • • {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
- • • • {Integration with an oxygen consuming unit, e.g. glass facility, waste incineration or oxygen based processes in general}
- U F25J 3/04539
- • • • • {for the H₂/CO synthesis by partial oxidation or oxygen consuming reforming processes of fuels}
- F25J 3/04545
- • • • • {for the gasification of solid or heavy liquid fuels, e.g. integrated gasification combined cycle ~~(IGCC)~~}
- U F25J 3/06
- by partial condensation (F25J 3/08 takes precedence; by rectification F25J 3/02; { purification of hydrocarbons in general C07C 7/00; not used})
- U F25J 3/0605
- • {characterised by the feed stream (for air F25J 3/04)(not used)}
- F25J 3/0625
- • • {H₂/CO mixtures, i.e. synthesis gas; Water gas or shifted synthesis gas (production of carbon monoxide containing gas in general C01B 31/18, C10J, C10K; production of hydrogen containing gas C01B 3/00)}
- U F25J 3/063
- • {characterised by the separated product stream (not used)}
- F25J 3/0675
- • • {separation of H₂/CO mixtures, i.e. of synthesis gas (production of carbon monoxide containing gas in general C01B 31/18, C10J, C10K, production of hydrogen containing gas C01B 3/00)}
- F25J 3/068
- • • {separation of H₂/N₂ mixtures, i.e. of ammonia synthesis gas (in general C01B 3/00)}
- U F25J 2205/00** **Processes or apparatus using other separation and/or other processing means (not used)**

- U F25J 2205/30
F25J 2205/32
F25J 2205/60
F25J 2205/64
- using a washing, e.g. "scrubbing" or bubble column for purification purposes
 - • as direct contact cooling tower to produce a cooled gas stream, e.g. direct contact after cooler [\(DCAC\)](#)
 - using adsorption on solid adsorbents, e.g. by temperature-swing adsorption [\(TSA\)](#) at the hot or cold end
 - • by pressure-swing adsorption [\(PSA\)](#) at the hot end
- U F25J 2210/00** **Processes characterised by the type or other details of the feed stream (not used)**
- F25J 2210/60
F25J 2210/62
- Natural gas or synthetic natural gas [\(SNG\)](#)
 - Liquefied natural gas [\(LNG\)](#); Natural gas liquids [\(NGL\)](#); Liquefied petroleum gas [\(LPG\)](#)
- U F25J 2260/00** **Coupling of processes or apparatus to other units; Integrated schemes (not used)**
- F25J 2260/50
- Integration in an installation using oxygen, e.g. in the burner of a glass facility, waste incineration or oxygen based process [\(OBP\)](#) in general
- U F25J 2270/00** **Refrigeration techniques used (not used)**
- F25J 2270/60
F25J 2270/66
- Closed external refrigeration cycle with single component refrigerant [\(SCR\)](#), e.g. C1-, C2- or C3-hydrocarbons
 - Closed external refrigeration cycle with multi component refrigerant [\(MCR\)](#), e.g. mixture of hydrocarbons

Project: N/A (F26B)

- F26B 1/00** **Preliminary treatment of solid materials or objects to facilitate drying, {e.g. mixing or backmixing the materials to be dried with predominantly dry solids ([F26B 5/005](#) takes precedence)}**
- U F26B 3/00** **Drying solid materials or objects by processes involving the application of heat (in specific machines or apparatus [F26B 9/00](#) to [F26B 19/00](#))**
- U F26B 3/02
- by convection, i.e. heat being conveyed from a heat source to the materials or objects to be dried by a gas or vapour, e.g. air [\(F26B 3/283](#) and [F26B 3/343](#) take precedence)
- U F26B 3/06
- • the gas or vapour flowing through the materials or objects to be dried ([F26B 3/14](#) takes precedence)
- U F26B 3/08
F26B 3/084
- • • 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](#))
 - • • with heat exchange taking place in the fluidised bed, {e.g. combined direct and indirect heat exchange}
- U F26B 3/10
F26B 3/12
- • the gas or vapour carrying the materials or objects to be dried with it
 - • • in the form of a spray, {i.e. sprayed or dispersed emulsions or suspensions (spray drying of solutions [B01D 1/18](#))}
- U F26B 3/18
F26B 3/20
F26B 3/32
- 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
 - • the heat source being a heated surface, {e.g. a moving belt or conveyer} ([F26B 3/22](#) takes precedence)
 - by development of heat within the materials or objects to be dried, {e.g. by fermentation or other microbiological action}
- U F26B 3/34
F26B 3/353
- • by using electrical effects
 - • • Resistance heating, {e.g. using the materials or objects to be dried as an electrical resistance}

- F26B 7/00** **Drying solid materials or objects by processes using a combination of processes not covered by a single one of groups [F26B 3/00](#) and [F26B 5/00](#) {([F26B 1/005](#) , [F26B 5/04](#) , [F26B 23/026](#) take precedence)}**
- U F26B 9/00** **Machines or apparatus for drying solid materials or objects at rest or with only local agitation; Domestic airing cupboards {(domestic laundry drying cabinets or chambers having heating or ventilating means [D06F 58/10](#))}**
- U F26B 9/06 · in stationary drums or chambers
- F26B 9/08 · · including agitating devices, {e.g. pneumatic recirculation arrangements (unloading devices [F26B 25/002](#) ; spouted beds [F26B 3/0926](#))}
- U F26B 13/00** **Machines and apparatus for drying fabrics, fibres, yarns, or other materials in long lengths, with progressive movement**
- U F26B 13/10 · Arrangements for feeding, heating, or supporting materials; Regulating movement, tension, or position of materials (heating processes [F26B 3/00](#))
- F26B 13/14 · · Rollers, {drums, cylinders}{sorbent surfaces [F26B 13/26](#)}; {Arrangement of drives, supports, bearings, cleaning}
- F26B 13/18 · · · heated {or} cooled, {e.g. from inside, the material being dried on the outside surface by conduction}
- 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; conveyers in general [B65G](#))**
- 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 17/00** **Machines or apparatus for drying materials in loose, plastic, or fluidised form, e.g. granules, staple fibres, with progressive movement ([F26B 13/00](#) takes precedence; { feed or discharge arrangements [F26B 25/002](#))}**
- F26B 17/02 · with movement performed by belts carrying the materials; with movement performed by belts {or elements attached to endless belts or chains} propelling the materials over stationary surfaces {(the movement being in a helical path [F26B 15/26](#) ; [F26B 17/003](#) , [F26B 17/263](#) take precedence)}
- F26B 17/10 · with movement performed by fluid currents, e.g. issuing from a nozzle, {e.g. pneumatic, flash, vortex or entrainment dryers}{[F26B 3/08](#) takes precedence}
- F26B 17/12 · with movement performed solely by gravity, {i.e. the material moving through a substantially vertical drying enclosure, e.g. shaft}
- F26B 17/16 · · the materials passing down a heated surface, {e.g. fluid-heated closed ducts or other heating elements in contact with the moving stack of material ([F26B 17/128](#) takes precedence)}
- F26B 17/18 · with movement performed by rotating helical blades or other rotary conveyers {which may be heated} moving materials in stationary chambers, {e.g. troughs}
- F26B 17/24 · with movement performed by shooting or throwing the materials, {e.g. after which the materials are subject to impact ([F26B 17/108](#) takes precedence)}
- U F26B 17/26 · with movement performed by reciprocating or oscillating conveyers propelling materials over stationary surfaces; with movement performed by reciprocating or oscillating shelves, sieves, or trays {([F26B 17/006](#) takes precedence)}
- F26B 17/263 · · {the conveying element making a rotary working movement while being transversely moved in one direction, the reverse or return movement being effected in an inoperative state, e.g. lifted, in rest}.
- F26B 17/28 · with movement performed by rollers or discs with material passing over or between them, e.g. suction drum, sieve, {the axis of rotation being in fixed position (moving rotating rollers [F26B 15/122](#))}

- F26B 21/00 Arrangements {or duct systems, e.g. in combination with pallet boxes,} for supplying and controlling air or gases for drying solid materials or objects ({F26B 9/10 takes precedence; systems for vehicle body drying B60S 3/002} ; air conditioning or ventilation in general F24F)**
- F26B 21/02 · Circulating air or gases in closed cycles, e.g. wholly within the drying enclosure (F26B 21/08 , F26B 21/14 , {F26B 23/022} take precedence)
- U F26B 21/06 · Controlling, e.g. regulating, parameters of gas supply (F26B 21/14 takes precedence; control in general G05)
- F26B 21/12 · · Velocity of flow; Quantity of flow, {e.g. by varying fan speed, by modifying cross flow area (F26B 21/004 takes precedence; changing air flow pattern F26B 21/022)}
- F26B 21/14 · using gases or vapours other than air or steam, {e.g. inert gases}
- U F26B 23/00 Heating arrangements ({by radiation, e.g. infra-red, ultra-violet, solar F26B 3/28 and F26B 3/30} ; using heated air or gases F26B 21/00)**
- F26B 23/10 · using tubes or passages containing heated fluids, {e.g. acting as radiative elements; Closed-loop systems (for combustion gases F26B 3/305)}
- U F26B 25/00 Details of general application not covered by group F26B 21/00 or F26B 23/00 (loading, conveying, and unloading in general B65G)**
- U F26B 25/06 · Chambers, containers, or receptacles {(large containers having means for heating, cooling, aerating or other conditioning of contents B65D 88/74)}
- U F26B 25/14 · · Chambers, containers, receptacles of simple construction
- F26B 25/18 · · · mainly open, e.g. dish, tray, pan, {rack (for drying agricultural produce A01F 25/12)}
- F26B 25/20 · Rollers (F26B 25/06 , {F26B 13/14} take precedence)

Project: N/A (F27D)**F27D 2201/00****Manipulation of furnace parts**NOTE

Indexing code [F27D 2201/00](#) can be followed by additional indexing codes preceded by a + sign. These additional indexing codes are chosen from codes of subclass ~~R27D~~[F27D](#) describing similar manipulations of furnace charges.

Example: [F27D 2201/00](#) + [F27D 2003/0036](#)

Project: N/A (F28D)**U F28D 7/00**

Heat-exchange apparatus having stationary tubular conduit assemblies for both heat-exchange media, the media being in contact with different sides of a conduit wall

- F28D 7/02 · the conduits being helically coiled (F28D 7/10 takes precedence {F28D 7/0016 and F28D 7/0033 take precedence})

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 F28D 9/00 and other subgroups})

Project: N/A (F41A)

- U F41A 1/00** **Missile propulsion characterised by the use of explosive or combustible propellant charges (projecting missiles without use of explosive or combustible propellant charge [F41B](#) ; launching rockets or torpedoes [F41F 3/00](#) ; missile self-propulsion [F42B 15/00](#))**
- F41A 1/04
- Missile propulsion using the combustion of a liquid, {loose powder} or gaseous fuel, e.g. hypergolic fuel
- U F41A 3/00** **Breech mechanisms, e.g. locks**
- U F41A 3/64**
- Mounting of breech-blocks; Accessories for breech-blocks or breech-block mountings
- U F41A 3/78**
- · Bolt buffer or recuperator means
- U F41A 3/82**
- · · Coil spring buffers ([F41A 3/80](#) takes precedence)
- F41A 3/86**
- · · · mounted under {or above} the barrel
- 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 [F41B11/02](#)[F41B 11/50](#)); Magazines; Guiding means for the extracting of cartridges (cartridge extractors or ejectors [F41A 15/00](#))**
- U F41A 9/01**
- Feeding of unbelted ammunition
- U F41A 9/06**
- · using cyclically moving conveyers, i.e. conveyers having ammunition pusher or carrier elements which are emptied or disengaged from the ammunition during the return stroke
- U F41A 9/09**
- · · Movable ammunition carriers or loading trays, e.g. for feeding from magazines {(locking of ammunition in ammunition containers or loading trays [F42B 39/22](#))}
- U F41A 9/10**
- · · · pivoting or swinging
- U F41A 9/13**
- · · · · in a vertical plane
- F41A 9/14**
- · · · · · {which is} transverse to the barrel axis
- F41A 9/16**
- · · · · · {which is} parallel to the barrel axis
- U F41A 9/17**
- · · · · · · mounted within a smallarm
- F41A 9/18**
- · · · · · · · feeding from a {tubular} magazine under the barrel
- F41A 9/19**
- · · · · · · · feeding from a {tubular} magazine mounted in the stock
- U F41A 9/38**
- Loading arrangements, i.e. for bringing the ammunition into the firing position
- F41A 9/45**
- · the cartridge chamber or the barrel as a whole being tiltable {or transversely slidable} between a loading and a firing position {([F41A 9/25](#) and [F41A 9/27](#) take precedence)}
- U F41A 9/54**
- Cartridge guides, stops or positioners, e.g. for cartridge extraction
- F41A 9/55**
- · Fixed {or movable} guiding means, mounted on, or near, the cartridge chamber
- F41A 9/82**
- Reloading {or unloading} of magazines
- 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
- U F41A 15/14**
- · the ejector being mounted on or within the bolt; {Extractors per se}
- U F41A 17/00** **Safety arrangements, e.g. safeties**

- F41A 17/30
- Multiple safeties, i.e. {one safety element} acting on at least one element of the firing mechanism and at least one other element of the gun, e.g. the moving barrel
- U F41A 17/34
- Magazine safeties
- F41A 17/36
- • locking the gun {automatically} in a safety condition when the magazine is empty or removed {(F41A 17/44 takes precedence)}
- F41A 17/38
- • {Magazine mountings, e.g. for} locking the magazine in the gun
- F41A 17/42
- Safeties for locking the breech-block or bolt in a safety position (F41A 17/32 , F41A 17/36 , F41A 17/40 take precedence {; anti-rebound arrangements F41A 3/70}){(anti-rebound arrangements F41A 3/70)}
- F41A 17/44
- Safety plugs, e.g. for plugging-up cartridge chambers, {barrels, magazine spaces}
- U F41A 19/00 Firing or trigger mechanisms; Cocking mechanisms**
- F41A 19/06
- Mechanical firing mechanisms, {e.g. counterrecoil firing, recoil actuated firing mechanisms}(F41A 19/01 to F41A 19/05 , F41A 19/59 take precedence)
- U F41A 19/25
- • having only slidably-mounted striker elements, i.e. percussion or firing pins
- U F41A 19/27
- • • the percussion or firing pin being movable relative to the breech-block
- U F41A 19/29
- • • • propelled by a spring under tension
- F41A 19/39
- • • • • Cocking {or firing} mechanisms for other types of guns, e.g. fixed breech-block types, forwardly-slidable barrel types
- U F41A 19/42
- • having at least one hammer
- F41A 19/52
- • • Cocking {or firing} mechanisms for other types of guns, e.g. fixed breech-block types, revolvers
- U F41A 21/00 Barrels; Gun tubes; Muzzle attachments; Barrel mounting means (F41A 25/00 takes precedence; barrel attachments for firing grenades or riot-control ammunition from smallarms F41C 27/06)**
- F41A 21/28
- Gas-expansion chambers; Barrels provided with gas-relieving ports (F41A 1/06 , F41A 13/08{ and F41A 21/36} take precedence)
- U F41A 21/32
- Muzzle attachments or glands (F41A 21/26 , F41A 21/30 , F41A 21/46 take precedence; { for projectile velocity measurements G01P 3/665 , G01P 3/685})
- U F41A 21/36
- • for recoil reduction (recoil reduction arrangements in general F41A 25/00); {Stabilisators; Compensators, e.g. for muzzle climb prevention}
- F41A 21/38
- • • adjustable, {i.e. the vent holes or the vent area being adjustable}
- F41A 21/40
- • Chokes for shotguns, {e.g. automatic chokes}
- F41A 21/42
- • • {manually} adjustable
- U F41A 23/00 Gun mountings, e.g. on vehicles; Disposition of guns on vehicles (F41A 25/00 , F41A 27/00 take precedence)**
- U F41A 23/02
- Mountings without wheels
- NOTE
Shooting stands for hunting [A01M 31/02](#)
- U F41A 23/12
- • Tripods; {Mountings having at least three legs}
- U F41A 25/00 Gun mountings permitting recoil or return to battery, e.g. gun cradles; Barrel buffers or brakes (recoilless guns F41A 1/08)**
- U F41A 25/02
- Fluid-operated systems
- F41A 25/04
- • adjustable, {e.g. in relation to the elevation of the gun}

- U F41A 33/00 **Adaptations for training (adaptations of barrels for recoil reinforcement [F41A 21/26](#)); Gun simulators (teaching or practice apparatus for gun-aiming or gun-laying [F41G 3/26](#) ; { shooting games [A63F 9/02](#) ; military simulation [G09B 9/003](#)})**
- U F41A 33/02 · Light- or radiation-emitting guns; {Light- or radiation-sensitive guns; Cartridges carrying light emitting sources, e.g. laser}

Project: N/A (F41C)

- U F41C 9/00 **Other smallarms, e.g. hidden smallarms or smallarms specially adapted for underwater use**
- F41C 9/06 · Smallarms specially adapted for underwater use {(spring operated harpoon guns [F41B 7/04](#); air pressure operated harpoon guns [F41B11/08](#)[F41B 11/83](#))}

Project: N/A (F41H)

- 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](#)})**
- F41H 5/06 · Shields (in ships [B63G 9/00](#); in aircraft [B64D 7/00](#) {blasting mats [F42D 5/05](#)})
- F41H 11/00 **Defence installations; Defence devices (constructional aspects see Section E, e.g. {air-raid shelters} [E04H 9/04](#); {protective arrangements for buildings [E04B 1/92](#); extinguishing or preventing the spread of fire from, incendiary bombs [A62C 3/06](#) ; dynamic armour [F41H 5/007](#); ballistically deployed systems for restraining persons or animals [F41H 13/0006](#); electronic countermeasures [G01S](#)})**

Project: N/A (F42B)

- U F42B 10/00 **Means for influencing, e.g. improving, the aerodynamic properties of projectiles or missiles; Arrangements on projectiles or missiles for stabilising, steering, range-reducing, range-increasing or fall-retarding ([F42B 6/00](#) takes precedence)**
- U F42B 10/32 · Range-reducing or range-increasing arrangements; Fall-retarding means
- F42B 10/38 · · Range-increasing arrangements ([F42B 10/34](#), [F42B 14/06](#) {and [F42B 15/105](#)} take precedence)
- U F42B 33/00 **Manufacture or ammunition: Dismantling or ammunition; Apparatus therefor ([F42B 5/188](#) takes precedence; manufacturing processes for hollow charges [F42B 1/036](#): manufacture of blasing cartridge initiators [F42B 3/195](#))**
- F42B 33/06 · Dismantling fuzes, cartridges, projectiles, missiles, rockets or bombs ({[F42B 33/004](#) and} [F42B 33/04](#) take precedence; {elimination of undesirable components of explosives [C06B 21/0091](#)})
- U F42B 39/00 **Packaging or storage of ammunition or explosive charges; Safety features thereof; Cartridge belts or bags**
- F42B 39/14 · Explosion or fire protection arrangements on packages or ammunition ([F42B 39/20](#) {and [F42B 39/24](#)} take precedence; {wall or panel structure of fireproof safes or storage containers [E05G 1/024](#)})

Project: N/A (F42C)

- U F42C 15/00 **Arming-means in fuzes; Safety means for preventing premature detonation of fuzes or charges**
- F42C 15/20 · wherein a securing-pin or latch is removed to arm the fuze, e.g. removed from the firing-pin ({[F42C 9/041](#) and} [F42C 15/40](#) take precedence)

Project: N/A (G01B)

- U G01B 5/00** **Measuring arrangements characterised by the use of mechanical means (instruments of the types covered by group [G01B 3/00](#) per se [G01B 3/00](#))**
- U G01B 5/0002 · {Arrangements for supporting, fixing or guiding the measuring instrument or the object to be measured}
- G01B 5/0004 · · {Supports (in general [F16M](#); ~~[116A2G](#)~~; [G01B 5/025](#) takes precedence)}
- U G01B 11/00** **Measuring arrangements characterised by the use of optical means (instruments of the types covered by group [G01B 9/00](#) per se [G01B 9/00](#))**
- U G01B 11/02 · for measuring length, width or thickness ([G01B 11/08](#) takes precedence)
- U G01B 11/06 · · for measuring thickness, e.g. of sheet material (thickness measurement by thermal means [G01B 21/085](#))
- U G01B 11/0616 · · · {of coating}
- G01B 11/0666 · · · · {using an exciting beam and a detection beam including surface acoustic waves ([SAW](#))}
- U G01B 11/24 · for measuring contours or curvatures
- G01B 11/25 · · by projecting a pattern, e.g. {one or more lines,} moirè fringes on the object ([G01B 11/255](#) takes precedence; image analysis for depth or shape recovery [G06T 7/0051](#))

Project: N/A (G01D)

- U G01D 5/00** **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 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](#))**

NOTE

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.

- U G01D 5/26 · characterised by optical transfer means, i.e. using infra-red, visible, or ultra-violet light
- U G01D 5/32 · · with attenuation or whole or partial obturation of beams of light ([G01D 5/40](#) takes precedence; {mechanical adjustment [G01D 5/264](#)})
- U G01D 5/34 · · · the beams of light being detected by photocells
- U G01D 5/353 · · · · influencing the transmission properties of an optical fibre
- G01D 5/35306 · · · · · {using an interferometer arrangement}

WARNING

This group and its subgroups are not complete pending reclassification; see also ~~[G01D353F](#)~~ [G01D 5/35303](#)

G01D 5/3537

- · · · {Optical fibre sensor using a particular arrangement of the optical fibre itself}

WARNING

This group and its subgroups are not complete pending reclassification; see also [G01D353F](#)[G01D 5/35303](#)

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](#) to [G01F 1/68](#)

U G01F 1/704

- using marked regions or existing inhomogeneities within the fluid stream, e.g. statistically occurring variations in a fluid parameter ([G01F 1/76](#), [G01F 25/00](#) take precedence)

U G01F 1/708

- · Measuring the time taken to traverse a fixed distance

G01F 1/716

- · · using electron paramagnetic resonance ([EPR](#)) or nuclear magnetic resonance ([NMR](#))

Project: N/A (G01G)**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 [G06](#))

Project: N/A (G01J)**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 1/42

- using electric radiation detectors (optical or mechanical part [G01J 1/04](#); by comparison with a reference light or electric value [G01J 1/10](#))

U G01J 1/44

- · Electric circuits {(for command of an exposure part [G03B 7/02](#))}

U G01J 2001/4446

- · · {Type of detector}

G01J 2001/448

- · · · {Array ([CCD](#))}

G01J 2001/4493

- · · · {with image intensifier tube ([IIT](#))}

U G01J 3/00

Spectrometry; Spectrophotometry; Monochromators; Measuring colour

U G01J 3/12

- Generating the spectrum; Monochromators

U G01J 2003/1226

- · {Interference filters}

G01J 2003/1234

- · · {Continuously variable IF ([CVIF](#)); Wedge type}

G01J 3/14

- · using refracting elements, e.g. prisms ([G01J 3/18](#), [G01J 3/26](#) take precedence {prisms per se [G02B 5/04](#)})

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](#)})

Project: N/A (G01K)

U G01K 11/00

Measuring temperature based upon physical or chemical changes not covered by groups [G01K 3/00](#), [G01K 5/00](#), [G01K 7/00](#) or [G01K 9/00](#)

U G01K 11/22

- using measurement of acoustic effects

U G01K 11/26

- · of resonant frequencies

G01K 11/265

- · · {using surface acoustic wave (~~SAW~~)}

Project: N/A (G01L)

U G01L 1/00

Measuring force or stress in general (measuring force due to impact [G01L 5/00](#); measuring deformation of bodies as a result of stress by using gauges [G01B](#))

G01L 1/10

- by measuring variations of frequency of stressed vibrating elements, e.g. of stressed strings (using resistance strain gauges [G01L 1/22](#) {using piezo-resistive vibrators [G01L 1/183](#)})

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](#) to [G01L 21/00](#); measuring rapid changes of pressure in gas, steam or liquid [G01L 23/00](#))

G01L 5/20

- for measuring wheel side-thrust (in balancing ~~G01M(47B28)~~)

U G01L 19/00

Details of, or accessories for, apparatus for measuring steady or quasi-steady pressure of a fluent medium insofar as such details or accessories are not special to particular types of pressure gauges

G01L 19/14

- {Housings ([G01L 19/0007](#), [G01L 19/0084](#), [G01L 19/0092](#), [G01L 19/04](#), ~~G801L19/06~~[G01L 19/06](#) take precedence)}

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](#))

G01M 1/14

- Determining unbalance ([G01M 1/30](#) ; ~~takes G01M1/38 take~~ precedence)

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

U G01M 3/06

- · · by observing bubbles in a liquid pool

U G01M 3/08

- · · · for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds}

U G01M 3/12

- · · by observing elastic covers or coatings e.g. soapy water

U G01M 3/14

- · · · for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds; for containers, e.g. radiators}

- G01M 3/16
- • • using electric detection means ([G01M 3/06](#) , [G01M 3/12](#) , [G01M 3/20](#) , [G01M 3/24](#) , [G01M 3/26](#) take precedence {[G01M 3/045](#) takes precedence})
- U G01M 3/18
- • • • for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds; for containers, e.g. radiators}
- U G01M 3/20
- • • using special tracer materials, e.g. dye, fluorescent material, radioactive material
- U G01M 3/22
- • • • for pipes, cables or tubes; for pipe joints or seals; for valves; {for welds; for containers, e.g. radiators}
- U G01M 11/00**
- Testing of optical apparatus; Testing structures by optical methods not otherwise provided for**
- WARNING
- Groups [G01M 11/30](#) - [G01M 11/39](#) do not correspond to former or future IPC groups. Concordance CPC : IPC for these groups is as follows: - [G01M 11/30](#) - [G01M 11/39](#) : [G01M 11/00](#)
- U G01M 11/08
- Testing of mechanical properties {([G01M 11/005](#) takes precedence)}
- G01M 11/083
- {by using an optical fiber in contact with the device under test ([DUT](#))}

Project: N/A (G01N)

- U G01N 1/00**
- Sampling; Preparing specimens for investigation**
- U G01N 1/02
- Devices for withdrawing samples (for medical or veterinary purposes [A61](#); { sampling of foundation soil [E02D 1/04](#) ; obtaining samples of soil or well fluids [E21B 49/00](#) ; { collecting or conveying radioactive samples [G01T 7/00](#) , e.g. [G01T 7/02](#) , [G01T 7/08](#)})
- U G01N 1/10
- • in the liquid or fluent state {(burettes, pipettes [B01L 3/02](#) ; Sampling of ground water [E02D 1/06](#) ; metering by volume of fluids or fluent solid material [G01F 11/00](#) , [G01F 13/00](#))}
- G01N 1/16
- • • with provision for intake at several levels {([G01N 1/2035](#))([G01N 1/12](#) , [G01N 1/14](#) take precedence)}
- G01N 1/20
- • • for flowing or falling materials {([G01N 1/2035](#))([G01N 1/12](#) , [G01N 1/14](#) take precedence)}
- U G01N 15/00**
- Investigating characteristics of particles; Investigating permeability, pore-volume, or surface-area of porous materials (identification of micro-organisms [C12Q](#))**
- G01N 15/06
- Investigating concentration of particle suspensions ([G01N 15/04](#) , [G01N 15/10](#) take precedence; by weighing [G01N 5/00](#))
- NOTE
- References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group and its subgroups:
- Investigating or analysing materials;
 - by the use of optical means: [G01N 21/00](#) , e.g. [G01N 21/47](#) , [G01N 21/90](#) ;
 - by other radiations or by particles: [G01N 23/00](#) , e.g. [G01N 23/02](#) , [G01N 23/201](#) ;
 - by measuring impedance: [G01N 27/02](#) , e.g. [G01N 27/06](#) , [G01N 27/22](#) ;
 - by electrochemical means: [G01N 27/00](#) , e.g. [G01N 27/26](#) , ~~[G01N27/56B](#)~~ ;
 - by measuring absorption of sonic or ultrasonic vibrations: [G01N 29/00](#) , e.g. [G01N 29/02](#)
- U G01N 15/10
- Investigating individual particles

- G01N 2015/1037 · · {Associating coulter-counter and optical flow cytometer ~~{(OFC)}~~}
- U G01N 21/00 Investigating or analysing materials by the use of optical means, i.e. using infra-red, visible or ultra-violet light (G01N 3/00-G01N 19/00 take precedence)**
- NOTE
This group does not cover the investigation of spectral properties of light per se, or measurements of the properties of materials where spectral properties of light are sensed and primary emphasis is placed on creating, detecting or analysing the spectrum providing that the properties of the materials to be investigated are of minor importance (see also Note (4) after the title of class G01). Those subjects are covered by group G01J 3/00 .
- U G01N 21/17 · 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)
- G01N 21/47 · · Scattering, i.e. diffuse reflection (G01N 21/25 , G01N 21/41 take precedence {G01N 21/55 takes precedence})
- U G01N 21/62 · Systems in which the material investigated is excited whereby it emits light or causes a change in wavelength of the incident light
- U G01N 21/63 · · optically excited
- U G01N 21/65 · · · Raman scattering
- G01N 2021/653 · · · · {Coherent methods ~~{(CARS)}~~}
- 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 to G01N 17/00 take precedence; measuring stress in general G01L 1/00 ; measurement of nuclear or X-radiation G01T; introducing objects or materials into nuclear reactors, or removing them therefrom, or storing them after treatment therein G21C; construction or operation of X-ray apparatus or circuits therefor H05G)**
- U G01N 23/20 · by using diffraction of the radiation, e.g. for investigating crystal structure; by using reflection of the radiation
- 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)
- U G01N 23/22 · by measuring secondary emission
- NOTE
Devices per se are classified in the relevant places, e.g. H01J 37/00 , H01J 49/00
- G01N 23/223 · · by irradiating the sample with X-rays {or gamma-rays} and by measuring X-ray fluorescence {(G01N 23/2076 takes precedence)}
- U G01N 27/00 Investigating or analysing materials by the use of electric, electro-chemical, or magnetic means (G01N 3/00 to G01N 25/00 take precedence; measurement or testing electric or magnetic variables or of electric or magnetic properties of materials G01R)**
- U G01N 27/02 · by investigating the impedance of the material
- U G01N 27/04 · · by investigating resistance {(for measuring the amount of particles G01N 15/0656)}

- G01N 27/12
- • • 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 27/26
- by investigating electrochemical variables; by using electrolysis or electrophoresis (investigating resistance to corrosion [G01N 17/00](#) ; investigating or analysing materials by separation into components using adsorption, absorption or similar phenomena or using ion-exchange, e.g. chromatography, [G01N 30/00](#) ; immunoelectrophoresis [G01N 33/561](#) ; electrochemical processes or apparatus in general [B01J](#); standard cells [H01M 6/28](#))
- U G01N 27/416
- • 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
- 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](#) to [G01N 27/00](#) take precedence; measuring or indicating of ultrasonic, sonic or infrasonic waves in general [G01H](#); systems using the reflection or reradiation of acoustic waves, e.g. acoustic imaging, [G01S 15/00](#) ; obtaining records by techniques analogous to photography using ultrasonic, sonic or infrasonic waves [G03B 42/06](#) ; { medical diagnosis by ultrasounds [A61B 8/00](#) ; generating or transmitting mechanical or acoustic waves [B06B](#), [G10K](#); seismic or acoustic prospecting or detecting [G01V 1/00](#)})**
- 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 [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 29/069
- • • • {Defect imaging, localisation and sizing using, e.g. time of flight diffraction ({[/TOFD](#)}), synthetic aperture focusing technique ({[/SAFT](#)}), Amplituden-Laufzeit-Ortskurven ({[/ALOK](#)}) technique}
- G01N 29/22
- Details, {e.g. general constructional or apparatus details}
- U G01N 29/24
- • Probes {(transducers for acoustic waves [B06B](#) , [G10K](#) ; for measuring [G01H](#))}
- U G01N 29/2437
- • • {Piezoelectric probes}
- G01N 29/245
- • • • {Ceramic probes, e.g. lead zirconate titanate ({[/PZT](#)}) probes}
- G01N 29/32
- • Arrangements for suppressing undesired influences, e.g. temperature or pressure variations, {compensating for signal noise}
- G01N 29/34
- Generating the ultrasonic, sonic or infrasonic waves, {e.g. electronic circuits specially adapted therefor}
- G01N 29/36
- Detecting the response signal, {e.g. electronic circuits specially adapted therefor}
- G01N 29/44
- Processing the detected response signal, {e.g. electronic circuits specially adapted therefor (digital signal processing per se [G06F 17/00](#))}
- G01N 29/4463
- • {Signal correction, e.g. distance amplitude correction ({[/DAC](#)}), distance gain size ({[/DGS](#)}), noise filtering}

- 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](#) to [G01N 29/00](#) take precedence; separation for the preparation or production of components [B01D 15/00](#) , [B01D 53/02](#) , [B01D 53/14](#) ; solid sorbent compositions in general [B01J 20/00](#) ; ion-exchange in general [B01J 39/00](#) to [B01J 49/00](#)){or field flow fractionation (for preparation or production of components [B01D 21/00](#) , [B01D 43/00](#) , [B01D 45/00](#) or [B03C](#))}
- NOTE
In this group, the following term is used with the meaning indicated:
- "conditioning" refers to the adjustment or control of environmental parameters, e.g. temperature or pressure.
- U G01N 30/02 • Column chromatography
- U G01N 30/50 • • Conditioning of the sorbent material or stationary liquid
- U G01N 30/58 • • • the sorbent moving as a whole
- G01N 2030/582 • • • • {micellar electrokinetic capillary chromatography (~~MECC~~)}
- U G01N 33/00** **Investigating or analysing materials by specific methods not covered by the preceding groups**
- U G01N 33/15 • Medicinal preparations; {Physical properties thereof, e.g. dissolubility (drug screening with animal cells [G01N 33/5008](#) , drug screening with microorganisms [C12Q 1/025](#))}
- U G01N 33/26 • oils; viscous liquids; paints; inks ([G01N 33/22](#) takes precedence)
- G01N 33/28 • • Oils {,f i.e. hydrocarbon liquids-}{~~gaseous fuels G01N 33/225~~} {~~gaseous fuels G01N 33/225~~; edible oils or edible fats [G01N 33/03](#)}
- U G01N 33/48 • biological material, e.g. blood, urine ([G01N 33/02](#) to [G01N 33/14](#) , [G01N 33/26](#) , [G01N 33/44](#) , [G01N 33/46](#) take precedence; determining the germinating capacity of seeds [A01C 1/02](#)); Haemocytometers (counting blood corpuscles distributed over a surface by scanning the surface [G06M 11/02](#))
- U G01N 33/483 • • Physical analysis of biological material
- U G01N 33/487 • • • of liquid biological material
- 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 33/4925 • • • • • {measuring blood gas content, e.g. ~~O₂~~, ~~CO₂~~, HCO₃}
- 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](#) to [G01N 33/96](#) , in the absence of an indication to the contrary, an invention is also classified in the last appropriate place.
3. Documents relating to new peptides or new DNA or its corresponding mRNA, encoding for the peptides, and their use in measuring or testing processes are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in

diagnostics. However, if the investigating or analysing aspects are of interest, the documents are classified in this group

- U G01N 33/74
 - • • involving hormones {or other non-cytokine intercellular protein regulatory factors such as growth factors, including receptors to hormones and growth factors}
- G01N 33/78
 - • • • Thyroid gland hormones, {e.g. T3, T4, TBH, TBG or their receptors}
- G01N 33/92
 - • • involving lipids, e.g. cholesterol, {lipoproteins, or their receptors (steroid hormones [G01N 33/743](#))}
- G01N 33/98
 - • • involving alcohol, e.g. ethanol in breath

NOTE

In groups [G01N 35/00](#) to [G01N 35/085](#) , the indexing codes of **S01N**[G01N](#) are added

- U G01N 35/00** **Automatic analysis not limited to methods or materials provided for in any single one of groups [G01N 1/00](#) to [G01N 33/00](#); Handling materials therefor**
- U G01N 35/02
 - using a plurality of sample containers moved by a conveyer system past one or more treatment or analysis stations {([G01N 35/0098](#) and [G01N 35/0099](#) take precedence)}
- U G01N 35/04
 - • Details of the conveyer system {([G01N 35/021](#) to [G01N 35/028](#) take precedence)}
- U G01N 2035/046
 - • • {General conveyer features}
- G01N 2035/0462
 - • • • {Buffers ([FIFO](#)) or stacks ([LIFO](#)) for holding carriers between operations}
- 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)}
- U G01N 2201/00** **Features of devices classified in [G01N 21/00](#)**
- U G01N 2201/06
 - Illumination; Optics
- U G01N 2201/062
 - • LED`s
- G01N 2201/0628
 - • • Organic LED ([OLED](#))
- U G01N 2223/00** **Investigating materials by wave or particle radiation**
- U G01N 2223/03
 - by transmission
- U G01N 2223/04
 - • and measuring absorption
- G01N 2223/041
 - • • X-ray absorption fine structure ([EXAFS](#))
- U G01N 2223/07
 - secondary emission
- U G01N 2223/081
 - • incident ion beam, e.g. proton
- G01N 2223/0813
 - • • incident ion beam and measuring X-rays ([PIXE](#))
- G01N 2223/0816
 - • • incident ion beam and measuring secondary ion beam ([SIMS](#))
- G01N 2223/085
 - • photo-electron spectrum ([ESCA](#), [XPS](#))
- U G01N 2223/40
 - Imaging
- G01N 2223/412
 - • use of image converter tube ([PMT](#))
- G01N 2223/413
 - • sensor array ([CCD](#))
- U G01N 2223/60
 - Specific applications or type of materials
- U G01N 2223/611
 - • patterned objects; electronic devices
- G01N 2223/6113
 - • • printed circuit board ([PCB](#))

U G01N 2333/00 Assays involving biological materials from specific organisms or of a specific nature

NOTE

In groups [G01N 2333/47](#) to [G01N 2333/994](#) indexing codes are assigned according to the chemical nature of the materials irrespective of the source organism.

- U G01N 2333/195
- from bacteria
- NOTE**
- In groups [G01N 2333/20](#) to [G01N 2333/365](#) , where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets.
- G01N 2333/30
- • from Mycoplasmatales, e.g. Pleuropneumonia-like organisms [{\[PPLO\]}](#)
- U G01N 2333/435
- from animals; from humans
- U G01N 2333/475
- • Assays involving growth factors
- G01N 2333/48
- • • Nerve growth factor [{\[NGF\]}](#)
- G01N 2333/485
- • • Epidermal growth factor [{\[EGF\]}](#) (urogastrone)
- G01N 2333/49
- • • Platelet-derived growth factor [{\[PDGF\]}](#)
- G01N 2333/495
- • • Transforming growth factor [{\[TGF\]}](#)
- G01N 2333/50
- • • Fibroblast growth factors [{\[FGF\]}](#)
- G01N 2333/501
- • • • acidic FGF [{\[aFGF\]}](#)
- G01N 2333/503
- • • • basic FGF [{\[bFGF\]}](#)
- G01N 2333/505
- • • Erythropoietin [{\[EPO\]}](#)
- U G01N 2333/52
- • Assays involving cytokines
- G01N 2333/525
- • • Tumor necrosis factor [{\[TNF\]}](#)
- G01N 2333/5255
- • • • Lymphotoxin [{\[LT\]}](#)
- G01N 2333/53
- • • Colony-stimulating factor [{\[CSF\]}](#)
- G01N 2333/54
- • • Interleukins [{\[IL\]}](#)
- G01N 2333/5415
- • • • Leukaemia inhibitory factor [{\[LIF\]}](#)
- G01N 2333/555
- • • Interferons [{\[IFN\]}](#)
- U G01N 2333/575
- • Hormones (derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin [G01N 2333/665](#) , corticotropin [G01N 2333/695](#))
- G01N 2333/5751
- • • Corticotropin releasing factor [{\[CRF\]}](#) (Urotensin)
- G01N 2333/5754
- • • Endothelin, vasoactive intestinal contractor [{\[VIC\]}](#)
- G01N 2333/5757
- • • Vasoactive intestinal peptide [{\[VIP\]}](#) or related peptides
- G01N 2333/58
- • • Atrial natriuretic factor complex; Atriopeptin; Atrial natriuretic peptide [{\[ANP\]}](#); Brain natriuretic peptide [{\[BNP, proBNP\]}](#); Cardionatrin; Cardiodilatin
- G01N 2333/59
- • • Follicle-stimulating hormone [{\[FSH\]}](#); Chorionic gonadotropins, e.g. HCG; Luteinising hormone [{\[LH\]}](#); Thyroid-stimulating hormone [{\[TSH\]}](#)
- G01N 2333/595
- • • Gastrins; Cholecystokinins [{\[CCK\]}](#)
- G01N 2333/61
- • • Growth hormones [{\[GH\]}](#) (Somatotropin)
- U G01N 2333/665
- • Assays involving proteins derived from pro-opiomelanocortin, pro-enkephalin or pro-dynorphin
- G01N 2333/68
- • • Melanocyte-stimulating hormone [{\[MSH\]}](#)
- G01N 2333/695
- • • Corticotropin [{\[ACTH\]}](#)
- U G01N 2333/705
- • Assays involving receptors, cell surface antigens or cell surface determinants

- G01N 2333/70567
 - • • Nuclear receptors, e.g. retinoic acid receptor [\(RAR\)](#), RXR, nuclear orphan receptors
- U G01N 2333/715
 - • • for cytokines; for lymphokines; for interferons
- G01N 2333/7151
 - • • • for tumor necrosis factor [\(TNF\)](#); for lymphotoxin [\(LT\)](#)
- G01N 2333/7153
 - • • • or colony-stimulating factors [\(CSF\)](#)
- G01N 2333/7155
 - • • • for interleukins [\(IL\)](#)
- G01N 2333/7156
 - • • • for interferons [\(IFN\)](#)
- U G01N 2333/745
 - • Assays involving non-enzymic blood coagulation factors
- G01N 2333/755
 - • • Factors VIII, e.g. factor VIII C [\(AHF\)](#), factor VIII Ag [\(VWF\)](#)
- G01N 2333/78
 - • Connective tissue peptides, e.g. collagen, elastin, laminin, fibronectin, vitronectin, cold insoluble globulin [\(CIG\)](#)
- U G01N 2333/90
 - Enzymes; Proenzymes

NOTE

Enzymes are generally categorised 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.

- U G01N 2333/902
 - • Oxidoreductases (1.)
- U G01N 2333/906
 - • • acting on nitrogen containing compounds as donors (1.4, 1.5, 1.7)
- U G01N 2333/9065
 - • • • acting on CH-NH groups of donors (1.5)
- U G01N 2333/90655
 - • • • • with NAD or NADP as acceptor (1.5.1) in general
- U G01N 2333/90661
 - • • • • with a definite EC number (1.5.1.-)
- G01N 2333/90666
 - • • • • • Dihydrofolate reductase [\(DHFR\)](#) (1.5.1.3)

Project: N/A (G01P)

- U G01P 13/00
 - Indicating or recording presence, absence, or direction, of movement (electric switches [H01H](#); counting moving objects [G06M 7/00](#))
- G01P 13/008
 - {by using a window mounted in the fluid carrying tube [G01P 13/0013](#), [G01P 13/0026](#), [G01P 13/004](#) take precedence}[\(G01P 13/0013, G01P 13/0026, G01P 13/004 take precedence\)}](#)

Project: N/A (G01R)

- G01R 1/00
 - Details of instruments or arrangements of the types included in groups [G01R 5/00](#) to [G01R 13/00](#) and [G01R 31/00](#)(constructional details particular to {electromechanical} arrangements for measuring the electric consumption [G01R 11/02](#))
- G01R 3/00
 - Apparatus or processes specially adapted for the manufacture {or maintenance} of measuring instruments, {e.g. of probe tips}
- G01R 11/00
 - Electromechanical arrangements for measuring time integral of electric power {i.e. electric energy} or current, e.g. of consumption ({other arrangements for measuring time integral of electric power or current [G01R 22/00](#) ; Boards, panels, desks for energy meters, [H02B 1/03](#) ; monitoring electric consumption of electrically-propelled vehicles [B60L 3/00](#))

NOTE

For the definition of "arrangement" see Note (2) under [G01R](#)

- U G01R 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 13/20 · Cathode-ray oscilloscopes; {Oscilloscopes using other screens than CRT`s, e.g. LCD`s; (control arrangements or circuits for cathode-ray tube indicators [G09G 1/00](#) ; cathode ray tubes [H01J 31/00](#))}
- U G01R 15/00 Details of measuring arrangements of the types provided for in groups [G01R 17/00](#) to [G01R 29/00](#) and [G01R 33/00](#) to [G01R 35/00](#)(details of instruments [G01R 1/00](#) ; overload protection arrangements [G01R 1/36](#))**
- G01R 15/12 · Circuits for multi-testers, {i.e. multimeters}, e.g. for measuring voltage, current, or impedance at will
- U G01R 15/14 · Adaptations providing voltage or current isolation, e.g. for high-voltage or high-current networks (instrument transformers [H01F 38/20](#) ; voltage dividers [G01R 15/04](#) ; { means for converting the output of a sensing member to another variable [G01D 5/00](#) ; visible signalling arrangements or devices [G08B 5/00](#) ; transmission systems for measured values [G08C 17/00](#) , [G08C 23/00](#)})
- G01R 15/20 · · using galvano-magnetic devices, e.g. Hall-effect devices, {i.e. measuring a magnetic field via the interaction between a current and a magnetic field, e.g. magneto resistive or Hall effect devices (electromechanical such devices, [G01R 5/00](#) , [G01R 7/00](#) , [G01R 9/00](#) ; measuring magnetic fields [G01R 33/02](#))}
- U G01R 19/00 Arrangements for measuring currents or voltages or for indicating presence or sign thereof ([G01R 5/00](#) takes precedence; { voltage measurements using secondary electron emission when testing electronic circuits [G01R 31/305](#) } ; for measuring bio-electric currents or voltages [A61B 5/04](#))**
- NOTE
Within groups [G01R 19/02](#) to [G01R 19/32](#) , group [G01R 19/28](#) takes precedence. Groups [G01R 19/18](#) to [G01R 19/257](#) take precedence over groups [G01R 19/02](#) to [G01R 19/17](#) and [G01R 19/30](#) .
- G01R 19/04 · Measuring peak values {or amplitude or envelope} of ac or of pulses
- U G01R 19/165 · Indicating that current or voltage is either above or below a predetermined value or within or outside a predetermined range of values (circuits with regenerative action, e.g. Schmitt trigger [H03K 3/00](#) ; threshold switches [H03K 17/00](#))
- G01R 19/17 · · giving an indication of the number of times this occurs, {i.e. multi-channel analysers}
- U G01R 23/00 Arrangements for measuring frequencies; Arrangements for analysing frequency spectra (frequency discriminators [H03D](#) ; { high frequency probes [G01R 1/06772](#)})**
- G01R 23/02 · Arrangements for measuring frequency, e.g. pulse repetition rate {(using vibrating reeds [G01R 9/04](#))}; Arrangements for measuring period of current or voltage (measuring short-time intervals [G04F](#))
- G01R 23/10 · · by converting frequency into a train of pulses, which are then counted, {i.e. converting the signal into a square wave}
- G01R 23/15 · · Indicating that frequency of pulses is either above or below a predetermined value or within or outside a predetermined range of values, by making use of non-linear or digital elements {(indicating that pulse width is above or below a certain limit)}

- U G01R 23/16 · Spectrum analysis; Fourier analysis {(computing with Fourier series or Walsh functions [G06F 17/14](#) , [G06G 7/19](#) ; spectral data processing)}
- G01R 23/17 · · with optical {or acoustical} auxiliary devices
- G01R 23/20 · · Measurement of non-linear distortion, {e.g. harmonics or noise, ([G01R 31/31708](#) takes precedence; noise figure [G01R 29/26](#))}
- U G01R 27/00 Arrangements for measuring resistance, reactance, impedance, or electric characteristics derived therefrom {(measuring super-conductive properties [G01R 33/1238](#))}**
- U G01R 27/02 · Measuring real or complex resistance, reactance, impedance, or other two-pole characteristics derived therefrom, e.g. time constant (by measuring phase angle only [G01R 25/00](#))
- NOTE
Groups [G01R 27/02](#) to [G01R 27/22](#) cover variables that directly or indirectly can be measured over two poles of a component or a Thevenin two-pole equivalent. Subgroup [G01R 27/26](#) also covers other techniques, e.g. using electro magnetic waves or network analyzers
- G01R 27/04 · · in circuits having distributed constants, {e.g. having very long conductors or involving high frequencies}
- U G01R 27/16 · · Measuring impedance of element or network through which a current is passing from another source, e.g. cable, power line
- G01R 27/18 · · · Measuring resistance to earth, {i.e. line to ground}
- G01R 27/20 · · Measuring earth resistance; Measuring contact resistance, {e.g.} of earth connections, e.g. plates
- U G01R 27/26 · · Measuring inductance or capacitance; Measuring quality factor, e.g. by using the resonance method; Measuring loss factor; Measuring dielectric constants; {Measuring impedance or related variables}
- G01R 27/28 · Measuring attenuation, gain, phase shift or derived characteristics of electric four pole networks, i.e. two-port networks {using network analysers} Measuring transient response (in line transmission systems [H04B 3/46](#))
- G01R 27/32 · · in circuits having distributed constants, {e.g. having very long conductors or involving high frequencies}
- U G01R 29/00 Arrangements for measuring or indicating electric quantities not covered by groups [G01R 19/00](#) to [G01R 27/00](#)**
- U G01R 29/02 · Measuring characteristics of individual pulses, e.g. deviation from pulse flatness, rise time, duration (of amplitude [G01R 19/00](#) ; of repetition rate [G01R 23/00](#) ; of phase difference of two cyclic pulse trains [G01R 25/00](#) ; monitoring pattern of pulse trains [H03K 5/19](#))
- U G01R 29/027 · · Indicating that a pulse characteristic is either above or below a predetermined value or within or beyond a predetermined range of values
- G01R 29/033 · · · giving an indication of the number of times this occurs, {i.e. multi-channel analysers (the characteristic being frequency)}
- U G01R 29/08 · Measuring electromagnetic field characteristics {(measuring electrostatic fields [G01R 29/12](#) ; for determining a voltage [G01R 15/14](#) ; measuring magnetic fields [G01R 33/00](#) ; Measuring or estimating received signal strength [H04B 17/318](#))}
- U G01R 29/10 · · Radiation diagrams of aerials; {Antenna testing in general}

- 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](#) } ; **data processing equipment for testing or function monitoring [G06F15/20B](#) } ; 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 31/12 • Testing dielectric strength or breakdown voltage; {Testing or monitoring effectiveness or level of insulation, e.g. of a cable or of an apparatus, for example using partial discharge measurements; Electrostatic testing ([G01R 31/06](#) , [G01R 31/08](#) and [G01R 31/327](#) take precedence; measuring in plasmas [G01R 19/0061](#) ; Measuring dielectric constants [G01R 27/2617](#) ; ESD, EMC or EMP testing of circuits [G01R 31/002](#)}}
- G01R 31/14 • • Circuits therefor, {e.g. for generating test voltages, sensing circuits ([G01R 31/1209](#) to [G01R 31/1227](#) take precedence; for testing switches [G01R 31/327](#))}
- G01R 31/28 • Testing of electronic circuits, e.g. by signal tracer ({EMC, EMP or similar testing of electronic circuits [G01R 31/002](#) } ; testing for short-circuits, discontinuities, leakage or incorrect line connection [G01R 31/02](#) ; checking computers {or computer components} [G06F 11/00](#) ; checking static stores for correct operation [G11C 29/00](#) ; { testing receivers or transmitters of transmission systems [H04B 17/00](#)})
- G01R 31/2801 • • {Testing of printed circuits, backplanes, motherboards, hybrid circuits or carriers for multichip packages (~~{MCP}~~) ([G01R 31/318508](#) takes precedence; contactless testing [G01R 31/302](#) ; testing contacts or connections [G01R 31/04](#))}
- U G01R 31/2832 • • {Specific tests of electronic circuits not provided for elsewhere (contains no documents; [G01R 31/2801](#) and [G01R 31/316](#) take precedence)}
- G01R 31/2834 • • • {Automated test systems (~~{ATE}~~); using microprocessors or computers ([G01R 31/317](#) takes precedence; ATE for detection of defective computer hardware [G06F 11/2736](#))}
- G01R 31/2851 • • {Testing of integrated circuits (~~{IC}~~) ([G01R 31/317](#) takes precedence; testing individual devices [G01R 31/26](#) ; testing printed circuits [G01R 31/2801](#))}
- U G01R 31/2855 • • • {Environmental, reliability or burn-in testing}
- G01R 31/2856 • • • • {Internal circuit aspects, e.g. built-in test features; Test chips; Measuring material aspects, e.g. electro migration (~~{EM}~~)}
- G01R 31/2858 • • • • • {Measuring of material aspects, e.g. electro-migration (~~{EM}~~)}, hot carrier injection}
- G01R 31/2894 • • • {Aspects of quality control (~~{QC}~~) ([G01R 31/31718](#) takes precedence; program control for QC [G05B 19/41875](#))}
- U G01R 31/30 • • Marginal testing, e.g. varying supply voltage (marginal testing of computers [G06](#))
- U G01R 31/3004 • • • {Current or voltage test}
- G01R 31/3012 • • • • {Built-In-Current test (~~{BIC}~~)}
- U G01R 31/317 • • Testing of digital circuits

WARNING

The following subgroups of [G01R 31/317](#) are not complete due to an ongoing reorganisation : [G01R 31/31702](#) , [G01R 31/31708](#) , [G01R 31/31711](#) ,

[G01R 31/31717](#) , [G01R 31/31718](#) , [G01R 31/31728](#) , [G01R 31/31901](#) . See also [G01R 31/317](#) and its other subgroups

- G01R 31/31701 . . . {Arrangements for setting the Unit Under Test [{\[UUT\]}](#) in a test mode}
- U G01R 31/3181 . . . Functional testing ([G01R 31/3177](#) takes precedence)
- U G01R 31/3183 Generation of test inputs, e.g. test vectors, patterns or sequence
- G01R 31/318307 {computer-aided, e.g. automatic test program generator [{\[ATPG\]}](#), program translations, test program debugging}
- G01R 31/318314 {Tools, e.g. program interfaces, test suite, test bench, simulation hardware, test compiler, test program languages (simulation software [G01R 31/318357](#) ; emulators [G06F11/26S2G06F 11/261](#))}
- U G01R 31/3185 Reconfiguring for testing, e.g. LSSD, partitioning
- U G01R 31/318516 {Test of programmable logic devices [PLDs]}
- G01R 31/318519 {Test of field programmable gate arrays [{\[FPGA\]}](#)}
- U G01R 31/319 Tester hardware, i.e. output processing circuit {(logic analyzers [G01R 31/3177](#) , Memory tester hardware [G11C 29/56](#))}
- U G01R 31/31903 {tester configuration}
- G01R 31/31905 {Interface with the device under test [{\[DUT\]}](#), e.g. arrangements between the test head and the DUT, mechanical aspects, fixture}
- G01R 31/31908 {Tester set-up, e.g. configuring the tester to the device under test [{\[DUT\]}](#), down loading test patterns}
- G01R 31/31917 {Stimuli generation or application of test patterns to the device under test [{\[DUT\]}](#)}
- G01R 31/31926 {Routing signals to or from the device under test [{\[DUT\]}](#), e.g. switch matrix, pin multiplexing}
- U G01R 31/327 . . . Testing of circuit interrupters, switches or circuit-breakers (structural association with switches [H01H](#) ; { detecting faults in encased switchgear [H02B 13/065](#) ; monitoring in addition to disconnection by a protective circuit [H02H 3/04](#)})
- U G01R 31/333 Testing of the switching capacity of high-voltage circuit-breakers; {Testing of breaking capacity or related variables, e.g. post arc current or transient recovery voltage} (means for detecting the presence of an arc or discharge in switching devices [H01H 9/50](#) , [H01H 33/26](#))
- G01R 31/40 Testing power supplies (testing photovoltaic devices [H02S 50/10](#) {; comparing current or voltage with a reference level in AC or DC supplies [G01R 19/16538](#)})

U G01R 33/00

Arrangements or instruments for measuring magnetic variables

- U G01R 33/02 . . . Measuring direction or magnitude of magnetic fields or magnetic flux ([G01R 33/20](#) takes precedence ; measuring direction or magnitude of the earth`s field for navigation or surveying [G01C](#) ; for prospecting, for measuring the magnetic field of the earth [G01V 3/00](#))

NOTE

Groups [G01R 33/022](#) , [G01R 33/10](#) take precedence over groups [G01R 33/025](#) to [G01R 33/09](#) .

- G01R 33/032 . . . using magneto-optic devices, e.g. Faraday, {Cotton-Mouton effect (magneto-optics in general [G02F 1/09](#))}
- U G01R 33/10 . . . Plotting field distribution; {Measuring field distribution}
- U G01R 33/20 . . . involving magnetic resonance (medical aspects [A61B 5/055](#) ; magnetic resonance gyrometers [G01C 19/00](#){ investigating materials using NMR [G01N 24/00](#) ; prospecting or detecting using NMR [G01V 3/00](#)})

- U G01R 33/28
 - • Details of apparatus provided for in groups [G01R 33/44](#) to [G01R 33/64](#)
 - WARNING
 - Groups [G01R 33/281](#) - [G01R 33/288](#) are not complete pending reclassification. See also this group
- U G01R 33/32
 - • • Excitation or detection systems, e.g. using radio frequency signals
- G01R 33/34
 - • • • Constructional details, e.g. resonators, ~~{~~{specially adapted to MR (aerials in general [H01Q](#))}
- U G01R 33/341
 - • • • • comprising surface coils
- G01R 33/3415
 - • • • • • comprising arrays of sub-coils, ~~{~~{i.e. phased-array coils with fileiple receiver channels}
- U G01R 33/38
 - • • Systems for generation, homogenisation or stabilisation of the main or gradient magnetic field
- U G01R 33/387
 - • • • Compensation of inhomogeneities (screening [G01R 33/42](#))
- U G01R 33/3873
 - • • • • using ferromagnetic bodies; {Passive shimming}
- G01R 33/389
 - • • • Field stabilisation, ~~{~~{e.g. by field measurements and control means or indirectly by current stabilisation}
- 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
- G01R 33/441
 - • • {Nuclear Quadrupole Resonance (~~(/NQR)/~~) Spectroscopy and Imaging}
- U G01R 33/48
 - • • NMR imaging systems
- G01R 33/50
 - • • • based on the determination of relaxation times, ~~{~~{e.g. T1 measurement by IR sequences; T2 measurement by multiple-echo sequences}
- G01R 33/54
 - • • • Signal processing systems, e.g. using pulse sequences, ~~{~~{Generation or control of pulse sequences (in general [H03K](#)); Operator Console}
- G01R 33/56
 - • • • • Image enhancement or correction, e.g. subtraction or averaging techniques, ~~{~~{e.g. improvement of signal-to-noise ratio and resolution (image data processing in general [G06T](#))}
- U G01R 33/561
 - • • • • • by reduction of the scanning time, i.e. fast acquiring systems, e.g. using echo-planar pulse sequences
- G01R 33/5613
 - • • • • • • {Generating steady state signals, e.g. low flip angle sequences (~~(/FLASH)/~~)}
- G01R 33/58
 - • • • Calibration of imaging systems, e.g. using test probes {, Phantoms; Calibration objects or fiducial markers such as active or passive RF coils surrounding an MR active material}

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 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, 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

- 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.
- 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 1/00

Beacons or beacon systems transmitting signals having a characteristic or characteristics capable of being detected by non-directional receivers and defining directions, positions, or position lines fixed relatively to the beacon transmitters; Receivers co-operating therewith (position fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#))

U G01S 1/02

• using radio waves ([G01S 19/00](#) takes precedence)

U G01S 1/08

• • Systems for determining direction or position line {(aerial arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#) ; combinations of different interacting units for giving a desired directional characteristic [H01Q 21/29](#) ; aerials or aerial systems providing at least two radiation patterns [H01Q 25/00](#))}

U G01S 1/20

• • • using a comparison of transit time of synchronised signals transmitted from non-directional aerials or aerial systems spaced apart, i.e. path-difference systems {(synchronisation in general [H03L 7/00](#))}

G01S 1/24

• • • the synchronised signals being pulses or equivalent modulations on carrier waves and the transit times being compared by measuring the difference in arrival time of a significant part of the modulations, {e.g. LORAN systems}

U G01S 1/44

• • • Rotating or oscillating beam beacons defining directions in the plane of rotation or oscillation

- U G01S 1/46
 - . . . Broad-beam systems producing at a receiver a substantially continuous sinusoidal envelope signal of the carrier wave of the beam, the phase angle of which is dependent upon the angle between the direction of the receiver from the beacon and a reference direction from the beacon, e.g. cardioid system
- G01S 1/50
 - wherein the phase angle of the direction-dependent envelope signal is compared with a non-direction-dependent reference signal, {e.g. VOR}
- 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 3/04
 - . . Details
- G01S 3/12
 - . . . Means for determining sense of direction, e.g. by combining signals from directional aerial or goniometer search coil with those from non-directional aerial ({[G01S 3/065](#) takes precedence} determining direction by amplitude comparison of signals derived by combining directional and non-directional signals [G01S 3/24](#) , [G01S 3/34](#))
- 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 3/46
 - . . . using aerials spaced apart and measuring {frequency} phase or time difference between signals therefrom, i.e. path-difference systems
- 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
- G01S 3/786
 - the desired condition being maintained automatically, {i.e. tracking systems; ([G01S 3/783](#) takes precedence)}
- G01S 5/10
 - . . Position of receiver fixed by co-ordinating a plurality of position lines defined by path-difference measurements {,e.g. omega or decca systems} ([G01S 5/12](#) takes precedence; { beacons and receivers cooperating therewith [G01S 1/306](#) , [G01S 1/308](#)})
- 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 7/48
 - . of systems according to group [G01S 17/00](#)
- U G01S 7/483
 - . . Details of pulse systems
- U G01S 7/486
 - . . . Receivers
- G01S 7/487
 - Extracting wanted echo signals, {e.g. pulse detection}
- U G01S 7/52
 - . of systems according to group [G01S 15/00](#)
- G01S 7/64
 - . . Luminous indications (~~[G01S 7/62](#) takes precedence~~){(~~[G01S 7/62](#) takes precedence~~ {; short-range imaging [G01S 7/52076](#)})}

- U G01S 13/00** **Systems using the reflection or reradiation of radio waves, e.g. radar systems; Analogous systems using reflection or reradiation of waves whose nature or wavelength is irrelevant or unspecified (using acoustic waves [G01S 15/00](#) ; using electromagnetic waves other than radio waves [G01S 17/00](#))**
- NOTES**
1. This group covers :
 - systems for detecting the presence of an object, e.g. by reflection or reradiation from the object itself, or from a transponder associated with the object, for determining the distance or relative velocity of an object, for providing a co-ordinated display of the distance and direction of an object or for obtaining an image thereof;
 - systems arranged for mounting on a moving craft or vehicle and using the reflection of waves from an extended surface external to the craft, e.g. the surface of the earth, to determine the velocity and direction of motion of the craft relative to the surface.
 2. This group does not cover :
 - systems for determining the direction of an object by means not employing reflection or reradiation, which are covered by groups [G01S 1/00](#) or [G01S 3/00](#) ;
 - systems for determining distance or velocity of an object by means not employing reflection or reradiation, which are covered by group [G01S 11/00](#) .
- U G01S 13/74** • Systems using reradiation of radio waves, e.g. secondary radar systems; Analogous systems
- G01S 13/75** • • using transponders powered from received waves, e.g. using passive transponders, {or using passive reflectors}
- U G01S 13/76** • • wherein pulse-type signals are transmitted
- U G01S 13/78** • • • discriminating between different kinds of targets, e.g. IFF-radar, i.e. identification of friend or foe {([G01S 13/75](#) , [G01S 13/767](#) take precedence)}
- G01S 13/781** • • • • {Secondary Surveillance Radar ([SSR](#)) in general}
- G01S 13/785** • • • • {Distance Measuring Equipment ([DME](#)) systems}
- G01S 13/79** • • Systems using random coded signals or random pulse repetition frequencies, {e.g. "Separation and Control of Aircraft using Non synchronous Techniques" ([SECANT](#))}
- U G01S 13/88** • Radar or analogous systems specially adapted for specific applications (electromagnetic prospecting or detecting of objects, e.g. near-field detection, [G01V 3/00](#))
- U G01S 13/89** • • for mapping or imaging
- G01S 13/90** • • • using synthetic aperture techniques, {e.g. correcting range migration errors (compression in range per se [G01S 13/28](#) ; platform motion compensation for AMTI [G01S 13/5242](#))}
- U G01S 13/9035** • • • • {Particular SAR processing techniques not provided for elsewhere, e.g. squint mode, doppler beam-sharpening mode, spotlight mode, bistatic SAR, inverse SAR}
- G01S 2013/9064** • • • • • {Inverse SAR ([ISAR](#))}
- G01S 2013/9082** • • • • • {rotating SAR([ROSAR](#)), i.e. antennas rotatably mounted}
- G01S 2013/9088** • • • • • {circular SAR ([CSAR](#), C-SAR)}
- U G01S 13/91** • • for traffic control ([G01S 13/93](#) takes precedence)
- G01S 2013/916** • • • {Airport surface monitoring ([ASDE](#))}

U G01S 15/00 Systems using the reflection or reradiation of acoustic waves, e.g. sonar systems

NOTES

1. This group covers :
 - systems for detecting the presence of an object, e.g. by reflection or reradiation from the object itself, or from a transponder associated with the object, for determining the distance or relative velocity of an object, for providing a co-ordinated display of the distance and direction of an object or for obtaining an image thereof;
 - systems arranged for mounting on a moving craft or vehicle and using the reflection of waves from an extended surface external to the craft, e.g. the surface of the earth, to determine the velocity and direction of motion of the craft relative to the surface.
2. This group does not cover :
 - systems for determining the direction of an object by means not employing reflection or reradiation, which are covered by groups [G01S 1/00](#) or [G01S 3/00](#) ;
 - systems for determining distance or velocity of an object by means not employing reflection or reradiation, which are covered by group [G01S 11/00](#) .

U G01S 15/02 • using reflection of acoustic waves ([G01S 15/66](#) takes precedence)

U G01S 15/06 • • Systems determining the position data of a target

U G01S 15/08 • • • Systems for measuring distance only (indirect measurement [G01S 15/46](#))

U G01S 15/32 • • • • using transmission of continuous unmodulated waves, amplitude-, frequency-, or phase-modulated waves

G01S 15/325 • • • • {using transmission of coded signals, e.g. of phase-shift keyed (~~PSK~~) signals}

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

U 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 [H04B 1/7097](#))}

G01S 19/24 • • • Acquisition or tracking {or demodulation} of signals transmitted by the system {(synchronisation aspects of direct sequence spread spectrum modulation [H04B 1/7073](#))}

G01S 19/29 • • • • carrier, {including Doppler,} related {([G01S 19/246](#) takes precedence)}

Project: N/A (G01T)

U G01T 1/00 Measuring X-radiation, gamma radiation, corpuscular radiation, or cosmic radiation ([G01T 3/00](#) , [G01T 5/00](#) take precedence)

- U G01T 1/29
 - 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}
- G01T 1/2992
 - • • {Radioisotope data or image processing not related to a particular imaging system; Off-line processing of pictures, e.g. rescanners (for measuring radiation intensity [G01T 1/1663](#) ; digital computing or data processing equipment or methods specially adapted for nuclear physics or nuclear engineering [G06F15/52](#)[G06F 15/00](#) ; general purpose image data processing [G06T 1/00](#) ; computerized tomography [G06T 1/003](#))}

Project: N/A (G01V)**U G01V 1/00****Seismology; Seismic or acoustic prospecting or detecting**NOTE

Groups [G01V 1/44](#) to [G01V 1/52](#) take precedence over groups [G01V 1/001](#) to [G01V 1/393](#)[G01V 1/42](#)

WARNING

Group [G01V 1/159](#) does not correspond to former or current IPC groups.

Concordance ECLA:IPC for this group is as follows: - [G01V 1/159](#) : [G01V 1/02](#)

- U G01V 1/02
 - Generating seismic energy ({[G01V 1/003](#) takes precedence } ; blasting in general [F42](#); nuclear explosives [G21J](#))
- U G01V 1/133
 - • using fluidic driving means, e.g. highly pressurised fluids; {using implosion} ([G01V 1/104](#) takes precedence)
- G01V 1/135
 - • • by deforming or displacing surfaces of enclosures {, e.g. by hydraulically driven vibroseis™}
- G01V 1/137
 - • • which fluid escapes from the generator in a pulsating manner, e.g. for generating bursts {, airguns}
- U G01V 1/143
 - • using mechanical driving means {e.g. motor driven shaft}{[G01V 1/104](#) , [G01V 1/133](#) take precedence)
- G01V 1/145
 - • • by deforming or displacing surfaces {, e.g. by mechanically driven vibroseis™}
- G01V 1/157
 - • using spark discharges; using exploding wires (~~spark gaps, {non-enclosed} discharge apparatus, not otherwise provided for H01T~~ *spark gaps, {non-enclosed} discharge apparatus, not otherwise provided for H01T*)
- U G01V 1/28
 - Processing seismic data, e.g. analysis, for interpretation, for correction ([G01V 1/48](#) takes precedence)
- U G01V 1/36
 - • Effecting static or dynamic corrections on records, e.g. correcting spread; Correlating seismic signals; Eliminating effects of unwanted energy
- G01V 1/37
 - • • specially adapted for seismic systems using continuous agitation of the ground, {e.g. using pulse compression of frequency swept signals for enhancement of received signals}
- G01V 1/38
 - specially adapted for water-covered areas ([G01V 1/28](#) , {[G01V 1/42](#)} take precedence)

Project: N/A (G02B)

G02B

OPTICAL ELEMENTS, SYSTEMS, OR APPARATUS (G02F takes precedence; measuring-instruments, see the relevant subclass of G01, e.g. optical rangefinders G01C; testing of optical elements, systems, or apparatus G01M 11/00 ; spectacles G02C; sound lenses G10K 11/30 ; electron and ion "optics" H01J; X-ray "optics" H01J, H05G 1/00 ; optical elements structurally combined with electric discharge tubes H01J 5/16 , H01J 29/89 , H01J 37/22 ; microwave "optics" H01Q; combination of optical elements with television receivers H04N 5/72 ; heating arrangements specially adapted for transparent or reflecting areas H05B 3/84 ; {optical apparatus 42H})

NOTE

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

- "simple lens or prism" means a single lens or prism;
- "compound lens or prism" means an optical member, the constituents of which either are close together without air-space or (except in group ~~G02B11/00~~) 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 3/00 | Simple or compound lenses (artificial eyes A61F 2/14 ; spectacle lenses or contact lenses for the eyes G02C ; watch or clock glasses G04B 39/00) |
| U | G02B 3/02 | • with non-spherical faces (G02B 3/10 takes precedence) |
| | G02B 3/04 | • • with continuous faces that are rotationally symmetrical but deviate from a true sphere, {e.g. so called "aspheric" lenses} |
| U | G02B 5/00 | Optical elements other than lenses (light guides G02B 6/00 ; optical logic elements G02F 3/00) |
| U | G02B 5/08 | • Mirrors {(vehicle mirrors involving special optical features B60R 1/08)} |
| | G02B 5/09 | • • Multifaceted or polygonal mirrors, {e.g. polygonal scanning mirrors; Fresnel mirrors} |
| U | G02B 6/00 | Light guides |
| | G02B 6/0001 | • {specially adapted for lighting devices or systems (lighting or signalling on vehicles using light guides B60Q 1/00 ; lighting devices for vehicle interior using light guides B60Q 3/002 ; lighting devices mounted on the vehicle rear part using light guides F21S 48/2225 ; lighting devices for vehicle dashboards B60Q 3/04 ; measuring arrangements having light conducting pointers G01D 13/265 ; illumination of liquid crystal displays G02F1/13357 G02F 1/1336 ; illuminated signs G09F 13/00)} |
| U | G02B 6/0011 | • • {the light guides being planar or of plate-like form} |
| U | G02B 6/0066 | • • • {characterised by the light source being coupled to the light guide} |
| | G02B 6/0073 | • • • • {Light emitting diode (L LED)} |

- U G02B 6/10
 - of the optical waveguide type ([G02B 6/02](#) , [G02B 6/24](#) take precedence; devices or arrangements for the control of light by electric, magnetic, electro-magnetic or acoustic means [G02F 1/00](#) ; transferring the modulation of modulated light [G02F 2/00](#) ; optical logic elements [G02F 3/00](#) ; optical analogue/digital converters [G02F 7/00](#) ; stores using opto-electronic devices [G11C 11/42](#) , { using electro-optical elements [G11C 13/047](#) } ; electric waveguides [H01P](#); transmission of information by optical means [H04B 10/00](#) ; multiplex systems [H04J 14/00](#))
- U G02B 6/12
 - • of the integrated circuit kind (production or processing of single crystals [C30B](#) ; electric integrated circuits [H01L 27/00](#){ coupling fibres and integrated optical circuits [G02B 6/30](#)})
- U G02B 2006/12083
 - • • {Constructional arrangements}
- G02B 2006/12128
 - • • • {Multiple Quantum Well ([MQW](#))}
- U G02B 2006/12133
 - • • {Functions}
- G02B 2006/12161
 - • • • {Distributed feedback ([DFB](#))}
- 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)
- G02B 6/268
 - • • {for modal dispersion control, e.g. concatenation of light guides having different modal dispersion properties (graded index multimode fibres [G02B 6/0288](#) ; multimodal transmission systems [H04B10/13](#) [H04B 10/2581](#))}
- U G02B 6/28
 - • • having data bus means, i.e. plural waveguides interconnected and providing an inherently bidirectional system by mixing and splitting signals
- U G02B 6/293
 - • • • with wavelength selective means ({[G02B 6/02052](#) , [G02B 6/02057](#) take precedence } ; for optical elements in use, see the relevant subgroups of this subclass; optical wavelength-division multiplexing systems [H04J 14/02](#) ; { in or associated with an integrated waveguide arrangement [G02B 6/12007](#) ; mode multiplexing [G02B 6/14](#)})
- U G02B 6/29346
 - • • • • {operating by wave or beam interference (interferometers for measuring [G01B 9/02](#))}
- U G02B 6/29358
 - • • • • • {Multiple beam interferometer external to a light guide, e.g. Fabry-Pérot, etalon, VIPA plate, OTDL plate, continuous interferometer, parallel plate resonator ([G02B 6/29347](#) , [G02B 6/29349](#) , [G02B 6/2935](#) , [G02B 6/29361](#) take precedence; resonator evanescently coupled to light guide [G02B 6/29335](#))}
- G02B 6/29359
 - • • • • • • {Cavity formed by light guide ends, e.g. fibre Fabry Pérot ([FFP](#))}
- U G02B 6/29379
 - • • • • {characterised by the function or use of the complete device}
- U G02B 6/2938
 - • • • • • {for multiplexing or demultiplexing, i.e. combining or separating wavelengths, e.g. 1xN, NxM}
- U G02B 6/29382
 - • • • • • • {including at least adding or dropping a signal, i.e. passing the majority of signals}
- G02B 6/29385
 - • • • • • • • {Channel monitoring, e.g. by tapping (channel monitoring in optical transmission systems [H04B10/08](#)[H04B 10/07](#))}
- U G02B 6/29392
 - • • • • • • {Controlling dispersion ([G02B 6/02214](#) takes precedence; modal dispersion control [G02B 6/268](#))}
- G02B 6/29394
 - • • • • • • • {Compensating wavelength dispersion ([G02B 6/29376](#) takes precedence; dispersion compensated optical transmission systems [H04B10/18](#)[H04B 10/2507](#))}
- 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](#))

- G02B 6/3598 {Switching means directly located between an optoelectronic element and waveguides, including direct displacement of either the element or the waveguide, e.g. optical pulse generation (based on changing the optical properties of the medium [G02F 1/00](#) ; optical pulse generation in optical transmitters [H04B10/155](#)[H04B 10/152](#) ; optical pulse generation by controlling laser operation [H01S 3/00](#))}
- 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 6/38 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 6/3817 {containing optical and electrical conductors (cables including electrical and optical conductors [H01B 11/22](#) ; [G092B6/38D2H](#) [G02B 6/3816](#) takes precedence)}
- U G02B 6/3833 {Details of mounting fibres in ferrules; Assembly methods; Manufacture}
- U G02B 6/3855 {characterised by the method of anchoring or fixing the fibre within the ferrule ([G02B 6/3854](#) takes precedence)}
- U G02B 6/3858 {Clamping, i.e. with only elastic deformation}
- G02B 6/3859 {Ferrules characterised by use of shape memory material [\(SMM\)](#), e.g. heat recoverable polymers, Ti-Ni compounds (chemical aspects of SMM see the relevant places under [C08](#) and [C22](#); SMM used for shaping by moulding [B29C 61/00](#) ; SMM for electrical coupling [H01R 4/01](#) , [H01R 4/72](#) , [H01R 12/856](#) , [H02G 15/1806](#))}
- U G02B 6/42 . . 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 6/43 Arrangements comprising a plurality of opto-electronic elements and associated optical interconnections (light-emissive or light-sensitive semiconductor devices [H01L 27/00](#) , [H01L 31/00](#) , [H01L 33/00](#)); {Transmitting or receiving optical signals between chips, wafers or boards; Optical backplane assemblies}
- G02B 6/44 . Mechanical structures for providing tensile strength and external protection for fibres, e.g. optical transmission cables (cables incorporating electric conductors and optical fibres {where features relating to the optical fibres are not of interest} [H01B 11/22](#))
- U G02B 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 7/183 specially adapted for very large mirrors, e.g. for astronomy, {or solar concentrators}

- G02B 7/28
- Systems for automatic generation of focusing signals (measuring distance per se [G01C](#), [G01S](#); using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. [G03B](#), [G03F](#), [H04N](#))
- G02B 7/36
- • using image sharpness techniques {, e.g. image processing techniques for generating autofocus signals (in cameras having a solid state image sensor [H04N 5/23212](#) ; image data processing per se [G06T](#))}
- G02B 7/38
- • • measured at different points on the optical axis {, e.g. focussing on two or more planes and comparing image data}
- G02B 13/00**
- Optical objectives specially designed for the purposes specified below (with variable magnification{in general}G02B 15/00with variable magnification {in general} G02B 15/00)**
- NOTE
- Unless specified in the title of the subgroups, this group and its subgroups do not cover objectives comprising reflecting surfaces, which are covered by [G02B 17/06](#) , [G02B 17/08](#) and their subgroups
- G02B 13/06
- Panoramic objectives; So-called "sky lenses" {including panoramic objectives having reflecting surfaces}
- G02B 13/16
- for use in conjunction with image converters or intensifiers {, or for use with projectors, e.g. objectives for projection TV}
- 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 17/08
- Catadioptric systems {(used in non-imaging applications [G02B 19/00](#))}
- G02B 17/0804
- • {using two curved mirrors ([G02B 17/0864](#) , ~~G02B1708Z~~[G02B 17/0896](#) takes precedence)}
- 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 21/00**
- Microscopes (eyepieces [G02B 25/00](#) ; polarising systems [G02B 27/28](#) ; measuring microscopes [G01B 9/04](#) ; microtomes [G01N 1/06](#) ; scanning-probe techniques or apparatus [G01Q](#))**
- U G02B 21/06
- Means for illuminating specimens
- U G02B 21/08
- • Condensers
- G02B 21/10
- • • affording dark-field illumination ([G02B 21/14](#){ and [G02B 21/125](#)} take precedence)
- U G02B 21/16
- adapted for ultra-violet illumination; {Fluorescence microscopes ([G02B 21/0076](#) takes precedence)}
- G02B 21/33
- Immersion oils, {or microscope systems or objectives for use with immersion fluids}
- G02B 23/00**
- Telescopes, e.g. binoculars; Periscopes; Instruments for viewing the inside of hollow bodies (diagnostic instruments [A61B](#)); Viewfinders (objectives [G02B 9/00](#) , ~~G02B11/00~~[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](#))**
- G02B 23/24
- Instruments {or systems} for viewing the inside of hollow bodies, e.g. fibrescopes

- 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](#))**
- G02B 27/09 • Beam shaping, e.g. changing the cross-sectional area, not otherwise provided for {(adapting the beam shape of a laser diode [G02B19/B3D](#)[G02B 19/0052](#); adapting the beam shape of an LED [G02B19/B3L](#)[G02B 19/0061](#) ; coupling into light guides using intermediate optical elements [G02B 6/4204](#) ; beam shaping specially adapted for lasers [H01S 3/005](#))}
- G02B 27/42 • Diffraction optics {, i.e. systems including a diffractive element being designed for providing a diffractive effect}([G02B 27/60](#) takes precedence)
- U G02B 27/48** • Laser speckle optics; {Speckle reduction arrangements} (speckle suppression in holography [G03H 1/32](#))

Project: N/A (G02F)

- U G02F 1/00** **Devices or arrangements for the control of the intensity, colour, phase, polarisation or direction of light arriving from an independent light source, e.g. switching, gating, or modulating; Non-linear optics (thermometers using change of colour or translucency [G01K 11/12](#) ; using changes in fluorescence [G01K 11/32](#) ; light guide devices [G02B 6/00](#) ; optical devices or arrangements using movable or deformable elements for controlling light independent of the light source [G02B 26/00](#) ; control of light in general [G05D 25/00](#) ; visible signalling systems [G08B 5/00](#) ; indicating arrangements for variable information by selection or combination of individual elements [G09F 9/00](#) ; control arrangements or circuits for visual indicators other than cathode-ray tubes [G09G 3/00](#) ; control of light sources [H01S 3/10](#) , [H05B 33/08](#) , [H05B 35/00](#) to [H05B 43/00](#) ; { photochromic filters [G02B 5/23](#) ; optical logic elements [G02F 3/00](#)})**

NOTE

This group covers only :

- devices or arrangements, e.g. cells, the optical operation of which is modified by changing the optical properties of the medium of the devices or arrangements by the influence or control of physical parameters, e.g. electric fields, electric current, magnetic fields, sound or mechanical vibrations, stress or thermal effects;
 - devices or arrangements in which the electric or magnetic field component of the light beams influences the optical properties of the medium, i.e. non-linear optics;
 - control of light by electromagnetic waves, e.g. radio waves, or by electrons or other elementary particles.
- U G02F 1/01** • for the control of the intensity, phase, polarisation or colour ([G02F 1/29](#) , [G02F 1/35](#) take precedence; polarising elements per se [G02B 5/30](#) ; static storage per se [G11C](#); image tube screens acting as light valves by shutter operation [H01J 29/12](#) ; such screens acting by discoloration [H01J 29/14](#) ; { projection arrangements for television image reproduction, e.g. using eidophor [H04N 5/74](#) ; recording by light [G11B 7/00](#) to [G11B 11/00](#)})
- U G02F 1/0121** • • {Operation of the device; Circuit arrangements not otherwise provided for ([G02F 1/0327](#) , [G02F 1/0516](#) , [G02F 1/076](#) , [G02F 1/092](#) , [G02F 1/113](#) , [G02F 1/13306](#) , [G02F 1/163](#) take precedence)}
- G02F 1/0123 • • • {Circuits for the control or stabilisation of the bias voltage, e.g. automatic bias control ([/\[ABC\]](#)) feedback loops}
- G02F 1/0136 • • {for the control of polarisation, e.g. state of polarisation ([/\[SOP\]](#)) control, polarisation scrambling, TE-TM mode conversion or separation ([G02F 1/0353](#) takes precedence)}

- U G02F 1/015
 - • based on semiconductor elements with at least one potential jump barrier, e.g. PN, PIN junction ([G02F 1/03](#) takes precedence)
- G02F 1/025
 - • • in an optical waveguide structure ([G02F 1/017](#) , {[G02F 1/2257](#)} take precedence)
- G02F 1/061
 - • based on electro-optical organic material ([G02F 1/07](#) , {[G02F 1/13](#)} take precedence)
- U G02F 1/11
 - • based on acousto-optical elements, e.g. using variable diffraction by sound or like mechanical waves ({elasto-optic effect without wave propagation [G02F 1/0131](#) ; } acousto-optical deflection [G02F 1/33](#))
- G02F 1/116
 - • • {using an optically anisotropic medium, wherein the incident and the diffracted light waves have different polarizations, e.g. acousto-optic tunable filter ({AOTF}) ([G02F 1/125](#) takes precedence)}
- U G02F 1/13
 - • based on liquid crystals, e.g. single liquid crystal display cells (liquid crystal materials [C09K 19/00](#))
- 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)
- U G02F 1/1335
 - • • • • Structural association of optical devices, e.g. polarisers, reflectors or illuminating devices, with the cell
- G02F 1/133504
 - • • • • • {Diffusing, scattering, diffracting elements (associated to illuminating devices ~~[G02F 1/13357](#)~~[G02F 1/133606](#))}
- G02F 1/133553
 - • • • • • {Reflecting elements (associated to illuminating devices ~~[G02F 1/13357](#)~~[G02F 1/133605](#))}
- G02F 1/1339
 - • • • • Gaskets; Spacers, {also spacers with conducting properties (electric line connectors [H01R](#))}; Sealing of the cell
- U G02F 1/1343
 - • • • • Electrodes {(reflective electrodes [G02F 1/133553](#))}
- U G02F 1/134309
 - • • • • • {characterised by their geometrical arrangement ([G09F 9/302](#) takes precedence)}
- G02F 1/134363
 - • • • • • • {for applying an electric field parallel to the substrate, i.e. in-plane switching ({IPS})}
- U G02F 1/137
 - • • characterised by a particular electro- or magneto-optical effect, e.g. field-induced phase transition, orientation effect, guest-host interaction, dynamic scattering
- U G02F 1/139
 - • • • based on orientation effects in which the liquid crystal remains transparent
- U G02F 1/1393
 - • • • • {the birefringence of the liquid crystal being electrically controlled, e.g. ECB-, DAP-, HAN-, PI-LC cells ([G02F 1/1396](#) , [G02F 1/141](#) take precedence)}
- G02F 1/1395
 - • • • • • {Optically compensated birefringence ({OCB})- cells or PI- cells}
- U G02F 1/141
 - • • • • using ferroelectric liquid crystals
- G02F 2001/1414
 - • • • • • {Deformed helix ferroelectric ({DHL})}
- U G02F 1/29
 - for the control of the position or the direction of light beams, i.e deflection ({optical coupling means [G02B 6/26](#) ; optical-mechanical scanning in general [G02B 26/10](#) } ; static stores with electric or magnetic read-in and optical read-out [G11C](#); lasers provided with means to change the location from which, or the direction in which, laser radiation is emitted [H01S 3/101](#))
- G02F 1/295
 - • {Analog deflection from or} in an optical waveguide structure]
- G02F 1/31
 - • Digital deflection, {i.e. optical switching}([G02F 1/33](#) takes precedence)

- U G02F 1/35
 - Non-linear optics (optical bistable devices [G02F 3/02](#) ; lasers using stimulated Brillouin or Raman effect [H01S 3/30](#))
- U G02F 1/3515
 - • {All-optical modulation, gating, switching, e.g. control of a light beam by another light beam ([G02F 1/353](#) , [G02F 1/37](#) , [G02F 1/39](#) take precedence)}
- U G02F 1/3517
 - • • {using an interferometer}
- G02F 1/3519
 - • • • {of Sagnac type, i.e. nonlinear optical loop mirror ([NOLM](#))}
- U G02F 1/353
 - • {Frequency conversion, i.e. wherein a light beam with frequency components different from those of the incident light beams is generated (second harmonic generation [G02F 1/37](#) ; optical parametric generation or amplification [G02F 1/39](#) ; transferring the modulation of modulated light [G02F 2/004](#) ; optical pumping of a laser by another laser [H01S 3/094](#) ; nonlinear optical devices inside a laser cavity [H01S 3/108](#))}
- U G02F 1/3544
 - • • {Particular phase matching techniques}
- G02F 2001/3548
 - • • • {Quasi-phase-matching ([QPM](#)), e.g. using a periodic domain inverted structure}
- U G02F 1/355
 - • characterised by the materials used
- G02F 1/3558
 - • • {Poled materials, e.g. with periodic poling; Fabrication of domain inverted structures, e.g. for quasi-phase-matching ([QPM](#))}
- G02F 1/365
 - • in an optical waveguide structure ([G02F 1/377](#) , {[G02F 1/395](#)} take precedence)
- U G02F 1/37
 - • for second-harmonic generation ({[G02F 1/3532](#) takes precedence})
- U G02F 1/377
 - • • in an optical waveguide structure
- G02F 1/3775
 - • • • {with a periodic structure, e.g. domain inversion, for quasi-phase-matching ([QPM](#))} ([G02F 1/383](#) takes precedence)}
- G02F 2/00**

Demodulating light; Transferring the modulation of modulated light; Frequency-changing of light ([G02F 1/35](#) takes precedence; photoelectric detecting or measuring devices [G01J](#), [H01J 40/00](#) , [H01L 31/00](#) ; demodulating laser arrangements {e.g. switching, gating} [H01S 3/10](#) ; demodulation or transference of modulation of modulated electro-magnetic waves in general [H03D 9/00](#))
- G02F 2/002
 - {using optical mixing (homodyne, heterodyne systems [H04B10/148](#) [H04B 10/142](#))}
- U **G02F 3/00**

Optical logic elements ({optical computing [G06E](#)} ; electric pulse generators using opto-electronic devices as active elements [H03K 3/42](#) ; logic circuits using opto-electronic devices [H03K 19/14](#)); Optical bistable devices
- U G02F 3/02
 - Optical bistable devices
- G02F 3/028
 - • {based on self electro-optic effect devices ([SEED](#))}

Project: N/A (G03B)

- G03B 11/00**

Filters or other obturators specially adapted for photographic purposes (filters per se [G02B](#) {[G02B 5/20](#)})
- U **G03B 27/00**

Photographic printing apparatus (film-strip handling [G03B 1/00](#))
- U G03B 27/32
 - Projection printing apparatus, e.g. enlarger, copying camera
- U G03B 27/52
 - • Details
- G03B 27/58
 - • • Baseboards, masking frames, or other holders for the sensitive material ([G03B 27/53](#) takes precedence; {for electrophotographic copiers [G03G15/00G](#) [G03G 15/65](#)})

Project: N/A (G03C)

- U G03C 1/00** **Photosensitive materials (photosensitive materials for multicolour processes [G03C 7/00](#) ; for diffusion transfer processes [G03C 8/00](#) ; photosensitive glass [C03C 4/04](#))**
- G03C 1/005 · Silver halide emulsions; Preparation thereof; Physical treatment thereof; Incorporation of additives therein (catalytic amounts of silver halide in dry silver systems {or thermographic systems using noble metal compounds} [G03C 1/494](#))
- G03C 1/015 · · Apparatus or processes for the preparation of emulsions (~~coating, drying [G03C 1/74](#)~~){(~~coating, drying [G03C 1/74](#)~~ {; [G03C 1/07](#) takes precedence; special processes for tabular grains [G03C 1/0051](#))} }
- U G03C 1/06** · · with non-macromolecular additives ([G03C 1/047](#) takes precedence; { combination of dyes [G03C 1/29](#)})
- U G03C 1/08** · · · Sensitivity-increasing substances
- U G03C 1/28** · · · · together with supersensitising substances
- U G03C 1/29** · · · · · the supersensitising mixture being solely composed of dyes; {Combination of dyes, even if the supersensitising effect is not explicitly disclosed}
- U G03C 11/00** **Auxiliary processes in photography (characterised by the apparatus used [G03D 15/00](#))**
- G03C 11/24 · Removing emulsion from waste photographic material; Recovery of photosensitive {or other} substances (electrolytic recovery of metals [C25C 1/00](#))

Project: N/A (G03F)

- U G03F 1/00** **Originals for photomechanical production of textured or patterned surfaces, e.g., masks, photo-masks, reticles; Mask blanks or pellicles therefor; Containers specially adapted therefor; Preparation thereof**
- NOTE
- In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place
- WARNING
- Groups [G03F 1/0007-G03F 1/16](#) are no longer used for the classification of documents as of January 1, 2012. The backfile of these groups is being reclassified into groups [G03F 1/20-G03F 1/92](#) as follows: [G03F 1/0007-G03F 1/0092](#) and [G03F 1/08-G03F 1/16](#) into groups [G03F 1/20-G03F 1/86](#); [G03F 1/02](#) into [G03F 1/88](#); [G03F 1/04](#) into [G03F 1/90](#); [G03F 1/06](#) into [G03F 1/92](#). Until reclassification is complete, groups [G03F 1/0007-G03F 1/16](#) and [G03F 1/20-G03F 1/92](#) should be considered in order to perform a complete search.
- G03F 1/06 · from printing surfaces, {e.g. using a heat or pressure sensitive foil, by pulling an impression, e.g. on a photosensitive sheet}
- U G03F 7/00** **Photomechanical, e.g. photolithographic, production of textured or patterned surfaces, e.g. printing surfaces; Materials therefor, e.g. comprising photoresists; Apparatus specially adapted therefor (using photoresist structures for special production processes, see the relevant places, e.g. [B44C](#), [H01L](#), e.g. [H01L 21/00](#) , [H05K](#))**
- U G03F 7/70** · {Exposure apparatus for microlithography}
- U G03F 7/70058** · · {Mask illumination systems}

- G03F 7/70091
- • • {Illumination settings, i.e. intensity distribution in the pupil plane, angular distribution in the field plane; On-axis or off-axis settings, e.g. annular, dipole, quadrupole; Partial coherence control, i.e. sigma or numerical aperture ([/NA/](#))}
- 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](#))}
- 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 7/20T22](#)[G03F 7/70633](#) ; marks applied to semiconductor devices [H01L 23/544](#))}

Project: N/A (G03G)

- U G03G 13/00** **Electrographic processes using a charge pattern ([G03G 15/00](#) , [G03G 16/00](#) , [G03G 17/00](#) take precedence)**
- NOTE
Group [G03G 15/00](#) also deals with processes in so far as they are characterised by the use or manipulation of apparatus classifiable per se in group [G03G 15/00](#) and therefor takes precedence
- U G03G 13/06
- Developing
- G03G 13/10
- • using a liquid developer, {e.g. liquid suspension}
- U G03G 15/00** **Apparatus for electrographic processes using a charge pattern ([G03G 16/00](#) , [G03G 17/00](#) take precedence; { xerographic printers for data processors per se [G06K 15/14](#)})**
- 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}
- U G03G 15/14
- for transferring a pattern to a second base
- G03G 15/16
- • of a toner pattern, e.g. a powder pattern, {e.g. magnetic transfer}
- U G03G 15/22
- involving the combination of more than one step according to groups [G03G 13/02](#) to [G03G 13/20](#)([G03G 15/01](#) takes precedence)
- G03G 15/32
- • in which the charge pattern is formed dotwise, {e.g. by a thermal head} ([G03G 15/04](#) , [G03G 15/05](#) , [G03G 15/34](#) take precedence)
- G03G 15/34
- • in which the powder image is formed directly on the recording material, {e.g. by using a liquid toner}
- U G03G 15/65
- {Apparatus which relate to the handling of copy material (handling sheets or webs in general [B65H](#); for photographic purposes in general [G03B](#))}
- G03G 15/6532
- • {Removing a copy sheet form a xerographic drum, band or plate (removing sheets from printing cylinders [B65H29/6](#)[B65H 29/02](#))}
- G03G 19/00** **Processes using magnetic patterns; Apparatus therefor, {i.e. magnetography}**

NOTE

This group comprises also processes and apparatus wherein magnetography and electrography are combined; magnetographic printing apparatus for data processing machines [G06K 15/14](#) ; recording members therefor [G03G 5/00](#) ; magnetic recording members for television [G11B](#); recording of sound [G11B](#);

recording of electric measurements [G01R 13/00](#) ; recording apparatus for measurements in general [G01D](#)

- U G03G 21/00 Arrangements not provided for by groups [G03G 13/00](#) to [G03G 19/00](#) , e.g. cleaning, elimination of residual charge**
- U G03G 21/16
- Mechanical means for facilitating the maintenance of the apparatus, e.g. modular arrangements
- G03G 21/18
- • using a processing cartridge, {whereby the process cartridge comprises at least two image processing means in a single unit}
- WARNING**
- Groups [G03G 21/1803](#) to [G03G 21/1896](#) are not complete pending reorganisation. See also this group
- U G03G 21/1803
- • • {Arrangements or disposition of the complete process cartridge or parts thereof}
- G03G 21/1814
- • • • {Details of parts of process cartridge, e.g. for charging, transfer, cleaning, developing (~~G021/18C6~~[G03G 21/1835](#) takes precedence)}

Project: N/A (G04B)

- U G04B 1/00 Driving mechanisms {(driving mechanisms for Turkish time [G04B 19/22](#); driving mechanisms in the hands [G04B 45/043](#); driving mechanisms for phonographic apparatus [G11B 19/00](#); springs, driving weight engines [F03G](#); driving mechanisms for cinematography [G03B 1/00](#); driving mechanisms; driving mechanisms for time fuses for missiles [F42C](#); driving mechanisms for toys [A63H 29/00](#))}**
- U G04B 1/10
- with mainspring {(synchronous motors with power reserve [G04C 15/0054](#); springs in general [F16F](#))}
- G04B 1/14
- • Mainsprings; Bridles therefor (mainsprings with bridles [G04B 1/18](#); alloys [C22C](#); springs in general [F16F](#) {constructions for compensation of changes in the motive power of the mainspring [G04B 1/22](#); construction of the hairspring [G04B 17/066](#); arrangements facilitating the removal of the mainspring [G04B 33/14](#))}
- G04B 1/22
- • Compensation of changes in the motive power of the mainspring (by mechanical shaping of the mainspring [G04B 1/14](#) {automatic regulation of the pendulum [G04B 18/003](#); of the regulator [G04B 19/28](#))}
- U G04B 3/00 Normal winding of clockworks by hand or mechanically; Winding up several mainsprings or driving weights simultaneously {(automatic winding up [G04B 5/00](#); combined normal and automatic winding up [G04B 7/00](#); Click devices [G04B 11/00](#); winding up the striking mechanism by the clockwork and vice versa [G04B 21/14](#); mechanical devices for setting the time-indication by using the winding means [G04B 27/02](#), [G04B 27/083](#); calibers of which the mainsprings are easily removable [G04B 33/14](#); winding mechanical clocks electrically [G04C 1/00](#); tools for setting springs [G04D 1/04](#); driving mechanisms for gramophones [G11B 19/00](#); driving mechanisms for cinematographs [G03B 1/00](#))}**
- G04B 3/06
- Keys or the like with means preventing overwinding (protecting devices arranged in, or attached to, the barrel [G04B 1/20](#); in connection with automatic winding devices [G04B 1/24](#) {construction of removably-mounted keys [G04B 3/02](#); means preventing overwinding, including those attached to the case, [G04B 3/10](#); protecting means [G04B 9/02](#); protection against overwinding for electrical winding up arrangements for mechanical clocks [G04C 1/10](#))}
- G04B 3/12
- 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 5/24
- Protecting means preventing overwinding (arranged in, or attached to, the barrel [G04B 1/20](#); in connection with keys or the like [G04B 3/06](#); in connection with parts of the cases [G04B 3/10](#) {support of the moving weight [G04B 5/18](#); protection means [G04B 9/02](#); electrical driving means for mechanical clockworks [G04C 1/10](#))}
- U G04B 9/00** **Supervision of the state of winding, e.g. indicating the amount of winding**
- G04B 9/02
- Devices controlled by such state, e.g. device affording protection means against overwinding (protecting means preventing overwinding arranged in or on the barrel [G04B 1/20](#); protecting means in connection with keys or the like [G04B 3/06](#); in connection with parts of the cases [G04B 3/10](#); in connection with automatic winding devices [G04B 5/24](#) {electric winding up of mechanical clockworks [G04C 1/10](#))}
- U G04B 17/00** **Mechanisms for stabilising frequency** {(for setting frequency [G04B 18/00](#); magnetic [G04C 5/005](#); in striking mechanisms [G04B 21/06](#); stopping and regulating of the running [G04B 23/023](#); electrically driven mechanical regulation [G04C 3/165](#); electrical and thermo-electric regulating mechanisms [G04C 5/00](#))}
- G04B 17/30
- Rotating governors, e.g. centrifugal governors, fan governors (for striking mechanisms [G04B 21/06](#) {electrically driven [G04C 3/0335](#))}
- U G04B 19/00** **Indicating the time by visual means** {(indicating the time optically by electric means [G04C 17/00](#), e.g.} by electric lamps [G04C 17/02](#); display arrangements in general [G09F](#))}
- G04B 19/24
- Clocks or watches with date {or week-day} indicators, {i.e. calendar clocks or watches}; Clockwork calendars {(combination of the clockwork with an independently settable calendar [G04B 47/00](#))}
- U G04B 23/00** **Arrangements producing acoustic signals at preselected times** {(indicating the time by optical means [G04B 19/00](#), [G04C 17/00](#); indicating the time by acoustic means [G04B 21/00](#); indicating the time by means other than acoustic or optical, or by a combination of means [G04B 25/00](#); acoustic time signals produced electrically [G04C 21/00](#); coin-freed alarm clocks [G07F 17/0007](#); acoustic signalling means [G08B 3/00](#))}
- G04B 23/02
- Alarm clocks (electrically released alarm signals [G04C 21/00](#) {waking up by electric lamps [G04C 19/02](#); by other means [G04B 25/005](#); alarm clocks with electric contacts [G04C 23/06](#))}
- U G04B 27/00** **Mechanical devices for setting the time indicating means**
- G04B 27/007
- {otherwise than manually (~~G04B 27/02 takes precedence~~)([G04B 27/02 takes precedence](#); oscillator weights in general [G04B 5/04](#))}
- 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 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](#))(~~by part of the case G04B 27/086~~)}
- U G04B 33/00** **Calibers** {(disposition of components of the automatic winding mechanism in relation to the clockwork [G04B 5/18](#))}

- G04B 33/08 · in which the gear train is arranged in different planes, e.g. parallel or inclined to each other ([G04B 33/10](#) takes precedence {case for special purposes, e.g. button or ring clockworks [G04B 37/12](#)})
- G04B 33/14 · Calibers of which the mainsprings or barrels are easily removable (mainsprings [G04B 1/14](#); barrels, arbors [G04B 1/16](#) {normal or mechanical winding [G04B 3/00](#)})
- U G04B 37/00 Cases {(Cases with a special shape [G04B 45/0069](#); ornamentation of the case [G04B 47/04](#); cartridges [A45C 11/00](#) to [A45C 11/38](#))}**
- G04B 37/12 · Cases for special purposes, e.g. watch combined with ring, watch combined with button (watch guards or protectors [A45C 11/10](#), [A45C 11/12](#); watches combined with cosmetic powder containers [A45D 33/30](#) {domed dial [G04B 19/10](#); calibers in which the clockwork is disposed on different planes [G04B 33/08](#); means for fixing watches on items of clothing [G04B 37/1433](#); cases having means for fixing onto a normal bracelet [G04B 37/1486](#); cases giving special affects due to their particular shape [G04B 45/0069](#); watches combined with various objects and therefore having a specially shaped case [G04B 47/00](#)})
- 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](#); ~~display stands [54G14K](#)~~)}
- G04B 37/18 · for pocket or wrist watches ([G04B 37/02](#) to [G04B 37/16](#) takes precedence {not used; see provisionally [G04B 37/00](#)})

Project: N/A (G04C)

- 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 9/06 · by decoupling the driving means (combined with blocking means [G04C 9/04](#) {see provisionally [G04C 9/00](#)})
- U G04C 11/00 Synchronisation of independently-driven clocks (radio-controlled time-pieces [G04R](#))**
- G04C 11/04 · over a line (transmitting time signals over telephone networks [H04M 11/06](#) {time setting [G04C 9/00](#)})
- U G04C 21/00 Producing acoustic time signals by electrical means {(for mechanical clocks or watches [G04B 21/08](#), [G04B 25/00](#))}**
- G04C 21/02 · Constructional details ([G04C 21/04](#), [G04C 21/16](#) take precedence {sound producing devices in general [G10K](#), e.g. [G10K 1/00](#)})

Project: N/A (G04D)

- U G04D 3/00 Watchmakers` or watch-repairers` machines or tools for working materials {(metal working in general class [B23](#))}**
- G04D 3/06 · Devices for shaping or setting watch glasses {(cutting watch glasses [C03B 33/04](#); ~~fixing spectacle lenses [42HS2A1](#)~~; grinding or working of spectacle lenses and lenses [B24B](#); working plastic materials in general [B29](#)})

Project: N/A (G04F)

- U G04F 7/00 Apparatus for measuring unknown time intervals by mechanical means**

G04F 7/04 · using a mechanical oscillator

WARNING

The subgroups of ~~G04F/04~~G04F 7/04 are not complete pending reclassification; see also this group

Project: N/A (G05B)

- U G05B 19/00** Programme-control systems (specific applications 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
- G05B 19/18 · · Numerical control ([NC](#)), i.e. automatically operating machines, in particular machine tools, e.g. in a manufacturing environment, so as to execute positioning, movement or co-ordinated operations by means of programme data in numerical form ([G05B 19/418](#) takes precedence)
- G05B 19/409 · · · characterised by using manual input ([MDI](#)) or by using control panel, e.g. controlling functions with the panel; characterised by control panel details, by setting parameters ([G05B 19/408](#), [G05B 19/4093](#) take precedence)
- U G05B 19/414 · · · Structure of the control system, e.g. common controller or multiprocessor system, interface to servo, programmable interface controller
- G05B 19/4145 · · · · {characterised by using same processor to execute programmable controller and numerical controller function ([CNC](#)) and PC controlled NC ([PCNC](#))}
- G05B 19/4147 · · · · {characterised by using a programmable interface controller ([PIC](#))}
- G05B 19/418 · · Total factory control, i.e. centrally controlling a plurality of machines, e.g. direct or distributed numerical control ([DNC](#)), flexible manufacturing systems ([FMS](#)), integrated manufacturing systems ([IMS](#)), computer integrated manufacturing ([CIM](#))
- G05B 19/4181 · · · {characterised by direct numerical control ([DNC](#))}
- U G05B 19/4185 · · · {characterised by the network communication}
- G05B 19/41855 · · · · {by local area network ([LAN](#)), network structure}
- U G05B 19/4189 · · · {characterised by the transport system}
- G05B 19/41895 · · · · {using automatic guided vehicles ([AGV](#)) (control of position or course of AGV's [G05D 1/00](#))}
- U G05B 23/00** **Testing or monitoring of control systems or parts thereof (monitoring of programme-control systems [G05B 19/048](#), [G05B 19/406](#))**
- U G05B 23/02 · Electric testing or monitoring
- WARNING
- 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}
- WARNING
- Not complete pending the completion of a reclassification; see also [G05B 23/02](#)

- U G05B 23/0218 . . . {characterised by the fault detection method dealing with either existing or incipient faults}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- U G05B 23/0224 {Process history based detection method, e.g. whereby history implies the availability of large amounts of data}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/024 {Quantitative history assessment, e.g. mathematical relationships between available data; Functions therefor; Principal component analysis [PCA]; Partial least square [PLS]; Statistical classifiers, e.g. Bayesian networks, linear regression or correlation analysis; Neural networks}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- U G05B 23/0259 . . . {characterized by the response to fault detection}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)
- G05B 23/0283 {Predictive maintenance, e.g. involving the monitoring of a system and, based on the monitoring results, taking decisions on the maintenance schedule of the monitored system; Estimating remaining useful life [RUL] (preventive maintenance, i.e. planning maintenance according to the available resources without monitoring the system ~~G06Q10/00C~~ [G06Q 10/06](#))}
WARNING
 Not complete pending the completion of a reclassification; see also [G05B 23/02](#)

Project: N/A (G05D)

G05D

SYSTEMS FOR CONTROLLING OR REGULATING NON-ELECTRIC VARIABLES (for continuous casting of metals [B22D 11/16](#) ; valves per se [F16K](#); sensing non-electric variables, see the relevant subclasses of [G01](#); for regulating electric or magnetic variables [G05F](#))

NOTES

1. This subclass 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](#) to [B64C 15/00](#) Controlling aircraft
~~[B64D 25/11](#)~~ [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 discharge 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 heat 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 conveyers

[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 conveyers

[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 conveyers
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
[H02P 9/00](#) Dynamo-electric motors or generators

Project: N/A (G06F)

- U G06F 1/00** Details of data-processing equipment not covered by groups [G06F 3/00](#) to [G06F 13/00](#) , {e.g. cooling, packaging or power supply specially adapted for computer application (security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#))}
- U G06F 1/16 . Constructional details or arrangements (instrument details [G12B](#))
- U G06F 1/18 . . Packaging or power distribution {(for electrical apparatus in general [H05K](#) , [H02J](#))}
- U G06F 1/181 . . . {Enclosures (for electric apparatus in general [H05K 5/00](#) ; for portable computers [G06F 1/1613](#))}
- G06F 1/182 {with special features, e.g. for use in industrial environments; grounding or shielding against radio frequency interference [RFI] or electromagnetical interference ~~(/EMI/)~~ (in general [H05K 9/00](#))}
- G06F 1/26 . Power supply means, e.g. regulation thereof (for memories [G11C](#) ;{regulation in general [G05F](#)})
- 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](#)})
- U G06F 3/01 . Input arrangements or combined input and output arrangements for interaction between user and computer ([G06F 3/16](#) takes precedence)
- U G06F 3/011 . . {Arrangements for interaction with the human body, e.g. for user immersion in virtual reality (for handicapped people in general [A61F 4/00](#) ; robot control [B25J](#); tactile signalling [G08B](#); blind teaching [G09B 21/00](#) ; for electrophonic musical instruments [G10H 1/344](#) ; electronic switches characterised by the way in which the control signals are generated [H03K 17/94](#))}
- G06F 3/015 . . . {Input arrangements based on nervous system activity detection, e.g. brain waves ~~(/EEG/)~~ detection, electromyograms ~~(/EMG/)~~ detection, electrodermal response detection}
- U G06F 3/03 . . Arrangements for converting the position or the displacement of a member into a coded form
- U G06F 3/0304 . . . {Detection arrangements using opto-electronic means (constructional details of pointing devices not related to the detection arrangement using opto-electronic means [G06F 3/033](#) and subgroups; optical digitisers [G06F 3/042](#))}
- WARNING
Groups [G06F 3/0304](#) and [G06F 3/0317](#) are not complete, pending a reorganisation. See also [G06F 3/042](#) and subgroups
- G06F 3/0312 {for tracking the rotation of a spherical or circular member, e.g. optical rotary encoders used in mice or trackballs using a tracking ball or in mouse scroll wheels (tracking relative movement in co-operation with a regularly or irregularly patterned surface, e.g. as in optical mice [G06F 3/0317](#) ; constructional details of scroll or thumb-wheels ~~G06F3/03362~~[G06F 3/0362](#) ; optical rotary encoders [G01D 5/3473](#) ; thumb wheel switches [H01H 19/001](#))}

- U G06F 3/033
 - • • Pointing devices displaced or positioned by the user, e.g. mice, trackballs, pens or joysticks; Accessories therefor {(constructional details of joysticks [G05G 9/047](#) ; arrangement for interfacing a joystick to a computer [G06F 3/038](#))}
- G06F 3/037
 - • • using the raster scan of a cathode-ray tube ~~{(CRT)}~~ for detecting the position of the member, e.g. light pens cooperating with CRT monitors
- G06F 3/05
 - Digital input using the sampling of an analogue quantity at regular intervals of time, {input from a/d converter or output to d/a converter}(analogue- digital conversion per se [H03M 1/00](#) ; sampling per se [H03K 17/00](#) ; sample- and- hold arrangements per se [G11C 27/02](#))
- G06F 3/06
 - Digital input from or digital output to record carriers, {e.g. RAID, emulated record carriers, networked record carriers (recording or reproducing devices per se [G11B](#); error detection, error correction, monitoring per se regarding storage systems [G06F 11/00](#); accessing or addressing within memory systems or architectures [G06F 12/00](#); information retrieval [G06F 17/30](#))}
- U G06F 3/0601
 - • {Dedicated interfaces to storage systems}
- U G06F 3/0602
 - • • {specifically adapted to achieve a particular effect}
- U G06F 3/0614
 - • • • {Improving the reliability of storage systems}
- G06F 3/0616
 - • • • • {in relation to life time, e.g. increasing Mean Time Between Failures ~~{(MTBF)}~~}
- G06F 3/08
 - • from or to individual record carriers, e.g. punched card, {memory card, integrated circuit [IC] card, smart card (record carriers for use with machines and with at least a part designed to carry digital markings [G06K 19/00](#) ; coded identity card or credit card with a coded signal [G07F 7/10](#))}
- G06F 3/12
 - Digital output to print unit, {e.g. line printer, chain printer}(digital output to typewriter [G06F 3/09](#) ; printing of alphanumeric characters [G06K 15/02](#))
- U G06F 3/13
 - Digital output to plotter; {Cooperation and interconnection of the plotter with other functional units}
- U G06F 3/14
 - Digital output to display device; {Cooperation and interconnection of the display device with other functional units} (control of display in general [G09G](#); arrangements for producing a permanent visual presentation of the output data [G06K 15/00](#))
- 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 7/38
 - 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
- U G06F 7/4806
 - • • {Computations with complex numbers}
- G06F 7/4818
 - • • • {using coordinate rotation digital computer ~~{(CORDIC)}~~}
- U G06F 7/52
 - • • Multiplying; Dividing ([G06F 7/483](#) to [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 [G06F 7/535](#) or [G06F 7/5375](#))}
- U 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 7/552
 - • • • Powers or roots, {e.g. Pythagorean sums}

- G06F 7/57
- • Arithmetic logic units (*{/ALU}*), i.e. arrangements or devices for performing two or more of the operations covered by groups [G06F 7/483](#) - [G06F 7/556](#) or for performing logical operations (instruction execution [G06F 9/30](#) *{/G06F 7/49 , G06F 7/491* take precedence; logic gate circuits [H03K 19/00](#))
- G06F 7/60
- 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](#)
- U G06F 7/62
- • Performing operations exclusively by counting total number of pulses; {Multiplication, division or derived operations using combined denominational and incremental processing by counters, i.e. without column shift ([G06F 7/68](#) takes precedence)}
- G06F 7/68
- • using pulse rate multipliers or dividers {pulse rate multipliers or dividers per se} ~~(G06F 7/70 takes precedence)~~ *{(G06F 7/70 takes precedence ; frequency division in electronic watches [G04G 3/02](#) ; frequency multiplication or division in oscillators [H03B 19/00](#) ; frequency dividing counters per se [H03K 23/00](#) to [H03K 29/00](#))}*
- G06F 8/00**
- {Arrangements for software engineering (execution of stored program [G06F 9/06](#) ; testing or debugging [G06F 11/36](#) ; hardware/software co-design [G06F 17/50](#) ; software project management ~~G06Q 10/00~~ *G06Q 10/06*)}**
- 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
- G06F 9/30
- • Arrangements for executing machine-instructions, e.g. instruction decode (for executing micro-instructions [G06F 9/22](#) ; for executing subprogrammes ~~G06F 9/40~~ *G06F 9/4425*)
- G06F 9/32
- • Address formation of the next instruction, e.g. incrementing the instruction counter, jump ([G06F 9/38](#) takes precedence; sub-programme jump ~~G06F 9/42~~ *G06F 9/4426*)
- 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 9/35
- • Indirect addressing, *{i.e. using single address operand, e.g. address register}*
- U G06F 9/44
- • Arrangements for executing specific programmes
- U G06F 9/4401
- • {Bootstrapping (secure booting [G06F 21/575](#) ; fault tolerant booting [G06F 11/1417](#) ; resetting means [G06F 1/24](#) ; power-on self test [G06F 11/2284](#))}
- G06F 9/4416
- • {Network booting; Remote initial programme loading (*{/RIPL}*)}
- 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](#))}
- U G06F 9/44568
- • {Immediately runnable code}
- G06F 9/44573
- • {Execute-in-place (*{/XIP}*)}

- G06F 9/455
- • • Emulation; Software simulation {, i.e. virtualisation or emulation of application or operating system execution engines (instruction translation at instruction execution time [G06F 9/3017](#) ; multiprogramming in general [G06F 9/46](#) ; logical partitioning of resources or management or configuration of virtualized resources [G06F 9/5077](#) ; in-circuit emulation [G06F 11/3652](#) ; environments for testing or debugging software [G06F 11/3664](#))}
- G06F 9/45504
- • • • {Abstract machines for programme code execution, e.g. Java virtual machine ([JVM](#)), interpreters, emulators}
- U G06F 9/46
- • Multiprogramming arrangements
- G06F 9/465
- • • {Distributed object oriented systems (remote method invocation ([RMI](#))) [G06F 9/548](#)}
- G06F 9/50
- • • Allocation of resources, e.g. of the central processing unit ([CPU](#))
- U G06F 9/52
- • • Programme synchronisation; Mutual exclusion, e.g. by means of semaphores; {Contention for resources among tasks}
- U G06F 9/54
- • • Interprogramme communication; {Intertask communication}
- G06F 9/547
- • • • {Remote procedure calls [[RPC](#)]; Web services}
- 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](#) to [G06F 15/00](#) are added
- U G06F 11/22
- Detection or location of defective computer hardware by testing during standby operation or during idle time, e.g. start-up testing (testing of digital circuits, e.g. of separate computer components [G01R 31/317](#))
- G06F 11/2284
- • {by power-on test, e.g. power-on self test ([POST](#))}
- U G06F 11/26
- • Functional testing
- U G06F 11/263
- • • Generation of test inputs, e.g. test vectors, patterns or sequences; {with adaptation of the tested hardware for testability with external testers}
- U G06F 11/30
- Monitoring
- U G06F 11/3003
- • {Monitoring arrangements specially adapted to the computing system or computing system component being monitored}
- G06F 11/3024
- • • {where the computing system component is a central processing unit ([CPU](#))}
- G06F 11/32
- • with visual {or acoustical} indication of the functioning of the machine
- U G06F 11/34
- • Recording or statistical evaluation of computer activity, e.g. of down time, of input/output operation; {Recording or statistical evaluation of user activity, e.g. usability assessment}
- U G06F 12/00**
- Accessing, addressing or allocating within memory systems or architectures ({digital input or output to record carriers, e.g. to disc storage units [G06F 3/06](#)}; information storage in general [G11](#))**
- 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
- U G06F 12/10
- • • Address translation

- G06F 12/1027 . . . {using associative or pseudo-associative address translation means, e.g. translation look-aside buffer [\(TLB\)](#)}
- U G06F 13/00** **Interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units (interface circuits for specific input/output devices [G06F 3/00](#) ; multiprocessor systems [G06F 15/16](#) ; transmission of digital information in general [H04L](#); selecting [H04Q](#); { multiprogramme control therefor [G06F 9/46](#)})**
- U G06F 13/38 . Information transfer, e.g. on bus ([G06F 13/14](#) takes precedence)
- G06F 13/40 . . Bus structure {(for computer networks [G06F 15/163](#) ; for optical bus networks [H04B10/20](#)[H04B 10/25](#))}
- 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 17/11 . . for solving equations {, e.g. nonlinear equations, general mathematical optimization problems (optimization specially adapted for a specific administrative, business or logistic context [G06Q 10/04](#))}
- G06F 17/12 . . . Simultaneous equations {, e.g. systems of linear equations}
- G06F 17/14 . . Fourier, Walsh or analogous domain transformations, {e.g. Laplace, Hilbert, Karhunen-Loeve, transforms (for correlation function computation [G06F 17/156](#) ; spectrum analysers [G01R 23/16](#))}
- G06F 17/16 . . Matrix or vector computation, {e.g. matrix-matrix or matrix-vector multiplication, matrix factorization (matrix transposition [G06F 7/78](#))}
- G06F 17/18 . . for evaluating statistical data, {e.g. average values, frequency distributions, probability functions, regression analysis (forecasting specially adapted for a specific administrative, business or logistic context [G06Q 10/04](#))}
- U G06F 17/20 . Handling natural language data (speech analysis or synthesis [G10L](#))
- U G06F 17/21 . . Text processing ([G06F 17/27](#) , [G06F 17/28](#) take precedence; systems for composing machines [B41B 27/00](#))
- U G06F 17/22 . . . Manipulating or registering by use of codes, e.g. in sequence of text characters {(compression [H03M 7/30](#))}
- G06F 17/2247 {Tree structured documents; Markup, e.g. Standard Generalized Markup Language [SGML], Document Type Definition [\(DTD\)](#)} (validation and parsing [G06F 17/2705](#) ; data retrieval [G06F 17/30](#) ; coding and compression [H03M 7/30](#))}
- U G06F 17/27 . . Automatic analysis, e.g. parsing {(speech recognition, analysis or synthesis [G10L](#))}
- U G06F 17/2705 . . . {Parsing}
- G06F 17/271 {Syntactic parsing, e.g. based on context-free grammar [\(CFG\)](#), unification grammars}
- U G06F 17/28 . . Processing or translating of natural language ([G06F 17/27](#) takes precedence)
- U G06F 17/2809 . . . {Data driven translation}
- G06F 17/2845 {Using very large corpora, e.g. the world wide web [\(WWW\)](#)}
- 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 17/30017
- • {Multimedia data retrieval; Retrieval of more than one type of audiovisual media (retrieval of image data [G06F 17/30244](#) ; retrieval of video data [G06F 17/30781](#) ; retrieval of audio data [G06F 17/3074](#) ; editing or indexing of data stored based on relative movement between record carrier and transducer [G11B 27/00](#))}
- WARNING
Groups [G06F 17/3002](#) - [G06F 17/30064](#) are not complete pending reclassification. See also [G06F 17/30017](#)
- U G06F 17/30023
- • • {Querying (programmed access in sequence to addressed parts of tracks of operating discs [G11B 27/105](#))}
- G06F 17/30026
- • • • {using audio data (details of audio retrieval [G06F 17/3074](#) ; general determination or detection of speech characteristics [G10L 11/00](#) [G10L 25/00](#); speech recognition [G10L 15/00](#); speaker recognition [G10L 17/00](#); electrophonic musical instruments [G10H](#))}
- 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](#) to [G06F 17/30238](#) are not complete pending reclassification. See also this group
- U G06F 17/3007
- • • {File system administration (file or folder operations [G06F 17/30115](#))}
- G06F 17/30073
- • • • {Details of archiving (details of hierarchical storage management [\(HSM\)](#) systems [G06F 17/30221](#) ; lifecycle management in storage systems [G06F 3/0649](#) ; backup systems [G06F 11/1446](#))}
- U G06F 17/30182
- • • {File system types}
- U G06F 17/30194
- • • • {Distributed file systems}
- U G06F 17/30197
- • • • • {implemented using NAS architecture (distributed or networked storage systems [G06F 3/067](#) ; protocols for distributed storage of data in a network [H04L 67/1097](#))}
- G06F 17/302
- • • • • • {Details of management specifically adapted to network area storage [\(NAS\)](#) (management of NAS or SAN [G06F 3/067](#))}
- G06F 17/30221
- • • • {Details of hierarchical storage management [\(HSM\)](#) systems, e.g. file migration and policies thereof (details of archiving [G06F 17/30073](#) ; life cycle management [G06F 3/0649](#) ; hybrid storage combining heterogeneous device types [G06F 3/0685](#))}
- G06F 17/3074
- • {Audio data retrieval (retrieval of video data [G06F 17/30781](#) ; retrieval of multimedia data [G06F 17/30017](#) ; general determination or detection of speech characteristics [G10L 11/00](#) [G10L 25/00](#); speech recognition [G10L 15/00](#); speaker recognition [G10L 17/00](#); electrophonic musical instruments [G10H](#); editing or indexing of data stored based on relative movement between record carrier and transducer [G11B 27/00](#))}
- WARNING
Groups [G06F 17/30743](#) - [G06F 17/30778](#) are not complete pending reclassification. See also [G06F 17/3074](#)

- G06F 17/30743
 - • • {using features automatically derived from the audio content, e.g. descriptors, fingerprints, signatures, MEP-cepstral coefficients, musical score, tempo (content oriented musical parameter indexing, e.g. tempo [G10H](#); determination or detection of speech characteristics [G10L11/00](#)[G10L 25/00](#); audio watermarking, e.g. by inserting fingerprints [G10L19/00W](#)[G10L 19/018](#) ; indexing by using information signals detectable on the record carrier and recorded by the same method as the main recording [G11B 27/28](#))}
- U G06F 17/30781
 - • {of video data (recognising patterns [G06K 9/00](#); image analysis [G06T 7/00](#); editing or indexing information signals on a record carrier in which information is recorded and accessed based on relative movement between record carrier and transducer [G11B 27/00](#); source coding or decoding of digital video signal [H04N 19/00](#); selective content distribution, e.g. interactive television, video on demand [H04N 21/00](#))}
- U G06F 17/30784
 - • • {using features automatically derived from the video content, e.g. descriptors, fingerprints, signatures, genre (recognising video content [G06K 9/00711](#) ; extraction of features or characteristics for pattern recognition of the image [G06K 9/46](#))}
- G06F 17/30787
 - • • • {using audio features (general determination or detection of speech characteristics [G10L11/00](#)[G10L 25/00](#) ; speech recognition [G10L 15/00](#) ; speaker recognition [G10L 17/00](#) ; contents oriented musical parameter indexing, e.g. tempo [G10H](#))}
- G06F 17/30796
 - • • • {using original textual content or text extracted from visual content or transcript of audio data (extraction of overlay text [G06K9/32R1T2](#) [G06K 9/3266](#))}
- U G06F 17/50
 - Computer-aided design
- U G06F 17/5009
 - • {using simulation}
- U G06F 17/5022
 - • • {Logic simulation, e.g. for logic circuit operation (fault-simulation [G06F 11/261](#) ; test pattern synthesising [G06F 11/263](#))}
- G06F 17/5027
 - • • • {Logic emulation using reprogrammable logic devices, e.g. field programmable gate arrays ([FPGA](#))}
- U G06F 17/5045
 - • {Circuit design ([G06F 17/5068](#) takes precedence; logic circuits [H03K 19/00](#))}
- G06F 17/5054
 - • • {for user-programmable logic devices, e.g. field programmable gate arrays ([FPGA](#))}
- U **G06F 21/00**

Security arrangements for protecting computers, components thereof, programs or data against unauthorised activity {(address-based protection against unauthorised use of memory [G06F 12/14](#) ; record carriers for use with machines and with at least a part designed to carry digital markings [G06K 19/00](#) ; preventing unauthorised reproduction or copying of disk-type recordable media [G11B 20/00](#) ; secret or secure communication [H04L 9/00](#) ; digital watermarking on images [H04N 1/32](#) ; protection in video systems or pay television [H04N 7/16](#))}
- U G06F 21/10
 - {Protecting distributed programs or content, e.g. vending or licensing of copyrighted material}
- U G06F 21/12
 - • {Protecting executable software}
- U G06F 21/121
 - • • {Restricting unauthorised execution of programs}
- G06F 21/123
 - • • • {by using dedicated hardware, e.g. dongles, smart cards, cryptographic processors, global positioning systems ([GPS](#)) devices}
- G06F 21/128
 - • • • {involving web programs, i.e. using technology especially used in internet, generally interacting with a web browser, e.g. hypertext markup language ([HTML](#)), applets, java}
- U G06F 21/50
 - {Monitoring users, programs or devices to maintain the integrity of platforms, e.g. of processors, firmware or operating systems}

- U G06F 21/57
- {Certifying or maintaining trusted computer platforms, e.g. secure boots or power-downs, version controls, system software checks, secure updates or assessing vulnerabilities}
- G06F 21/572
- • {Secure firmware programming, e.g. of basic input output system [\(BIOS\)](#)}
- U G06F 2206/00 Indexing scheme related to dedicated interfaces for computers**
- U G06F 2206/10
- Indexing scheme related to storage interfaces for computers, indexing schema related to group [G06F 3/06](#)
- G06F 2206/1008
- • Graphical user interface [\(GUI\)](#)}
- G06F 2206/1014
- • One time programmable [\(OTP\)](#) memory, e.g. PROM, WORM
- U G06F 2212/00 Indexing scheme relating to accessing, addressing or allocation within memory systems or architectures**
- U G06F 2212/25
- Using a specific main memory architecture
- U G06F 2212/254
- • Distributed memory
- G06F 2212/2542
- • • Non-uniform memory access [\(NUMA\)](#) architecture
- U G06F 2212/27
- Using a specific cache architecture
- G06F 2212/271
- • Non-uniform cache access [\(NUCA\)](#) architecture
- G06F 2212/272
- • Cache only memory architecture [\(COMA\)](#)}
- G06F 2212/68
- Details of translation look-aside buffer [\(TLB\)](#)}
- U G06F 2213/00 Indexing scheme relating to interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units**
- G06F 2213/0006
- Extension to the industry standard architecture [\(EISA\)](#)}
- G06F 2213/0018
- Industry standard architecture [\(ISA\)](#)}
- G06F 2213/0024
- Peripheral component interconnect [\(PCI\)](#)}
- G06F 2213/0028
- Serial attached SCSI [\(SAS\)](#)}
- G06F 2213/0032
- Serial ATA [\(SATA\)](#)}
- G06F 2213/0034
- Sun microsystems bus [\(SBus\)](#)}
- G06F 2213/0036
- Small computer system interface [\(SCSI\)](#)}
- G06F 2213/0042
- Universal serial bus [\(USB\)](#)}
- G06F 2213/0044
- Versatile modular eurobus [\(VME\)](#)}

Project: N/A (G06G)

- U G06G 7/00 Devices in which the computing operation is performed by varying electric or magnetic quantities**
- G06G 7/02
- Details not covered by [G06G 7/04](#) to [G06G 7/10](#), {e.g. monitoring, construction, maintenance}
- U G06G 7/12
- Arrangements for performing computing operations, e.g. operational amplifiers (amplifiers in general [H03F](#); {adapted for telemeasuring or for indicating or recording the results of the measurement [G01D 1/10](#), [G01D 1/16](#); for fuzzy computing [G06N 7/02](#)})
- G06G 7/14
- • for addition or subtraction (of vector quantities [G06G 7/22](#) {computing the average by addition; differential amplifiers [H03F 3/45](#)})
- G06G 7/22
- • for evaluating trigonometric functions; for conversion of co-ordinates; for computations involving vector quantities (trigonometric computations using simultaneous equations [G06G 7/34](#){ for computations in the complex plane; [G06G 7/20](#), [G06G 7/28](#) take precedence}; [resolvers 74C5A1](#)})

Project: N/A (G06K)

G06K 7/00 **Methods or arrangements for sensing record carriers, {e.g. for reading patterns}(G06K 9/00 takes precedence)**

- U G06K 7/02 · by pneumatic or hydraulic means, e.g. sensing punched holes with compressed air; by sonic means; {by ultrasonic means}

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

- In this group, the following term is used with the meaning indicated:
 - "recognising" includes several functions such as extracting features, clustering, classifying or matching.
- IPC subgroups [G06K 9/20](#) , [G06K 9/36](#) , [G06K 9/62](#) and [G06K 9/74](#) refer to methods or arrangements that can be applied to a pattern independently of its nature or to that are applied to specific patterns not included in the subgroups in the range [G06K 9/00006](#) to [G06K 9/00852](#) . The CPC subgroups in the range [G06K 9/00006](#) to [G06K 9/00852](#) refer to the same methods or arrangements when applied or specially adapted to the specific patterns to which these subgroups relate.
- 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 9/36 · Image preprocessing, i.e. processing the image information without deciding about the identity of the image (image data processing or generation, in general [G06T](#))

NOTE

Group [G06K 9/58](#) takes precedence over groups [G06K 9/38](#) to [G06K 9/54](#)

- U G06K 9/46 · · Extraction of features or characteristics of the image {(segmentation of touching or overlapping patterns [G06K 9/34](#) ; edge detection for feature extraction [G06K 9/4604](#) ; segmentation or edge detection for general image processing [G06T 7/0079](#))}

- U G06K 9/4604 · · · {Detecting partial patterns, e.g. edges or contours, or configurations, e.g. loops, corners, strokes, intersections (extracting features by contour coding [G06K 9/48](#) ; edge-based segmentation for general image processing [G06T 7/0083](#) ; edge detection for general image processing [G06T 7/0085](#))}

- U G06K 9/4609 · · · · {by matching or filtering}
- G06K 9/4614 · · · · · {filtering with Haar-like subimages, e.g. computation thereof with the integral image technique (biologically-inspired filters such as Gabor wavelets or local ICA kernels [G06K 9/4619](#) ; local approaches in face detection or representation [G06K 9/00248](#) , ~~[G006K9/00F2L](#)~~ [G06K 9/00281](#))}

- 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 9/6267 · · {Classification techniques}

- U G06K 9/6268
- • • {relating to the classification paradigm, e.g. parametric or non-parametric approaches}
- G06K 9/6277
- • • • {based on a parametric (probabilistic) model, e.g. based on Neyman-Pearson lemma, likelihood ratio, Receiver Operating Characteristic (ROC) curve plotting a False Acceptance Rate (FAR) versus a False Reject Rate (FRR) (segmentation of touching or overlapping patterns involving probabilistic approaches G06K 9/34 ; image connectivity analysis involving probabilistic approaches, e.g. Markov Random Fields techniques, G06K 9/4638 ; segmentation involving probabilistic approaches for general image processing G06T 7/0087)}
- 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 11/02
- Automatic curve followers, {i.e. arrangements in which an exploring member or beam is forced to follow the curve}
- 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}{(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 19/00
- Record carriers for use with machines and with at least a part designed to carry digital markings (record carriers adapted for controlling specific machines, see the appropriate subclass for the machine, e.g. B23Q, D03C, G10F, H04L; form printing B41; file cards B42F 19/00 ; record carriers in general G11)**
- U G06K 19/06
- characterised by the kind of the digital marking, e.g. shape, nature, code
- U G06K 19/067
- • Record carriers with conductive marks, printed circuits or semiconductor circuit elements, e.g. credit or identity cards {also with resonating or responding marks without active components}
- U G06K 19/07
- • • with integrated circuit chips
- G06K 19/0719
- • • • [{at least one of the integrated circuit chips comprising an arrangement for application selection, e.g. an acceleration sensor or a set of radio buttons (application selection on smart cards using pure software control, see G07F 7/10)}
- G06K 19/08
- • using markings of different kinds {or more than one marking of the same kind} in the same record carrier, e.g. one marking being sensed by optical and the other by magnetic means

G06K 19/10

- • • at least one kind of marking being used for authentication, e.g. of credit or identity cards (identification cards not to be read by a machine [B42D 25/00](#); verification of coded identity or credit cards in mechanisms actuated by them [G07F 7/12](#); printed identity or similar identification-bearing cards not for use with a machine [B42D 25/00](#))

Project: N/A (G06Q)**U G06Q 30/00****Commerce, e.g. shopping or e-commerce**

G06Q 30/04

- Billing or invoicing, {e.g. tax processing in connection with a sale}

U G06Q 30/06

- Buying, selling or leasing transactions

G06Q 30/08

- • Auctions, {matching or brokerage (matching or brokerage for stock exchange [G06Q 40/04](#))}

Project: N/A (G06T)**U G06T 1/00****General purpose image data processing**

U G06T 1/0021

- {Image watermarking}

G06T 1/0028

- • {Adaptive watermarking, e.g. Human Visual System ([HVS](#))-based watermarking}

U G06T 17/00**Three dimensional [3D] modelling, e.g. data description of 3D objects**

G06T 17/10

- Constructive solid geometry ([CSG](#)) using solid primitives, e.g. cylinders, cubes

G06T 17/20

- Finite element generation, e.g. wire-frame surface description, {tessellation}

Project: N/A (G07B)**U G07B 17/00****Franking apparatus (printing aspects [B41](#))**

U 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-free apparatus for franking per se [G07F 17/26](#))}

G07B 17/00314

- • {Communication within apparatus, personal computer ([PC](#)) system, or server, e.g. between printhead and central unit in a franking machine}

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 ~~G07F7/10F6~~[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 ~~G07F7/10D10M~~[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 (G07D)

G07D 11/00

Devices accepting coins or {accepting or dispensing} paper currency, e.g. depositing machines (apparatus freed or actuated by coins or the like [G07F](#); apparatus freed or actuated by paper currency [G07F 7/04](#); complete banking systems [G07F 19/00](#); {arrangements actuated by a coded-card for receiving or dispensing monies or the like and posting such transactions to existing accounts, e.g. automatic teller machines [ATMs]; [G07F 19/20](#)}}

NOTES

1. This group covers constructional or functioning aspects of devices handling paper currency, including of so-called Automatic Teller Machines [ATMs]; other aspects of ATMs, e.g. posting transactions to existing accounts or aspects related to the interaction with users, are covered by group [G07F 19/20](#)
2. Informative reference:
3. - devices dispensing coins [G07D 1/00](#)

Project: N/A (G07F)

G07F

COIN-FREED OR LIKE APPARATUS (coin sorting [G07D 3/00](#) ; coin testing [G07D 5/00](#) ; {handling coins or paper currencies apart from payment activated apparatus [G07D](#); payment architectures, schemes or protocols [G06Q 20/00](#)})

NOTES

1.
This subclass does not cover constructions or details of apparatus which includes, or is combined with, coin-actuated mechanisms but is not specially adapted or modified for use therewith. Such constructions or details are covered by the relevant subclass for the particular apparatus.
2. In this subclass, the following term are used with the meaning indicated:  {"- "coin-freed" means "payment activated"}  {"coins" covers also tokens or the like.}

- {"coin-freed" means "payment activated"}
- {"coins" covers also tokens or the like.}

U G07F 7/00

Mechanisms actuated by objects other than coins to free or to actuate vending, hiring, coin or paper currency dispensing or refunding apparatus {(handling coins or paper currencies apart from coin-freed or like apparatus [G07D](#); complete banking systems [G07F 19/00](#))}

G07F 7/06

- by returnable containers, {i.e. reverse vending systems in which a user is rewarded for returning a container that serves as a token of value}, e.g. bottles

U G07F 7/08

- by coded identity card or credit card {or other personal identification means (without personal verification means [G07F 7/02](#))}

U G07F 7/0873

- {Details of the card reader}

G07F 7/088

- • {the card reader being part of the point of sale ({POS}) terminal or electronic cash register ({ECR}) itself}

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}

U G07F 17/00

Coin-freed apparatus for hiring articles; Coin-freed facilities or services

- G07F 17/32
- for games, toys, sports or amusements, {e.g. casino games, online gambling or betting (game play without financial reward [A63F](#))}

Project: N/A (G07G)

- U G07G 1/00** **Cash registers (alarm indicators [G07G 3/00](#))**
- G07G 1/0009
- {Details of the software in the checkout register, electronic cash register ([ECR](#)) or point of sale terminal ([POS](#))}
- U G07G 1/0036
- {Checkout procedures}
- 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}

Project: N/A (G08B)

- 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](#) to [B64D 1/20](#); for personal calling arrangements see provisionally [G08B 3/1008](#), [G08B 3/1016](#))}
- G08B 7/00** **Signalling systems according to more than one of groups [G08B 3/00](#) to [G08B 6/00](#)(combinations of display arrangements with audible advertising [G09F 27/00](#)); Personal calling systems according to more than one of groups [G08B 3/00](#) to [G08B 6/00](#) {(combinations of display devices with advertising [G09F](#))}**
- 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 13/18
- 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
- U G08B 13/194
- • • using image scanning and comparing systems
- U G08B 13/196
- • • • using television cameras {(recognition of scenes under surveillance [G06K 9/00771](#); image analysis per se [G06T 7/00](#); television cameras [H04N 5/225](#); CCTV systems [H04N 7/18](#))}
- U G08B 13/19617
- • • • • {Surveillance camera constructional details}
- G08B 13/1963
- • • • • {Arrangements allowing camera rotation to change view, e.g. pivoting camera, pan-tilt and zoom ([PTZ](#))}

Project: N/A (G09B)

- U G09B 9/00** **Simulators for teaching or training purposes (for the use of weapons [F41](#); computing aspects [G06](#); {protocols for networked simulations [H04L 29/06034](#))}**
- U G09B 9/02
- for teaching control of vehicles or other craft
- U G09B 9/08
- • for teaching control of aircraft, e.g. Link trainer

- U G09B 9/30
- • • Simulation of view from aircraft
- NOTE
When classifying in groups [G09B 9/301](#), [G09B 9/302](#), [G09B 9/304](#), [G09B 9/305](#), classification is also made in other appropriate groups [G09B 9/307](#), [G09B 9/308](#), [G09B 9/32](#), [G09B 9/323](#), [G09B 9/326](#), [G09B 9/34](#), [G09B 9/36](#), [G09B 9/38](#) if of interest
- G09B 9/32
- • • • by projected image ({[G09B 9/307](#),} [G09B 9/36](#) take precedence)
- G09B 9/34
- • • • by cathode-ray screen display ({[G09B 9/307](#),} [G09B 9/36](#) take precedence)

Project: N/A (G09G)

- U G09G 3/00
- Control arrangements or circuits, of interest only in connection with visual indicators other than cathode-ray tubes (optical scanning systems in general [G02B 26/10](#))**
- U G09G 3/20
- for presentation of an assembly of a number of characters, e.g. a page, by composing the assembly by combination of individual elements arranged in a matrix {no fixed position being assigned to or needed to be assigned to the individual characters or partial characters}
- U G09G 3/34
- • by control of light from an independent source
- G09G 3/3406
- • • {Control of illumination source (illumination devices structurally associated with liquid crystal cells [G02F1/13357](#) [G02F 1/1336](#))}
- 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](#))**
- G09G 5/36
- characterised by the display of a graphic pattern, e.g. using an all-points-addressable ([APA](#)) memory

Project: N/A (G10K)

- G10K 3/00
- Rattles or like noise-producing devices, {e.g. door-knockers}**
- U 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 the relevant places, e.g. [C04B 26/00](#) to [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](#) to [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](#))**
- U G10K 11/02
- Mechanical acoustic impedances; Impedance matching, e.g. by horns; Acoustic resonators
- G10K 11/04
- • Acoustic filters {; Acoustic resonators}

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 ; circuits {or arrangements} specially adapted for {pictorial or} television signal recording {H04N 1/21} , H04N 5/76 , H04N 9/79** ; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor [H04R](#))

NOTES

1. This subclass covers :

- recording or playback of information by relative movement between a record track and a transducer, the transducer directly producing, or being directly actuated by, modulation in the track being recorded or played-back, and the extent of modulation corresponding to the signal being recorded or played-back;
- apparatus and machines for recording or playback, and parts thereof such as heads;
- record carriers for use with such apparatus and machines;
- associated working of other apparatus with such apparatus and machines;
- {relative positioning or movement of transducers and record carriers before, during or after transducing operation, e.g. for accessing record carriers or parts thereof, or for track change, selection or acquisition or for track following or for accessing parts of tracks;}
- {driving or moving of heads or record carriers or both heads and record carriers for increasing, maintaining or decreasing the relative speed before, during or after transducing operation}

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

- "head" includes any means for converting sinusoidal or non-sinusoidal electric wave-forms into variations of the physical condition of at least the adjacent surface of the record carrier, or vice versa;
- "record carrier" means a body, such as a cylinder, disc, card, tape, or wire, capable of permanently holding information, which can be read-off by a sensing element movable relatively to the record carrier.

3. Documents concerning relative positioning or movement of transducers and record carriers are classified in groups [G11B 3/00](#) to [G11B 7/00](#) and [G11B 21/00](#) when only the transducer is controlled and in groups [G11B 15/00](#) , [G11B 17/00](#) and [G11B 19/00](#) when only the record carrier is controlled. When both record carrier and head are controlled, the documents are classified in [G11B 15/1808](#), [G11B 15/1816](#) , [G11B 19/00](#) and [G11B 27/002](#).

When a plurality of record carriers are controlled, the documents are classified in [G11B 15/68](#) , [G11B 17/08](#) , [G11B 17/22](#) and [G11B 27/002](#).

4. By "access" is meant an operation including a relative movement for positioning between record carrier and head before, during or after transducing; this operation including "seek", "select", "change", "acquire" and "follow" functions for at least a part of a track on at least one record carrier. By "programmed access" is meant a sequence of access operations the result of the sequence being to acquire a wanted sequence of parts of tracks or a wanted sequence of tracks. Relative movement between head and record carrier also covers the movement of a coupling beam such as a light beam between the head and a stationary record carrier.

5. "Movement of the head" also covers any virtual movement or any physical movement such as obtained by switching between successive transducing parts of the head or by moving the transducing zone of the head, i.e. by "scanning". If different transducing parts of the head are switchable, the number of transducing parts should be much smaller than the number of individual storage areas of the record carrier.

6. Attention is drawn to the notes of subclass [G11C](#).

WARNING

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

G11B 5/65	covered by	G11B 5/64	to
G11B 5/64D3		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	

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 5/00 **Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor ([G11B 11/00](#){ and [G11B 13/00](#)} take precedence)**

NOTE

Subgroups [G11B 5/02](#) to [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) to [G11B 5/016](#)

G11B 5/008 • Recording on, or reproducing or erasing from, magnetic tapes, {sheets, e.g. cards,} or wires ([G11B 15/00](#) {[G11B 19/00](#)} take precedence;{ bulk transferring of information magnetisation for re-recording [G11B 5/865](#) ; marking record carriers in digital fashion [G06K](#)})

U G11B 5/00813 • • {magnetic tapes}

U G11B 5/00817 • • • {on longitudinal tracks only, e.g. for serpentine format recording}

G11B 2005/00843 • • • • {allowing digital compact cassette ~~{(DCC)}~~} format recording}

U G11B 5/127 • Structure or manufacture of heads, e.g. inductive

- G11B 5/33
- • Structure or manufacture of flux-sensitive heads, {i.e. for reproduction only; Combination of such heads with means for recording or erasing only} {{Single head using magnetic domains for scanning [G11B 5/4946](#) ; multiple head for scanning [G11B 5/4907](#) and subgroups } ; general details therefor [G11B 5/133](#) to [G11B 5/255](#)}
- U G11B 5/39
- • • using magneto-resistive devices {or effects}
- G11B 2005/3996
- • • • {large or giant magnetoresistive effects [{GMR}](#)}, e.g. as generated in spin-valve [{SV}](#) devices}
- G11B 5/48
- Disposition or mounting of heads {or head supports} relative to record carriers { mounting of head within housing [G11B 5/105](#) ; arrangements of heads, e.g. for scanning the record carrier to increase the relative speed (driving of both record carriers and head [G11B 15/18](#) ; guiding record carriers [G11B 15/60](#) ; head selecting circuits [G11B 15/12](#))}
- G11B 5/56
- • with provision for moving the head {support} for the purpose of adjusting the position of the head relative to the record carrier, e.g. manual adjustment for azimuth correction or track centering ([G11B 5/52](#) , [G11B 5/54](#) , [G11B 5/58](#) take precedence)
- U G11B 5/62
- Record carriers characterised by the selection of the material (selection of magnetic materials in general [H01F 1/00](#) ; thin magnetic films [H01F 10/00](#))
- NOTE**
- This group does not cover compositions, materials or processes, per se, which are covered by the relevant subclasses of section B or C.
- U G11B 5/64
- • Comprising only the magnetic material without bonding agent
- U G11B 5/645
- • • {characterised by the film material}
- G11B 5/647
- • • • {containing Fe or Ni ([G11B5/64D3](#) [G11B 5/656](#) takes precedence)}
- G11B 5/73
- • Base layers, {i.e. all layers lying under the first magnetic recording layer}
- 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)**
- G11B 7/002
- Recording, reproducing or erasing systems characterised by the shape {or form} of the carrier
- G11B 7/003
- • with webs {, filaments or wires}, e.g. belts, spooled tapes or films of quasi-infinite extent
- 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 7/00736
- • {Auxiliary data, e.g. lead-in, lead-out, Power Calibration Area [PCA], Burst Cutting Area [{BCA}](#)}, control information (sector headers or addresses in prepits [G11B 7/00745](#); address data in track wobble [G11B7/007F](#) [G11B 7/24082](#))}
- WARNING**
- Not complete, see also [G11B 7/007](#) and [G11B 7/00745](#)
- G11B 7/0079
- • {Zoned data area, e.g. having different data structures or formats for the user data within data layer, Zone Constant Linear Velocity [{ZCLV}](#)}, Zone Constant Angular Velocity [{ZCAV}](#)}, carriers with RAM and ROM areas}
- WARNING**
- Not complete, see also [G11B 7/007](#)

- 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 7/135
- • 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 7/1395
- • • Beam splitters or combiners ([G11B 7/1353](#) , [G11B 7/1356](#) take precedence ~~{; beam splitting or combining per se G02B 27/10}~~){(beam splitting or combining per se G02B 27/10)}
- WARNING
Not complete, see also [G11B 7/1359](#) - [G11B 7/1381](#)
- U G11B 7/24
- Record carriers characterised by shape, structure or physical properties, or by the selection of the material (characterised by the arrangement of information on the carrier [G11B 7/007](#))
- U G11B 7/241
- • characterised by the selection of the material
- U G11B 7/252
- • • of layers other than recording layers
- NOTE
In group [G11B 7/252](#) , multi-aspect classification is applied, so that if subject matter is characterised by aspects covered by more than one of its subgroups, the subject matter should be classified in each of those subgroups.
- U G11B 7/253
- • • • of substrates
- U G11B 2007/25303
- • • • • {comprising resins}
- G11B 2007/25304
- • • • • • {Polycarbonate ~~{(PC)}~~}
- G11B 2007/25306
- • • • • • {Polystyrene ~~{(PS)}~~}
- G11B 2007/25307
- • • • • • {Polycycloolefines ~~{(COCs)}~~}
- U G11B 9/00**
- Recording or reproducing using a method not covered by one of the main groups [G11B 3/00](#) to [G11B 7/00](#); Record carriers therefor ([G11B 11/00](#) takes precedence{ driving or moving of heads [G11B 21/02](#)})**
- U G11B 9/06
- using record carriers having variable electrical capacitance; Record carriers therefor ([G11B 9/02](#) takes precedence)
- U G11B 9/061
- • {Record carriers characterised by their structure or form or by the selection of the material; Apparatus or processes specially adapted for the manufacture of record carriers (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B05D](#) , [F16N](#) , [C08L](#))}
- U G11B 9/063
- • • {characterised by the selection of the material}
- G11B 9/065
- • • • {Additional layers for lubrication, wear protection or elimination of electrostatic charges of the interface between record carrier and head ([G11B 9/066](#) , [G11B 9/067](#) and ~~G11BR4R~~[G11B 9/068](#) take precedence)}
- U G11B 9/12
- using near-field interactions; Record carriers therefor

- G11B 9/14
- using microscopic probe means {, i.e. recording or reproducing by means directly associated with the tip of a microscopic electrical probe as used in Scanning Tunneling Microscopy [STM] or Atomic Force Microscopy [AFM] for inducing physical or electrical perturbations in a recording medium; Record carriers or media specially adapted for such transducing of information (marking using electrical current [B41M 5/20](#) ; measuring roughness or irregularity of surfaces [G01B 7/34](#) ; details of scanning-probe microscopes [G01Q](#))}
- 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](#) to [G11B 7/00](#) or by different subgroups of group [G11B 9/00](#); Record carriers therefor {(driving or moving of heads [G11B 3/02](#) , [G11B 5/48](#) , [G11B 7/08](#) , [G11B 21/02](#))}**
- NOTES**
1. Groups [G11B 11/00](#) to [G11B 11/14](#) mainly cover:
 - combined systems or apparatus comprising both recording and reproducing using different methods;
 - record carriers therefor.
 2. Reading only or recording only using mechanical, magnetic, optical or other methods is covered by groups [G11B 3/00](#) to [G11B 9/08](#)
- U G11B 11/10**
- using recording by magnetic means {or other means for magnetisation or demagnetisation of a record carrier, e.g. light induced spin magnetisation; Demagnetisation by thermal or stress means in the presence or not of an orienting magnetic field}
- G11B 11/105
- using a beam of light or a magnetic field for recording {by change of magnetisation} and a beam of light for reproducing, {i.e. magneto-optical,} e.g. light-induced thermo-magnetic recording, {spin magnetisation recording,} Kerr {or Faraday} effect reproducing
- G11B 11/11
- using a beam, {e.g. of electrons or X-rays} other than a beam of light {or a magnetic field} for recording
- G11B 11/115
- {using a beam,}{e.g. of electrons or X-rays} other than a beam of light for reproducing
- G11B 11/12
- using recording by optical means ([G11B 11/03](#) takes precedence {[G11B 11/10](#) takes precedence})
- U G11B 11/24**
- using recording by near-field interactions
- G11B 11/26
- using microscopic probe means {, i.e. recording by means directly associated with the tip of a microscopic electrical probe as used in scanning tunneling microscopy [STM] or atomic force microscopy [AFM] for inducing physical or electrical perturbations in a recording medium (marking using electrical current [B41M 5/20](#) ; measuring roughness or irregularity of surfaces [G01B 7/34](#) ; details of scanning-probe microscopes [G01Q](#))}
- U G11B 13/00** **Recording simultaneously or selectively by methods covered by different main groups{ among [G11B 3/00](#) , [G11B 5/00](#) , [G11B 7/00](#) and [G11B 9/00](#)}; Record carriers therefor {not otherwise provided for}; Reproducing therefrom {not otherwise provided for ([G11B 9/14](#) , [G11B 11/002](#) take precedence; driving or moving of heads [G11B 3/02](#) , [G11B 5/48](#) , [G11B 7/08](#) , [G11B 21/02](#))}**

NOTE

This group is limited to the combination of recording and reproducing on the same record carrier by more than one of the different method covered by groups [G11B 3/00](#) , [G11B 5/00](#) , [G11B 7/00](#) and [G11B 9/00](#)

- G11B 13/04
- magnetically {or by magnetisation} and optically {or by radiation, for changing or sensing optical properties}
- 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](#) to [G11B 7/00](#) , [G11B 21/00](#))**
- U G11B 15/02
- Control of operating function, e.g. switching from recording to reproducing
- G11B 15/12
- • Masking of heads; {circuits for} Selecting or switching of heads between operative and inoperative functions {or between different operative functions or for selection between operative heads}; Masking of beams, e.g. of light beams {(track selection by moving the magnetic head [G11B 5/54](#))}
- U G11B 15/18
- Driving; Starting; Stopping; Arrangements for control or regulation thereof {([G11B 15/56](#) takes precedence; handling tapes or filamentary material in general [B65H 23/00](#))}
- G11B 15/22
- • Stopping means (slowing-down preparatory to stopping or speed-changing [G11B 15/48](#) ; speed-controlling by mechanical linkage [G11B 15/50](#) ; brake constructions in general [F16D](#) {[G11B 15/06](#) takes precedence; inside container [G11B 23/04](#))}
- U G11B 15/675
- Guiding containers {e.g. loading, ejecting cassettes}
- U G11B 15/68
- • Automatic cassette changing arrangements; {automatic tape changing arrangements}
- U G11B 19/00** **Driving, starting, stopping record carriers not specifically of filamentary or web form, or of supports therefor; Control thereof; Control of operating function (guiding such record carriers [G11B 17/00](#)); {Driving both disc and head}**
- U G11B 19/02
- Control of operating function, e.g. switching from recording to reproducing
- U G11B 19/022
- • {Control panels}
- G11B 19/025
- • • {Virtual control panels, e.g. Graphical User Interface ~~{(GUI)}~~}
- G11B 19/12
- • by sensing distinguishing features of {or on} records, e.g. diameter {end mark}
- U G11B 20/00** **Signal processing not specific to the method of recording or reproducing; Circuits therefor**
- U G11B 20/10
- Digital recording or reproducing (digital computers in which at least part of the computation is effected electrically, arrangements for handling digital data [G06F](#) ; transmission of digital information [H04L](#))
- U G11B 20/12
- • Formatting, e.g. arrangement of data block or words on the record carriers {(within interface between computers and data recorders [G06F 3/06](#))}
- U G11B 20/1201
- • • {on tapes}
- U G11B 20/1202
- • • • {with longitudinal tracks only}
- G11B 20/1204
- • • • • {for continuous data, e.g. digitised analog information signals, pulse code modulated ~~{(PCM)}~~ data}
- U G11B 20/1207
- • • • • {with transverse tracks only}
- G11B 20/1208
- • • • • • {for continuous data, e.g. digitised analog information signals, pulse code modulated ~~{(PCM)}~~ data}
- U G11B 20/1211
- • • • • {with different data track configurations (longitudinal control tracks with transverse user data tracks [G11B 20/1207](#))}
- G11B 20/1212
- • • • • • {for continuous data, e.g. digitised analog information signals, pulse code modulated ~~{(PCM)}~~ data}
- U G11B 20/1217
- • • {on discs}

- G11B 20/1251 {for continuous data, e.g. digitised analog information signals, pulse code modulated ([PCM](#)) data}
- G11B 2020/1255 {Fixed Block Architecture ([FBA](#)) format}
- G11B 2020/1257 {Count Key Data ([CKD](#)) format}
- G11B 20/18 . . Error detection or correction; Testing, {e.g. of drop-outs}
- U G11B 21/00 Head arrangements not specific to the method of recording or reproducing**
- U G11B 21/02 . Driving or moving of heads
- G11B 21/04 . . Automatic feed mechanism producing a {progressive} transducing traverse of the head in a direction which cuts across the direction of travel of the recording medium, e.g. helical scan, {e.g. by lead-screw ([G11B 19/20](#) , [G11B 21/08](#) and [G11B 21/10](#) take precedence)}
- G11B 21/06 . . . the record carrier having {mechanical} means to ensure traverse movement of the head, {e.g. grooves}
- U G11B 23/00 Record carriers not specific to the method of recording or reproducing; Accessories, e.g. containers, specially adapted for co-operation with the recording or reproducing apparatus {Intermediate mediums; Apparatus or processes specially adapted for their manufacture (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. [B29](#) , [B41M](#) , [B05D](#) , [C08L](#) , [F16N](#))}**
- NOTE
In group [G11B 23/00](#) , recording or reproducing apparatus does not include the record carriers.
- G11B 23/28 . Indicating {or preventing} prior or unauthorized use, {e.g. cassettes with sealing or locking means, write-protect devices for discs (write-protect devices for tapes [G11B 23/042](#) , [G11B 23/08714](#) ; dummy cassettes for locking in the drive [G11B 33/005](#))}
- G11B 23/286 . . {Antitheft arrangements, e.g. Electronic Article Surveillance ([EAS](#)) tags}
- U G11B 23/50 . Reconditioning of record carriers; Cleaning of record carriers; {Carrying-off electrostatic charges} ([G11B 3/58](#) takes precedence; { carrying off electrostatic charges in general [H05F 3/00](#)})
- G11B 25/00 Apparatus characterised by the shape of record carrier employed but not specific to the method of recording or reproducing (individual parts of apparatus [G11B 3/00](#) to [G11B 23/00](#) , [G11B 33/00](#)), {e.g. dictating apparatus; Combinations of such apparatus}**
- U G11B 25/10 . Apparatus capable of using record carriers defined in more than one of the sub-groups [G11B 25/02](#) to [G11B 25/08](#) ; {Adaptor devices therefor}
- U G11B 27/00 Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel**
- U G11B 27/10 . Indexing; Addressing; Timing or synchronising; Measuring tape travel
- U G11B 27/19 . . by using information detectable on the record carrier
- U G11B 27/24 . . . by sensing features on the record carrier other than the transducing track (for controlling purposes [G11B 15/00](#) , [G11B 17/00](#)); {sensing signals or marks recorded by another method than the main recording}
- U G11B 27/28 . . . by using information signals recorded by the same method as the main recording {([G11B 27/22](#) takes precedence)}
- U G11B 27/30 on the same track as the main recording
- U G11B 27/3027 {used signal is digitally coded}
- U G11B 27/3036 {Time code signal}
- G11B 27/3054 {Vertical Interval Time code ([VITC](#))}

- U G11B 27/32 on separate auxiliary tracks of the same or an auxiliary record carrier
- U G11B 27/327 {Table of contents}
- G11B 27/328 {on a tape [\(TTOC\)](#)}
- G11B 27/329 {on a disc [\(VTOC\)](#)}
- U G11B 33/00** **Constructional parts, details or accessories not provided for in the preceding groups (containers, packaging elements or packages specially adapted for record carriers [B65D 85/00](#))**
- U G11B 33/14 . Reducing influence of physical parameters, e.g. temperature change, moisture, dust
- G11B 33/1493 . . {Electro-Magnetic Interference [\(EMI\)](#) or Radio Frequency Interference [\(RFI\)](#) shielding; grounding of static charges}

Project: N/A (G11C)

- U G11C 5/00** **Details of stores covered by [G11C 11/00](#)**
- U G11C 5/02 . Disposition of storage elements, e.g. in the form of a matrix array
- G11C 5/04 . . Supports for storage elements, Supports for storage elements, {e.g. memory modules}; Mounting or fixing of storage elements on such supports
- G11C 5/14 . Power supply arrangements (in general [G05F](#) , [H02J](#) , [H02M](#)), {e.g. Power down/chip (de)selection, layout of wiring/power grids, multiple supply levels}
- G11C 7/00** **Arrangements for writing information into, or reading information out from, a digital store ([G11C 5/00](#) takes precedence; auxiliary circuits for stores using semiconductor devices [G11C 11/4063](#) , [G11C 11/413](#) , ~~[G11C 11/4193](#)~~)**
- G11C 7/06 . Sense amplifiers; Associated circuits, {e.g. timing or triggering circuits} (amplifiers per se [H03F](#) , [H03K](#))
- U G11C 7/10 . Input/output (I/O) data interface arrangements, e.g. I/O data control circuits, I/O data buffers (level conversion circuits in general [H03K 19/0175](#))
- U G11C 7/1015 . . {Read-write modes for single port memories, i.e. having either a random port or a serial port}
- U G11C 7/1018 . . . {Serial bit line access mode, e.g. using bit line address shift registers, bit line address counters, bit line burst counters}
- U G11C 7/1021 {Page serial bit line access mode, i.e. using an enabled row address stroke pulse with its associated word line address and a sequence of enabled column address stroke pulses each with its associated bit line address}
- G11C 7/1024 {Extended data output [\(EDO\)](#) mode, i.e. keeping output buffer enabled during an extended period of time}
- U G11C 8/00** **Arrangements for selecting an address in a digital store (for stores using transistors [G11C 11/407](#) , [G11C 11/413](#) ; { switching or gating circuits for general use [H03K 17/00](#)})**
- G11C 8/18 . Address timing or clocking circuits; Address control signal generation or management, e.g. for row address strobe [\(RAS\)](#) or column address strobe [\(CAS\)](#) signals
- U G11C 11/00** **Digital stores characterised by the use of particular electric or magnetic storage elements; Storage elements therefor ([G11C 14/00](#) to [G11C 21/00](#) take precedence)**
- U G11C 11/19 . using non-linear reactive devices in resonant circuits {(contains no documents, see [G11C 11/20](#))}

- G11C 11/20
 - • using parametrons, {i.e. ferroresonant triggers; with overcritical feedback magnetic amplifiers or similar (pulse generators using parametrons and ferroresonant devices [H03K 19/162](#) , [H03K 19/164](#) ; counters using such elements [H03K 23/001](#))}
- U G11C 11/21
 - using electric elements
- G11C 11/23
 - • using electrostatic storage on a common layer, e.g. Forrester-Haef tubes, {William tubes}{[G11C 11/22](#) takes precedence; { construction of Williams tubes [H01J 31/00](#))}
- U G11C 11/34
 - • using semiconductor devices {(processes or apparatus for the manufacture or treatment of semiconductor or solid state devices [H01L 21/00](#) ; integrated circuit devices [H01L 27/00](#) ; generating electric pulses, e.g. bistable devices using semiconductor devices [H03K 3/00](#))}
- G11C 11/36
 - • • using diodes, e.g. as threshold elements, {i.e. diodes assuming a stable ON-stage when driven above their threshold (S- or N-characteristic)}
- U G11C 11/40
 - • • using transistors
- G11C 11/401
 - • • • forming cells needing refreshing or charge regeneration, {i.e. dynamic cells}
- G11C 11/41
 - • • • forming {static} cells with positive feedback, i.e. cells not needing refreshing or charge regeneration, e.g. bistable multivibrator or Schmitt trigger
- G11C 11/412
 - • • • • using field-effect transistors only {(latent image memory [G11C 7/20](#) ; multi-port cells ~~G11C 8/160~~[G11C 8/16](#))}
- G11C 11/42
 - • using opto-electronic devices, i.e. light-emitting and photoelectric devices electrically - or optically - {feedback -} coupled
- U G11C 13/00**
 - Digital stores characterised by the use of storage elements not covered by groups [G11C 11/00](#) , [G11C 23/00](#) to [G11C 25/00](#)**
- U G11C 13/0002
 - {using resistance random access memory [RRAM] elements}
- U G11C 13/0021
 - • {Auxiliary circuits}
- U G11C 13/004
 - • • {Reading or sensing circuits or methods}
- G11C 2013/0042
 - • • • {Read using differential sensing, e.g. bit line (~~/BL/~~) and bit line bar (~~/BLB/~~)}
- U G11C 13/04
 - using optical elements {using other beam accessed elements, e.g. electron, ion beam (using electrostatic memory tubes [G11C 11/23](#) ; recording of television signals [H04N 5/76](#))}
- G11C 13/06
 - • using magneto-optical elements {([G11C 13/042](#) takes precedence)} magneto-optics in general [G02F](#))}
- 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 19/12
 - using non-linear reactive devices in resonant circuits, {e.g. parametrons; magnetic amplifiers with overcritical feedback}
- U G11C 19/34
 - using storage elements with more than two stable states represented by steps, e.g. of voltage, current, phase, frequency {(in RAM multistable cells [G11C 11/56](#) ; in capacitive analog stores [G11C 27/04](#))}
- G11C 19/36
 - • using {multistable} semiconductor elements

- 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](#))}**
- WARNING**
Groups [G11C 29/70](#) to [G11C 29/886](#) do not correspond to former or current IPC groups.
Concordance CPC : IPC for these groups is the following: - [G11C 29/70](#) - [G11C 29/886](#) : [G11C 29/00](#)
- G11C 29/04 • Detection or location of defective memory elements, {e.g. cell construction details, timing of test signals}
- G11C 29/08 • • Functional testing, e.g. testing during refresh, power-on self testing [\(POST\)](#) or distributed testing
- G11C 29/12 • • • Built-in arrangements for testing, e.g. built-in self testing [\(BIST\)](#) {or interconnection details}
- U G11C 29/18 • • • • Address generation devices; Devices for accessing memories, e.g. details of addressing circuits
- G11C 29/20 • • • • • using counters or linear-feedback shift registers [\(LFSR\)](#)
- U G11C 29/38 • • • • Response verification devices
- G11C 29/42 • • • • • using error correcting codes [\(ECC\)](#) or parity check
- G11C 29/54 • Arrangements for designing test circuits, e.g. design for test [\(DFT\)](#) tools
- G11C 29/56 • External testing equipment for static stores, e.g. automatic test equipment [\(ATE\)](#); Interfaces therefor

Project: N/A (G21C)

- U G21C 21/00** **Apparatus or processes specially adapted to the manufacture of reactors or parts thereof (in general section B, e.g. [B23](#))**
- U G21C 21/02 • Manufacture of fuel elements or breeder elements contained in non-active casings
- G21C 21/06 • • by {rotatable} swaging {of the jacket around the fuel}

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 [H01L 35/00](#), [H01L 37/00](#))

Project: N/A (G21H)

- U G21H 1/00** **Arrangements for obtaining electrical energy from radioactive sources, e.g. from radioactive isotopes, { nuclear or atomic batteries}**
- G21H 1/10 • Cells in which radiation {of disintegration heat} heats a thermoelectric junction or a thermionic converter (discharge tubes functioning as thermionic generators [H01J 45/00](#); thermo electric devices comprising a junction of dissimilar materials [H01L 35/00](#) {Devices where heating occurs from fission reactions [G21C 3/04](#)})

Project: N/A (H01B)

- U H01B 7/00 Insulated conductors or cables characterised by their form**
- U H01B 7/17
- Protection against damage caused by external factors, e.g. sheaths or armouring (power cables with screens [H01B 9/02](#); communication cables with screens [H01B 11/06](#); {continuously-loaded cables [H01B 11/14](#);} installation of conduits [H02G](#))
- U H01B 7/18
- · {Protection against damage caused} by wear, mechanical force or pressure; {Sheaths; Armouring}

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 1/0302
- · · {characterised by unspecified or heterogeneous hardness or specially adapted for magnetic hardness transitions}
- H01F 1/0306
- · · · {Metals or alloys, e.g. LAVES phase alloys of the $MgCu_{-2}$ -type ([H01F 1/0304](#) takes precedence)}
- H01F 1/0308
- · · · {with magnetic shape memory (~~{MSM}~~), i.e. with lattice transformations driven by a magnetic field, e.g. Heusler alloys}
- H01F 1/40
- · of magnetic semiconductor materials, e.g. $CdCr_{-2}S_{-4}$ (devices using galvanomagnetic or similar effects [H01L 43/00](#))
- H01F 1/408
- · · {half-metallic, i.e. having only one electronic spin direction at the Fermi level, e.g. CrO_{-2} , Heusler alloys ([H01F 10/1936](#) takes precedence)}
- H01F 1/42
- of organic or organo-metallic materials, {e.g. graphene} ([H01F 1/44](#) takes precedence)
- U H01F 1/44
- of magnetic liquids, e.g. ferrofluids (particles in a bonding agent [H01F 1/28](#) , [H01F 1/36](#) , {[H01F 1/37](#)})
- H01F 1/445
- · {the magnetic component being a compound, e.g. $Fe_{-3}O_{-4}$ ([H01F 1/447](#) takes precedence)}
- U H01F 7/00 Magnets (superconducting magnets [H01F 6/00](#) ; for separation of solid materials or fluids [B03C 1/00](#) ; for bench or like work-holders [B23B 31/28](#) , [B23Q 3/00](#) ; work-holding devices [B25B 11/00](#) ; lifting magnets [B66C 1/00](#) ; { operating or controlling locks using permanent magnets [E05B 47/0038](#) ; devices for holding a wing, e.g. door or window, by magnetic or electromagnetic attraction [E05C 19/16](#) ; relieving load or bearings using magnetic means [F16C 39/06](#) } ; for electric meters [G01R](#) ; for relays [H01H](#) ; { for electric discharge tubes [H01J](#) , e.g. [H01J 3/24](#) , [H01J 23/10](#) , [H01J 29/68](#) } ; for dynamo-electric machines [H02K](#))**
- H01F 7/02
- Permanent magnets ~~{(PM)}~~
- U H01F 7/06
- Electromagnets; Actuators including electromagnets {(electric coils [H01F 5/00](#) ; devices for holding workpieces using electric force [B23Q 3/15](#) ; load-engaging elements for lifting articles electromagnetically [B66C 1/06](#) ; electromagnetic couplings [F16D 27/00](#) ; magnetic brakes [F16D 63/002](#) ; electromagnetically operated valves [F16K 11/24](#) , [F16K 31/00](#) ; magnetically locked mine lamps [F21L 11/00](#) ; analysing materials by magnetic means [G01N 27/72](#) , [G01N 27/80](#) ; electromagnets for winding mechanical clocks [G04C 1/02](#) ; electromagnetic relays [H01H 51/00](#) ; windings for salient poles of dynamo-electric machines [H02K 3/18](#) ; electromagnets for telegraphic communication [H04L](#) ; for arc lamps [H05B 31/28](#))}

- H01F 7/20
- without armatures (cores [H01F 3/00](#) ; coils [H01F 5/00](#) ; { shaping metal by applying magnetic forces [B21D 26/14](#) ; ~~analysing methods using magnetic fields [G01N24/06](#)~~ ; electromagnets specially adapted for NMR applications [G01R 33/381](#)})
- 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 10/32
- Spin-exchange-coupled multilayers, e.g. nanostructured superlattices {(applying spin-exchange-coupled multilayers to substrates [H01F 41/302](#))}
- U H01F 10/324
- {Exchange coupling of magnetic film pairs via a very thin non-magnetic spacer, e.g. by exchange with conduction electrons of the spacer}
- H01F 10/3254
- • {the spacer being semiconducting or insulating, e.g. for spin tunnel junction [\(STJ\)](#)}
- H01F 10/3259
- • • {Spin-exchange-coupled multilayers comprising at least a nano-oxide layer [\(NOL\)](#), e.g. with a NOL spacer}
- H01F 10/3268
- • • {the exchange coupling being asymmetric, e.g. by use of additional pinning, by using antiferromagnetic or ferromagnetic coupling interface, i.e. so-called spin-valve [\(SV\)](#) structure, e.g. NiFe/Cu/NiFe/FeMn}
- H01F 10/3272
- • • {by use of anti-parallel coupled [\(APC\)](#) ferromagnetic layers, e.g. artificial ferrimagnets [\(AFI\)](#), artificial [\(AAF\)](#) or synthetic [\(SAF\)](#) anti-ferromagnets}
- H01F 10/3277
- • • • {by use of artificial ferrimagnets [\(AFI\)](#) only}
- H01F 10/3281
- • • • {only by use of asymmetry of the magnetic film pair itself, i.e. so-called pseudospin valve [\(PSV\)](#) structure, e.g. NiFe/Cu/Co}
- H01F 29/00 Variable transformers or inductances not covered by group [H01F 21/00](#) {(tap change devices [H01H 9/0005](#))}**
- U H01F 41/00 Apparatus or processes specially adapted for manufacturing or assembling the devices covered by this subclass**
- 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](#) to [H01F 41/24](#) , and over group [H01F 41/32](#)
- U H01F 41/20
- by evaporation
- H01F 41/205
- • {by laser ablation, e.g. pulsed laser deposition [\(PLD\)](#)}
- H01F 41/30
- • for applying nanostructures, e.g. by molecular beam epitaxy [\(MBE\)](#)}
- H01F 41/32
- for applying conductive, insulating or magnetic material on a magnetic film {, specially adapted for a thin magnetic film}

Project: N/A (H01G)

- 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}
- U H01G 9/048
- • • characterised by their structure ([H01G 11/22](#) takes precedence)
- H01G 2009/05
- • • • {IPC5 consisting of tantalum, niobium, or sintered material; Combinations of such electrodes with solid semiconductive electrolytes, e.g. manganese dioxide not used, see subgroups ~~and [H01G9/00F](#), [H01G9/04B](#)~~}
- U H01G 9/20
- Light-sensitive devices

- U H01G 9/2027 · · {comprising an oxide semiconductor electrode}
- H01G 9/2031 · · · {comprising titanium oxide, e.g. TiO₂([H01G 9/2036](#) takes precedence)}

Project: N/A (H01H)

- U H01H 1/00 **Contacts (liquid contacts [H01H 29/04](#))****
 - H01H 1/0094 · {Switches making use of nanoelectromechanical systems ([NEMS](#))}
 - U H01H 1/58 · Electric connections to or between contacts; Terminals ({for high tension switches [H01H 33/025](#); for electromagnetic relays [H01H 50/14](#); for circuit breakers [H01H 71/08](#)}; electric connections in general [H01R](#))
 - H01H 2001/5888 · · {Terminals of surface mounted devices ([SMD](#))}
 - U H01H 1/64 · Protective enclosures, baffle plates, or screens for contacts (for arc-extinguishing [H01H 9/30](#); for mercury contacts [H01H 29/04](#))
 - H01H 1/645 · · {containing getter material (for explosion inhibiting in explosion-proofcases [H01H 9/046](#); ~~for vacuum switches [H02H33/6683](#)~~; *for vacuum switches [H01H 33/6683](#)*)}
- 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
 - H01H 2003/3094 · · · {allowing an opening - closing - opening ([OCO](#)) sequence}
- 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](#))****
 - H01H 11/0062 · {Testing or measuring non-electrical properties of switches, e.g. contact velocity (monitoring contacts [H01H 1/0015](#); monitoring gas density [H01H 33/563](#); ~~monitoring vacuum [H02H33/668](#)~~; *monitoring vacuum [H01H 33/668](#)*; calibrating [H01H 69/01](#); adjusting [H01H 71/74](#); testing of electrical properties [G01R 31/333](#))}
 - U H01H 11/04 · of switch contacts
 - U H01H 11/06 · · Fixing of contacts to carrier; {Fixing of contacts to insulating carrier}
 - H01H 2011/065 · · · {by plating metal or conductive rubber on insulating substrate, e.g. Molded Interconnect Devices ([MID](#))}
- U H01H 33/00 **High-tension or heavy-current switches with arc-extinguishing or arc-preventing means****
 - U H01H 33/02 · Details
 - H01H 33/021 · · {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 se [H01B 3/00](#))}
- U H01H 2201/00 **Contacts****
 - U H01H 2201/022 · Material
 - U H01H 2201/026 · · non precious
 - H01H 2201/028 · · · Indium tin oxide ([ITO](#))

- U H01H 2217/00** **Facilitation of operation; Human engineering**
 H01H 2217/044 · Repetitive strain injury ~~{[RSI]}~~ considerations
- U H01H 2300/00** **Orthogonal indexing scheme relating to electric switches, relays, selectors or emergency protective devices covered by H01H**
 H01H 2300/034 · using magnetic shape memory ~~{[MSM]}~~ also an austenite-martensite transformation, but then magnetically controlled

Project: N/A (H01J)

- 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**
- H01J 11/00** **Gas-filled discharge tubes with alternating current induction of the discharge, e.g. AC-PDPs [Alternating Current Plasma Display Panels] (circuits or methods for driving PDPs [G09G 3/28](#)); Gas-filled discharge tubes without any main electrode inside the vessel; Gas-filled discharge tubes with at least one main electrode outside the vessel (discharge lamps [H01J 65/00](#) {[H01J 61/00](#) , [H01J 63/00](#)})**
NOTES
 1. When classifying in this group, classification is made in all appropriate places.
 2. In this group, the following term is used with the meaning indicated:
 • "main electrode" means any of a sustain electrode, scan electrode or address electrode.
- H01J 17/00** **Gas-filled discharge tubes with solid cathode ([H01J 25/00](#) , [H01J 27/00](#) , [H01J 31/00](#) to [H01J 41/00](#) {[H01J 11/00](#)} take precedence; gas or vapour discharge lamps [H01J 61/00](#) ; gas filled spark gaps [H01T](#); Marx converters [H02M 7/26](#) ; tubes for generating potential differences by charges carried in a gas stream [H02N](#))**
- U H01J 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 23/00** **Details of transit-time tubes of the types covered by group [H01J 25/00](#)**
- U H01J 23/16** · Circuit elements, having distributed capacitance and inductance, structurally associated with the tube and interacting with the discharge (circuit elements, having distributed capacitance and inductance, in general [H01P](#))
- H01J 23/24** · · Slow-wave structures, {e.g. delay systems}
- U H01J 27/00** **Ion beam tubes ([H01J 25/00](#) , [H01J 33/00](#) , [H01J 37/00](#) take precedence; particle accelerators [H05H](#))**
- H01J 27/02** · Ion sources; Ion guns ({for examination or processing discharge tubes [H01J 37/08](#) ; ion sources, ion guns for particle spectrometer or separator tubes [H01J 49/10](#) ; ion propulsion [F03H 1/00](#)); arrangements for handling particles, e.g. focusing, {charge exchanging, polarising} , [G21K 1/00](#) ; generating ions to be introduced into non-enclosed gases [H01T 23/00](#) ; generating plasma [H05H 1/24](#))

- U H01J 27/08 · · using arc discharge
- H01J 27/10 · · · Duoplasmatrons (for use in particle accelerators [H05H 7/00](#) {[H05H 7/00](#) not used therefor; Duopigatrons})
- H01J 27/20 · · using particle {beam} bombardment, e.g. ionisers
- U H01J 29/00 Details of cathode-ray tubes or of electron-beam tubes of the types covered by group [H01J 31/00](#)**
- U H01J 29/86 · Vessels; Containers; Vacuum locks
- H01J 29/89 · · Optical or photographic arrangements structurally combined (or co-operating) with the vessel {([H01J 29/866](#) and [H01J 29/868](#) take precedence)}
- 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
- U H01J 37/18 · · Vacuum locks; {Means for obtaining or maintaining the desired pressure within the vessel (vacuum locks for electron-beam tubes in general [H01J 29/865](#))}
- 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 49/00 Particle spectrometer or separator tubes**
- NOTE**
- In classifying particle separators, no distinction is made between spectrometry and spectrography, the difference being only in the manner of detection which in the first case is electrical and in the second case is by means of a photographic film.
- U H01J 49/0013 · {Miniaturised spectrometers, e. g. having smaller than usual scale, integrated conventional components}
- H01J 49/0018 · · {Microminiaturised spectrometers, e. g. chip-integrated devices, Micro-Electro-Mechanical Systems ([MEMS](#))}
- U H01J 49/26 · Mass spectrometers or separator tubes (isotope separation using these tubes [B01D 59/44](#))
- U H01J 49/28 · · Static spectrometers
- H01J 49/30 · · · using magnetic analysers, {e.g. Dempster spectrometer}
- U H01J 2201/00 Electrodes common to discharge tubes**
- U H01J 2201/30 · Cold cathodes
- U H01J 2201/304 · · Field emission cathodes
- U H01J 2201/30446 · · · characterised by the emitter material
- U H01J 2201/30453 · · · · Carbon types
- H01J 2201/30476 · · · · · Diamond-like carbon ([DLC](#))
- U H01J 2201/312 · · having an electric field perpendicular to the surface thereof

- H01J 2201/3125 . . . Metal-insulator-Metal [{\[MIM\]}](#) emission type cathodes
- U H01J 2229/00** **Details of cathode ray tubes or electron beam tubes ([H01J 2329/00](#) takes precedence)**
- U H01J 2229/92 . Means providing or assisting electrical connection with or within the tube
- H01J 2229/925 . . associated with the high tension [{\[HT\]}](#), e.g. anode potentials
- U H01J 2231/00** **Cathode ray tubes or electron beam tubes ([H01J 2329/00](#) takes precedence)**
- U H01J 2231/50 . Imaging and conversion tubes
- U H01J 2231/50057 . . characterised by form of output stage
- U H01J 2231/50068 . . . Electrical
- H01J 2231/50073 Charge coupled device [{\[CCD\]}](#)
- U H01J 2231/50089 . . . Having optical stage before electrical conversion
- H01J 2231/50094 Charge coupled device [{\[CCD\]}](#)
- U H01J 2231/501 . . including multiplication stage
- U H01J 2231/5013 . . . with secondary emission electrodes
- H01J 2231/5016 Microchannel plates [{\[MCP\]}](#)
- H01J 2237/00** **Discharge tubes exposing object to beam, e.g. for analysis treatment, etching, imaging**
- NOTES
1. For features of general interest which may be found in other types of discharge tubes, an indexing code corresponding to general schemes [H01J 2201/00](#) to [T01J207/00](#)[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](#) to [T01J237/248D2](#)[H01J 2237/2487](#)
Imaging or analysing: [H01J 2237/25](#) to [H01J 2237/2857](#)
particle beam processing: [H01J 2237/30](#) to [H01J 2237/31798](#)
plasma processing: [H01J 2237/32](#) to [H01J 2237/339](#)
- U H01J 2237/04 . Means for controlling the discharge
- U H01J 2237/047 . . Changing particle velocity
- U H01J 2237/0473 . . . accelerating
- U H01J 2237/04735 with electrostatic means
- H01J 2237/04737 radio-frequency quadrupole [{\[RFQ\]}](#)
- U H01J 2237/25 . Tubes for localised analysis using electron or ion beams
- U H01J 2237/2505 . . characterised by their application
- U H01J 2237/2516 . . . Secondary particles mass or energy spectrometry
- H01J 2237/2527 Ions [{\[SIMS\]}](#)
- H01J 2237/2533 Neutrals [{\[SNMS\]}](#)
- H01J 2237/2538 . . . Low energy electron microscopy [{\[LEEM\]}](#)
- H01J 2237/2544 Diffraction [{\[LEED\]}](#)
- H01J 2237/255 Reflection diffraction [{\[RHEED\]}](#)
- U H01J 2237/30 . Electron or ion beam tubes for processing objects
- U H01J 2237/304 . . Controlling tubes
- U H01J 2237/30405 . . . Details

- H01J 2237/30411 using digital signal processors ~~{[DSP]}~~
- U H01J 2329/00 Electron emission display panels, e.g. field emission display panels**
- U H01J 2329/02 . Electrodes other than control electrodes
- U H01J 2329/04 . . Cathode electrodes
- U H01J 2329/0407 . . . Field emission cathodes
- U H01J 2329/0439 characterised by the emitter material
- U H01J 2329/0444 Carbon types
- H01J 2329/046 Diamond-like carbon ~~{[DLC]}~~
- U H01J 2329/0481 . . . Cold cathodes having an electric field perpendicular to the surface thereof
([H01J 2329/0407](#) - [H01J 2329/0478](#) take precedence)
- H01J 2329/0484 Metal-Insulator-Metal ~~{[MIM]}~~ emission type cathodes

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~~; *magnets, inductors {in general}*, *transformers H01F*; capacitors in general [H01G](#); electrolytic devices [H01G 9/00](#); batteries, accumulators [H01M](#); waveguides, resonators or lines of the waveguide type [H01P](#); line connectors, current collectors [H01R](#); stimulated emission devices [H01S](#); electromechanical resonators [H03H](#); loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#); electric light sources in general [H05B](#); printed circuits, hybrid circuits, casings or constructional details of electric apparatus, manufacture of assemblages of electrical components [H05K](#); use of semiconductor devices in circuits having a particular application, see the subclass for the application)

NOTES

1. This subclass covers electric solid state devices which are not provided for in any other subclass and details thereof. This includes:

- semiconductor devices adapted for rectifying, amplifying, oscillating or switching;
- semiconductor devices sensitive to radiation;
- electric solid state devices using thermoelectric, superconductive, piezoelectric, electrostrictive, magnetostrictive, galvano-magnetic or bulk negative resistance effects and integrated circuit devices.

Also covered by this subclass are photo-resistors, magnetic field dependent resistors, field effect resistors, capacitors with potential-jump barrier, resistors with potential-jump barrier or surface barrier, incoherent light emitting diodes, electromechanical solid state transducers and thin-film or thick-film circuits. Furthermore, it provides for processes and apparatus adapted for the manufacture or treatment of such devices, except where such processes relate to single step processes for which provision exists elsewhere.

2. In this subclass:

- The expression "solid state body" refers to the body of material within which, or at the surface of which, the physical effects characteristic of the device occur. In thermoelectric devices it includes all materials in the current path.
Regions in or on the body of the device (other than the solid state body itself), which exert an influence on the solid state body electrically, are considered to be "electrodes" whether or not an external electrical connection is made thereto. {Electrodes are often referred to as "contacts" in the literature.} An electrode may include several portions and the term includes metallic regions which exert influence on the solid state

body through an insulating region, (e.g. capacitive coupling) and inductive coupling arrangements to the body. The dielectric region in a capacitive arrangement is regarded as part of the electrode. In arrangements including several portions only those portions which exert an influence on the solid state body by virtue of their shape, size or disposition or the material of which they are formed are considered to be part of the electrode. The other portions are considered to be "arrangements for conducting electric current to or from the solid state body" or "interconnections between solid state components formed in or on a common substrate", i.e. leads.

- The word "device" refers to an electric circuit element; where an electric circuit element is one of a plurality or elements formed in or on a common substrate it is referred to as a "component".
- A "complete device" is a device in its fully assembled state which may or may not require further treatment, e.g. electro-forming, before it is ready for use but which does not require the addition of further structural units.
- The word "parts" includes all structural units which are included in a complete device.
- A "container" is an enclosure forming part of the complete device and is essentially a solid construction in which the body of the device is placed, or which is formed around the body without forming an intimate layer thereon. An enclosure which consists of one or more layers formed on the body and in intimate contact therewith is referred to as an "encapsulation".
- "Integrated circuit" is a device where all components, e.g. diodes, resistors, are built up on a common substrate and form the device including interconnections between the components.

3. "Integration processes" are processes for the manufacture of at least two different components where the process is especially adapted to their integration, e.g. to take advantage of it or to reduce their manufacturing cost. Example: in a CMOS process, the same ion implant dopes the p-MOS gate and the n-MNOS source and drain.

Consequently, a process for the manufacture of a component per se is not considered as an integration process, even though that component will be part of an integrated circuit.

"Assembly" of a device is the building up of the device from its component constructional units and includes the provision of fillings in containers.

When referring to the periodic table of the elements, either the new IUPAC notation, i.e. numbering system from 1 to 18, or the previous IUPAC form may be used to indicate an element group, e.g. group IV elements according to the previous IUPAC form correspond to group 14 elements according to the new notation

WARNINGS

1. The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups
[H01L 21/301](#) covered by [H01L 21/30](#)
[H01L 21/328](#) covered by [H01L 29/66075](#)[H01L 21/329](#) covered by [H01L 29/66083](#)[H01L 21/33](#) covered by [H01L 29/66227](#)[H01L 21/331](#) covered by [H01L 29/66234](#)[H01L 21/332](#) covered by [H01L 29/66363](#)[H01L 21/334](#) covered by [H01L 29/66075](#)[H01L 21/335](#) covered by [H01L 29/66409](#)[H01L 21/336](#) covered by [H01L 29/66477](#)[H01L 21/337](#) covered by [H01L 29/66893](#)[H01L 21/338](#) covered by [H01L 29/66848](#)[H01L 21/339](#) covered by [H01L 29/66946](#)[H01L 21/58](#) covered by [H01L 24/80](#)
[H01L 21/8239](#) covered by [H01L 27/1052](#)[H01L 21/60](#) covered by [H01L 24/80](#)
[H01L 21/66](#) covered by [H01L 22/34](#)[H01L 21/603](#) covered by [H01L 24/80](#)
[H01L 21/607](#) covered by [H01L 24/80](#)
[H01L 21/8242](#) covered by [H01L 27/10844](#)

[H01L 21/8244](#) covered by [H01L 27/11](#)[H01L 21/8246](#) covered by
[H01L 27/112](#)[H01L 21/8247](#) covered by [H01L 27/11517](#)[H01L 21/98](#) covered by
[H01L 25/50](#)

[H01L 29/38](#) covered by [H01L 29/04](#) to [H01L 29/365](#)

[H01L 29/96](#) covered by [H01L 29/68](#) to [H01L 29/945](#)[H01L 51/30](#) covered by
[H01L 51/0032](#)

[H01L 51/40](#) covered by [H01L 51/0001](#)

[H01L 51/46](#) covered by [H01L 51/0032](#)

[H01L 51/48](#) covered by [H01L 51/0001](#)

[H01L 51/54](#) covered by [H01L 51/0032](#)

2. Groups [H01L 23/562](#) to [H01L 23/576](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 23/562](#) - [H01L 23/564](#) : [H01L 23/00](#) - [H01L 23/57](#) : [H01L 23/58](#)

3. Groups [H01L 22/00](#) to [H01L 22/34](#) do not correspond to a former or current IPC group. Concordance CPC : IPC for these groups is as follows: - [H01L 22/00](#) - [H01L 22/34](#) : [H01L 21/66](#)

4. Groups [H01L 24/00](#) to [H01L 24/98](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 24/00](#) - [H01L 24/98](#) : [H01L 23/00](#)

5. Group [H01L 25/50](#) does not correspond to a former or current IPC group. Concordance CPC : IPC for this group is as follows: - [H01L 25/50](#) : [H01L 21/98](#)

6. Groups [H01L 28/00](#) - [H01L 28/92](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H01L 28/00](#) - [H01L 28/92](#) : [H01L 49/02](#)

U H01L 21/00

Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof ({testing or measuring during manufacture or treatment, or reliability measurements [H01L 22/00](#) ; multistep manufacturing processes for passive two-terminal components without a potential-jump or surface barrier for integrated circuits [H01L 28/00](#) ; }processes or apparatus peculiar to the manufacture or treatment of devices provided for in groups [H01L 31/00](#) to [H01L 51/00](#) or of parts thereof, see these groups; single-step processes covered by other subclasses, see the relevant subclasses, e.g. [C23C](#), [C30B](#); photomechanical production of textured or patterned surfaces, materials or originals therefor, apparatus specially adapted therefor, in general [G03F](#))

U H01L 21/02

· Manufacture or treatment of semiconductor devices or of parts thereof

U H01L 21/02104

· · {Forming layers (deposition in general [C23C](#); crystal growth in general [C30B](#))}

WARNING

Group [H01L 21/02104](#) and subgroups are not complete pending reorganisation. See also groups [H01L 21/20](#) , [H01L 21/36](#) , [H01L 21/06](#) , [H01L 21/16](#) and subgroups

U H01L 21/02107

· · · {Forming insulating materials on a substrate}

WARNING

This group and subgroups are not complete pending the completion of a reclassification; see also [H01L 21/312](#) , [H01L 21/314](#) , [H01L 21/316](#) , and [H01L 21/318](#) and subgroups thereof

U H01L 21/02225

· · · · {characterised by the process for the formation of the insulating layer}

U H01L 21/02226

· · · · · {formation by a deposition process (per se [C23C](#))}

- U H01L 21/02263 {deposition from the gas or vapour phase}
- NOTE
This group and subgroups also cover deposition methods in which the gas or vapour is produced by physical means, e.g. ablation from targets or heating of source material
- H01L 21/02269 {deposition by thermal evaporation; ~~H01L 21/02293 takes precedence~~; ~~H01L 21/02293 takes precedence~~}
- NOTE
Subject matter relating to molecular beam epitaxy is classified in this group
- U H01L 21/02271 {deposition by decomposition or reaction of gaseous or vapour phase compounds, i.e. chemical vapour deposition ([H01L 21/02266](#) takes precedence)}
- H01L 21/02274 {in the presence of a plasma (~~PECVD~~)}
- U H01L 21/02296 {characterised by the treatment performed before or after the formation of the layer ([H01L 21/02227](#) and subgroups take precedence)}
- NOTE
This group and subgroups only cover processes which are directly linked to the layer formation; routine anneals, i.e. thermal treatment without further features like a special atmosphere, presence of a plasma, thermally induced chemical reactions, change of phase (crystal structure) etc. are not classified here; for cleaning see [H01L 21/02041](#) and subgroups; for etching processes see [H01L 21/311](#) and subgroups; for planarization processes see [H01L 21/31051](#) and subgroups; for processes to repair etch damage see [H01L 21/3105](#) and subgroups
- U H01L 21/02318 {post-treatment}
- NOTE
This group only covers processes that are part of the layer formation; treatments which are performed after completion of the insulating layer are covered by [H01L 21/3105](#) and subgroups
- H01L 21/02321 {introduction of substances into an already existing insulating layer (~~H01L 21/02227 and subgroups take precedence~~); ~~H01L 21/02227 and subgroups take precedence~~}
- NOTE
processes like the introduction of phosphorus into silicon oxide by diffusion, or doping of an already existing insulating layer are covered by this group and subgroups; for the method of introduction, see [H01L 21/02337](#) , [H01L 21/02343](#) , [H01L 21/02345](#) and subgroups
- H01L 21/02334 {in-situ cleaning after layer formation, e.g. removing process residues (~~cleaning compositions per se C30D~~; ~~cleaning in general B08B~~)}
- NOTE
Subject matter relating to the cleaning processes for semiconductor devices in general is covered by [H01L 21/02041](#) and subgroups
- H01L 21/027 Making masks on semiconductor bodies for further photolithographic processing not provided for in group [H01L 21/18](#) or [H01L 21/34](#) {(photographic masks or originals per se [G03F 1/00](#) ; registration or positioning of photographic masks or originals [G03F 9/00](#) ; photographic cameras [G03B](#); control of position [G05D 3/00](#))}

- 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](#)}}
- U H01L 21/18 . . . the devices having semiconductor bodies comprising elements of the fourth group of the Periodic System or AllIBV compounds with or without impurities, e.g. doping materials {([H01L 21/041](#) to [H01L 21/0425](#) , [H01L 21/045](#) to [H01L 21/048](#) take precedence)}

NOTE

This group covers also processes and apparatus which, by using the appropriate technology, are clearly suitable for manufacture or treatment of devices whose bodies comprise elements of the fourth group of the Periodic System or AllIBV compounds, even if the material used is not explicitly specified.

- U H01L 21/22 . . . Diffusion of impurity materials, e.g. doping materials, electrode materials, into or out of a semiconductor body, or between semiconductor regions; {Interactions between two or more impurities; Redistribution of impurities}
- U H01L 21/30 . . . Treatment of semiconductor bodies using processes or apparatus not provided for in groups [H01L 21/20](#) to [H01L 21/26](#)(manufacture of electrodes thereon [H01L 21/28](#))
- U H01L 21/31 . . . 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 21/314 . . . Inorganic layers ([H01L 21/3105](#) , [H01L 21/32](#) take precedence)

WARNING

This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof

- H01L 21/3141 . . . {Deposition using atomic layer deposition techniques (~~[ALD]~~)}
- U H01L 21/316 . . . composed of oxides or glassy oxides or oxide based glass

WARNING

This group and subgroups are no longer used for the classification of new documents as from May 1, 2011. The backlog of this group is being continuously reclassified to [H01L 21/02107](#) and subgroups thereof

- U H01L 21/31604 . . . {Deposition from a gas or vapour ([H01L 21/31691](#) , [H01L 21/31695](#) take precedence)}
- H01L 21/31608 . . . {Deposition of SiO₂([H01L 21/31625](#) , [H01L 21/31629](#) and [H01L 21/31633](#) take precedence)}
- U H01L 21/3205 . . . Deposition of non-insulating-, e.g. conductive- or resistive-, layers on insulating layers; After-treatment of these layers (manufacture of electrodes [H01L 21/28](#))
- U H01L 21/321 . . . After treatment
- U H01L 21/32115 . . . {Planarisation}
- H01L 21/3212 . . . {by chemical mechanical polishing (~~[CMP]~~)}
- H01L 21/34 . . . the devices having semiconductor bodies not provided for in groups {[H01L 21/0405](#) , [H01L 21/0445](#) } , [H01L 21/06](#) , [H01L 21/16](#) and [H01L 21/18](#) with or without impurities, e.g. doping materials

- H01L 21/50
- • • Assembly of semiconductor devices using processes or apparatus not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#), {e.g. sealing of a cap to a base of a container}
- NOTE
Arrangements for connecting or disconnecting semiconductor or other solid state bodies, or methods related thereto, other than those arrangements or methods covered by the following subgroups, are covered by [H01L 24/00](#)
- H01L 21/58
- • • {Insulative} mounting semiconductor devices on supports {([H01L 21/563](#), [H01L 23/49513](#) take precedence)}
- WARNING
This group is no longer used for the classification of new documents as from June 1, 2010. The backlog of this group is being continuously reclassified to [H01L 24/80](#) and subgroups
- U H01L 21/67
- Apparatus specially adapted for handling semiconductor or electric solid state devices during manufacture or treatment thereof; Apparatus specially adapted for handling wafers during manufacture or treatment of semiconductor or electric solid state devices or components; {Apparatus not specifically provided for elsewhere (processes per se [H01L 21/30](#), [H01L 21/46](#), [H01L 23/00](#); simple temporary support means, e.g. using adhesives, electric or magnetic means [H01L 21/68](#), [H01L 21/302](#); apparatus for manufacturing arrangements for connecting or disconnecting semiconductor or solid-state bodies and for methods related thereto [H01L 24/74](#) ;)}
- NOTE
In this subgroup the term substrate designates a semiconductor or electric solid state device or component, or a wafer
- U H01L 21/677
- • for conveying, e.g. between different workstations
- U H01L 21/67703
- • • {between different workstations}
- WARNING
This group and subgroups are not complete pending completion of reorganization; see also [H01L 21/677](#)
- H01L 21/67721
- • • • {the substrates to be conveyed not being semiconductor wafers or large planar substrates, e.g. chips, lead frames; ~~H01L 21/6773 takes precedence~~ ([H01L 21/6773 takes precedence](#))}
- 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)
- H01L 21/74
- • • Making of {localized} buried regions, e.g. buried collector layers, internal connections {substrate contacts}
- U H01L 21/76
- • • Making of isolation regions between components
- H01L 21/762
- • • • Dielectric regions, {e.g. EPIC dielectric isolation, LOCOS; Trench refilling techniques, SOI technology, use of channel stoppers}

- H01L 21/7624 {using semiconductor on insulator (~~[SOI]~~) technology ([H01L 21/76297](#) takes precedence; manufacture of integrated circuits on insulating substrates [H01L 21/84](#) ; silicon on sapphire (~~[SOS]~~) technology [H01L 21/86](#))}
- U H01L 21/77 . . Manufacture or treatment of devices consisting of a plurality of solid state components or integrated circuits formed in, or on, a common substrate
- NOTE**
Integration processes for the manufacture of devices of the type classified in [H01L 27/14](#) to [H01L 27/32](#) are not classified in this group and its sub-groups. Instead, as they are peculiar to said devices, they are classified together with the devices Multistep processes for manufacturing memory structures in general using field effect technology are covered by [H01L 27/1052](#); Multistep processes for manufacturing dynamic random access memory structures are covered by [H01L 27/10844](#); Multistep processes for manufacturing static random access memory structures are covered by [H01L 27/11](#) ; Multistep processes for manufacturing read-only memory structures are covered by [H01L 27/112](#) ; Multistep processes for manufacturing electrically programmable read-only memory structures are covered by [H01L 27/115](#)
- U H01L 21/78 . . . with subsequent division of the substrate into plural individual devices (cutting to change the surface-physical characteristics or shape of semiconductor bodies [H01L 21/304](#))
- U H01L 21/82 to produce devices, e.g. integrated circuits, each consisting of a plurality of components
- U H01L 21/822 the substrate being a semiconductor, using silicon technology ([H01L 21/8258](#) takes precedence)
- U H01L 21/8232 Field-effect technology
- H01L 21/8234 MIS technology, {, i.e. integration processes of field effect transistors of the conductor-insulator-semiconductor type}
- H01L 21/823493 {with a particular manufacturing method of the wells or tubs, e.g. twin tubs, high energy well implants, buried implanted layers for lateral isolation (~~[BILLI]~~)}
- U H01L 21/8238 Complementary field-effect transistors, e.g. CMOS
- H01L 21/823892 {with a particular manufacturing method of the wells or tubs, e.g. twin tubs, high energy well implants, buried implanted layers for lateral isolation (~~[BILLI]~~)}
- H01L 21/8256 the substrate being a semiconductor, using technologies not covered by one of groups {[H01L 21/8206](#) , [H01L 21/8213](#) } , [H01L 21/822](#) , [H01L 21/8252](#) and [H01L 21/8254](#)([H01L 21/8258](#) takes precedence)
- H01L 21/8258 the substrate being a semiconductor, using a combination of technologies covered by {[H01L 21/8206](#) , [H01L 21/8213](#) } , [H01L 21/822](#) , [H01L 21/8252](#) , [H01L 21/8254](#) or [H01L 21/8256](#)
- U H01L 23/00** **Details of semiconductor or other solid state devices ([H01L 25/00](#) takes precedence; { structural arrangements for testing or measuring during manufacture or treatment, or for reliability measurements [H01L 22/00](#) ; arrangements for connecting or disconnecting semiconductor or solid-state bodies, or methods related thereto [H01L 24/00](#) ; finger print sensors [G06K 9/00006](#)})**

NOTE

This group does not cover:

- details of semiconductor bodies or of electrodes of devices provided for in group [H01L 29/00](#) , which details are covered by that group;

- details peculiar to devices provided for in a single main group of groups [H01L 31/00](#) to [H01L 51/00](#) , which details are covered by those groups.
- H01L 23/02
- Containers; Seals ([H01L 23/12](#) , [H01L 23/34](#) , [H01L 23/48](#) , [H01L 23/552](#) , [H01L 23/66](#)) take precedence; { for memories [G11C](#)}
- U H01L 23/04
- • characterised by the shape {of the container or parts, e.g. caps, walls}
- H01L 23/053
- • • the container being a hollow construction and having an insulating {or insulated} base as a mounting for the semiconductor body
- U H01L 23/16
- Fillings or auxiliary members in containers {or encapsulations}, e.g. centering rings ([H01L 23/42](#) , [H01L 23/552](#) take precedence)
- U H01L 23/18
- • Fillings characterised by the material, its physical or chemical properties, or its arrangement within the complete device
- NOTE
Group [H01L 23/26](#) takes precedence over groups [H01L 23/20](#) to [H01L 23/24](#)
- H01L 23/26
- • • including materials for absorbing or reacting with moisture or other undesired substances, {e.g. getters}
- 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](#)})
- U H01L 23/34
- Arrangements for cooling, heating, ventilating or temperature compensation; {Temperature sensing arrangements (thermal treatment apparatus [H01L 21/00](#))}
- H01L 23/42
- • Fillings or auxiliary members in containers {or encapsulations} selected or arranged to facilitate heating or cooling ({heating [H01L 23/345](#)} ; characterised by selection of materials for the device [H01L 23/373](#))
- H01L 23/433
- • • Auxiliary members {in containers} characterised by their shape, e.g. pistons
- 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](#)
- H01L 23/488
- • consisting of soldered {or bonded} constructions {(bump connectors [H01L 24/01](#))}
- H01L 23/498
- • • Leads, {i.e. metallisations or lead-frames} on insulating substrates, {e.g. chip carriers (shape of the substrate [H01L 23/13](#))}
- U H01L 23/49811
- • • • {Additional leads joined to the metallisation on the insulating substrate, e.g. pins, bumps, wires, flat leads ([H01L 23/49827](#) takes precedence)}
- H01L 23/49816
- • • • • {Spherical bumps on the substrate for external connection, e.g. ball grid arrays (~~BGA~~)}
- H01L 23/50
- • for integrated circuit devices, {e.g. power bus, number of leads}([H01L 23/482](#) to [H01L 23/498](#) take precedence)
- 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](#))}
- U H01L 23/522
- • including external interconnections consisting of a multilayer structure of conductive and insulating layers inseparably formed on the semiconductor body
- H01L 23/528
- • • {Geometry or} layout of the interconnection structure {([H01L 27/0207](#) takes precedence; algorithms [G06F 17/50](#))}

- H01L 23/544
- Marks applied to semiconductor devices {or parts}, e.g. registration marks, {alignment structures, wafer maps (test patterns for characterising or monitoring manufacturing processes [H01L 22/00](#))}
- NOTE**
When classifying in group [H01L 23/544](#), details are to be further indexed by using the indexing codes chosen from [H01L 2223/544](#) and subgroups
- H01L 23/58
- Structural electrical arrangements for semiconductor devices not otherwise provided for, {e.g. in combination with batteries ([H01L 23/49593](#), [H01L 23/49596](#) take precedence)}
- H01L 25/00**
- Assemblies consisting of a plurality of individual semiconductor or other solid state devices {; Multistep manufacturing processes thereof} {lead frames with assemblies of semiconductor devices thereon [H01L 23/49575](#); assembling semiconductor devices using processes or apparatus not provided for in a single one of the subgroups [H01L 21/06](#) to [H01L 21/326](#), e.g. sealing of a cap to a base of a container, [H01L 21/50](#);} devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#); photovoltaic modules or arrays of photovoltaic cells [H01L 31/042](#) {, [H01G 9/20](#))}**
- H01L 25/18
- the devices being of types provided for in two or more different subgroups of the same main group of groups [H01L 27/00](#) to [H01L 51/00](#) {(comprising devices provided for in [H01L 27/144](#) and subgroups, 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](#) to [H01L 51/00](#); details thereof [H01L 23/00](#), [H01L 29/00](#) to [H01L 51/00](#); assemblies consisting of a plurality of individual solid state devices [H01L 25/00](#); assemblies of electrical components in general [H05K](#))**
- NOTE**
In this group, in the absence of an indication to the contrary, classification is made in the last appropriate place.
- 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 27/04**
- • 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
- H01L 27/1057
- • • • {comprising charge coupled devices ~~{/CCD}~~ or charge injection devices ~~{/CID}~~}
- 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
- H01L 27/14679
 - • • • {Junction field effect transistor ([JFET](#)) imagers; static induction transistor ([SIT](#)) imagers}
- H01L 27/24
 - including solid state components for rectifying, amplifying or switching without a potential-jump barrier or surface barrier, {e.g. resistance switching non-volatile memory structures}

WARNING
Groups [H01L 27/2409](#) to [H01L 27/249](#) are not complete pending reclassification; see provisionally also group [H01L 27/24](#)
- U H01L 27/28
 - including components using organic materials as the active part, or using a combination of organic materials with other materials as the active part
- H01L 27/32
 - • with components specially adapted for light emission, e.g. flat-panel displays using organic light-emitting diodes ([OLED](#)) {(combination of organic light sensitive components with organic light emitting components, e.g. optocoupler [H01L 27/288](#))}
- U H01L 27/3206
 - • • {Multi-colour light emission}
- H01L 27/322
 - • • • {using colour filters or colour changing media ([CCM](#))}
- 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](#) to [H01L 29/51](#) and in groups [H01L 29/66](#) to [H01L 29/94](#) if both of these sets of groups are relevant.
- U H01L 29/02
 - Semiconductor bodies; {Multistep manufacturing processes therefor}
- U H01L 29/06
 - • characterised by their shape; characterised by the shapes, relative sizes, or dispositions of the semiconductor regions; {characterised by the concentration or distribution of impurities within semiconductor regions}
- U H01L 29/0603
 - • • {characterised by particular constructional design considerations, e.g. for preventing surface leakage, for controlling electric field concentration or for internal isolations regions (isolation regions between components [H01L 21/76](#) ; design considerations for integrated circuits [H01L 27/00](#) ; geometrical design considerations for devices [H01L 29/0657](#))}
- U H01L 29/0607
 - • • • {for preventing surface leakage or controlling electric field concentration}
- U H01L 29/0611
 - • • • • {for increasing or controlling the breakdown voltage of reverse biased devices ([H01L 29/0661](#) takes precedence)}
- H01L 29/0615
 - • • • • {by the doping profile or the shape or the arrangement of the PN junction, or with supplementary regions, e.g. junction termination extension ([JTE](#)) (LDD or drain offset regions [H01L 29/7833](#))}

- H01L 29/063 {Reduced surface field (~~/RESURF~~) pn-junction structures}
- U H01L 29/12 . . characterised by the materials of which they are formed
- U H01L 29/15 . . . Structures with periodic or quasi periodic potential variation, e.g. multiple quantum wells, superlattices (such structures applied for the control of light [G02F 1/017](#) , applied in semiconductor lasers [H01S 5/34](#))
- NOTE**
Group [H01L 29/15](#) takes precedence over groups [H01L 29/16](#) to [H01L 29/26](#) .
- H01L 29/158 {Structures without potential periodicity in a direction perpendicular to a major surface of the substrate, i.e. vertical direction, e.g. lateral superlattices, lateral surface superlattices (~~/LSS~~)}
- U H01L 29/16 . . . including, apart from doping materials or other impurities, only elements of the fourth group of the Periodic System in uncombined form {(including SiC [H01L 29/24](#))}
- U H01L 29/161 including two or more of the elements provided for in group [H01L 29/16](#) , {e.g. alloys ([H01L 29/1604](#) takes precedence)}
- H01L 29/165 in different semiconductor regions, {e.g. heterojunctions}
- U H01L 29/20 . . . including, apart from doping materials or other impurities, only AIIIBV compounds
- H01L 29/201 including two or more compounds, {e.g. alloys ([H01L 29/2006](#) takes precedence)}
- H01L 29/205 in different semiconductor regions, {e.g. heterojunctions}
- U H01L 29/22 . . . including, apart from doping materials or other impurities, only AIIIBVI compounds
- H01L 29/221 including two or more compounds, {e.g. alloys ([H01L 29/2206](#) takes precedence)}
- H01L 29/225 in different semiconductor regions, {e.g. heterojunctions}
- U H01L 29/24 . . . including, apart from doping materials or other impurities, only semiconductor materials not provided for in groups [H01L 29/16](#) , [H01L 29/18](#) , [H01L 29/20](#) , [H01L 29/22](#) (including organic materials [H01L 51/00](#))
- H01L 29/242 {AIBVI or AIBVII compounds, e.g. Cu_2O , Cu I ([H01L 29/247](#) takes precedence)}
- H01L 29/26 . . . including, apart from doping materials or other impurities, elements provided for in two or more of the groups [H01L 29/16](#) , [H01L 29/18](#) , [H01L 29/20](#) , [H01L 29/22](#) , [H01L 29/24](#) , {e.g. alloys}
- H01L 29/267 in different semiconductor regions, {e.g. heterojunctions ([H01L 29/263](#) takes precedence)}
- U H01L 29/40 . . Electrodes; {Multistep manufacturing processes therefor}
- 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 covers also devices using any other conductor material in place of metal
- H01L 29/4966 {the conductor material next to the insulator being a composite material, e.g. organic material, TiN, MoSi_2 ([H01L 29/4908](#) , [H01L 29/4983](#) take precedence)}
- 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 29/70
 - • • Bipolar devices
- U H01L 29/72
 - • • • Transistor-type devices, i.e. able to continuously respond to applied control signals
- H01L 29/739
 - • • • • controlled by field-effect, {e.g. bipolar static induction transistors [\(BSIT\)](#)} (unijunction transistors [H01L 29/705](#))
- H01L 29/76
 - • • Unipolar devices, {e.g. field effect transistors}
- H01L 29/7606
 - • • • {Transistor-like structures, e.g. hot electron transistor [\(HET\)](#); metal base transistor [\(MBT\)](#)}
- U H01L 29/778
 - • • • with two-dimensional charge carrier gas channel, e.g. HEMT; {with two-dimensional charge-carrier layer formed at a heterojunction interface ([H01L 29/803](#) takes precedence)}
- U H01L 29/78
 - • • • • with field effect produced by an insulated gate {([H01L 29/7725](#) , [H01L 29/775](#) , [H01L 29/778](#) take precedence)}
- H01L 29/786
 - • • • • • Thin film transistors, {i.e. transistors with a channel being at least partly a thin film (transistors having only the source or the drain region on an insulator layer [H01L 29/0653](#) ; thin film FinFETs [H01L 29/785](#))}
- H01L 29/78696
 - • • • • • • {characterised by the structure of the channel, e.g. multichannel, transverse or longitudinal shape, length or width, doping structure, or the overlap or alignment between the channel and the gate, the source or the drain, or the contacting structure of the channel ([H01L 29/78612](#) takes precedence; transistors having a drain offset region or a lightly doped drain [\(LDD\)](#) [H01L 29/78621](#))}
- H01L 29/80
 - • • • • with field effect produced by a PN or other rectifying junction gate, {i.e. potential-jump barrier}
- H01L 29/808
 - • • • • • with a PN junction gate, {e.g. PN homojunction gate ([H01L 29/7725](#) , [H01L 29/775](#) , [H01L 29/778](#) , [H01L 29/806](#) take precedence)}
- 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 31/0248
 - characterised by their semiconductor bodies
- U H01L 31/036
 - • characterised by their crystalline structure or particular orientation of the crystalline planes
- U H01L 31/0392
 - • • including thin films deposited on metallic or insulating substrates; {characterised by specific substrate materials or substrate features or by the presence of intermediate layers, e.g. barrier layers, on the substrate (textured substrates [H01L 31/02366](#))}
- U H01L 31/08
 - in which radiation controls flow of current through the device, e.g. photoresistors

- U H01L 31/10
 - • characterised by at least one potential-jump barrier or surface barrier, e.g. phototransistors
- U H01L 31/101
 - • • Devices sensitive to infra-red, visible or ultra-violet radiation
- U H01L 31/102
 - • • • characterised by only one potential barrier or surface barrier
- U H01L 31/108
 - • • • • the potential barrier being of the Schottky type
- H01L 31/1085
 - • • • • {the devices being of the Metal-Semiconductor-Metal ~~(MSM)~~ Schottky barrier type}
- U H01L 35/00**

Thermo-electric devices comprising a junction of dissimilar materials, i.e. exhibiting Seebeck or Peltier effect with or without other thermo-electric effects or thermomagnetic effects; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof; Details thereof (devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#) ; refrigerating machines using electric or magnetic effects [F25B 21/00](#) ; thermometers using thermoelectric or thermomagnetic elements [G01K 7/00](#) ; obtaining energy from radioactive sources [G21H](#))
- U H01L 35/02
 - Details
- U H01L 35/04
 - • Structural details of the junction; Connection of leads
- H01L 35/08
 - • • non-detachable, e.g. cemented, sintered, soldered, {e.g. thin films}
- U H01L 35/12
 - Selection of the material for the legs of the junction
- U H01L 35/14
 - • using inorganic compositions
- H01L 35/18
 - • • comprising arsenic or antimony or bismuth ([H01L 35/16](#) takes precedence), {e.g. IIIIV compounds}
- U H01L 39/00**

Devices using superconductivity; Processes or apparatus peculiar to the manufacture or treatment thereof or of parts thereof (devices consisting of a plurality of solid state components formed in or on a common substrate [H01L 27/00](#) ; { light detection [G01J](#) , [G02F 2/00](#) ; application to memories [G11C 11/44](#) , [G11C 15/00](#) , [G11C 19/32](#) } ; superconducting conductors cables or transmission lines [H01B 12/00](#) ; { microwaves [H01P 7/00](#) , [H01P 11/00](#) } ; superconductive coils or windings [H01F](#) ; amplifiers using superconductivity [H03F 19/00](#) ; { impulse generators and logic circuits [H03K 3/38](#) , [H03K 17/92](#) , [H03K 19/195](#) ; lasers [H01S 3/00](#) , [H01S 5/00](#)})

NOTE

In this group, in the absence of an indication to the contrary, an invention is classified in the last appropriate place
- U H01L 39/02
 - Details
- U H01L 39/12
 - • characterised by the material
- U H01L 39/121
 - • • {Organic materials}
- H01L 39/123
 - • • • {Fullerene superconductors, e.g. soccerball-shaped allotrope of carbon, e.g. C₆₀, C₉₄(fullerenes in general [C07C 13/00](#))}
- H01L 39/16
 - Devices switchable between superconductive and normal states, {e.g. switches, current limiters (circuits for current limitation using superconductor elements [H02H 9/023](#))}
- U H01L 39/24
 - Processes or apparatus peculiar to the manufacture or treatment of devices provided for in [H01L 39/00](#) or of parts thereof
- U H01L 39/2419
 - • {the superconducting material comprising copper oxide}
- U H01L 39/2422
 - • • {Processes for depositing or forming superconductor layers}
- H01L 39/2438
 - • • • {by chemical vapour deposition ~~(CVD)~~}
- H01L 39/2441
 - • • • • {by metalloorganic chemical vapour deposition ~~(MOCVD)~~}

- U H01L 51/00** **Solid state devices using organic materials as the active part, or using a combination of organic materials with other materials as the active part; Processes or apparatus specially adapted for the manufacture or treatment of such devices, or of parts thereof (devices consisting of a plurality of components formed in or on a common substrate [H01L 27/28](#) ; thermoelectric devices using organic material [H01L 35/00](#) , [H01L 37/00](#) ; piezoelectric, electrostrictive or magnetostrictive elements using organic material [H01L 41/00](#))**
- U H01L 51/0032** · {Selection of organic semiconducting materials, e.g. organic light sensitive or organic light emitting materials}
- NOTE
This group only covers the selection of organic materials for their electrical or other properties insofar as they are specific for their use in devices covered by the group [H01L 51/00](#) .
For the materials per se, see the relevant subclasses.
Attention is drawn to the following places:
- organic materials in general [C07C](#), [C07D](#), [C07F](#), [C08L](#);
 - organic materials as electrical conductors [H01B 1/12](#) ;
 - organic materials as electrical insulators [H01B 3/18](#)
- U H01L 51/0034** · · {Organic polymers or oligomers (organic macromolecular compounds or compositions per se [C08](#))}
- U H01L 51/0035** · · · {comprising aromatic, heteroaromatic, or aryllic chains, e.g. polyaniline (per se [C08G 73/026](#)), polyphenylene (per se [C08G 61/10](#)), polyphenylene vinylene (per se [C08G 61/02](#))}
- U H01L 51/0036** · · · · {Heteroaromatic compounds comprising sulfur or selenium, e.g. polythiophene (per se [C08G 61/126](#))}
- H01L 51/0037** · · · · · {Polyethylene dioxythiophene (~~PE~~DOT) and derivatives}
- U H01L 51/42** · specially adapted for sensing infra-red radiation, light, electro-magnetic radiation of shorter wavelength or corpuscular radiation and adapted for the conversion of the energy of such radiation into electrical energy or for the control of electrical energy by such radiation {using organic materials as the active part, or using a combination of organic materials with other material as the active part; Multistep processes for their manufacture}
- U H01L 51/4213** · · {Comprising organic semiconductor-inorganic semiconductor hetero-junctions ([H01L 51/4253](#) takes precedence)}
- H01L 51/422** · · · {Majority carrier devices using sensitisation of widebandgap semiconductors, e.g. TiO₂(photoelectrochemical devices with a liquid or solid electrolyte [H01G 9/20](#))}
- H01L 51/50** · specially adapted for light emission, e.g. organic light emitting diodes [OLED] or polymer light emitting devices (~~PLED~~); -(organic semiconductor lasers [H01S 5/36](#) ; { circuit arrangements for OLED or PLED [H05B 33/0896](#) ; control arrangements for organic electroluminescent displays [G09G 3/3208](#))}
- H01L 51/5012** · · {Electroluminescent (~~EL~~) layer}
- H01L 51/5032** · · · {Light emitting electrochemical cells (~~LEC~~), i.e. with mobile ions in the active layer}
- U H01L 2224/00** **Indexing scheme for arrangements for connecting or disconnecting semiconductor or solid-state bodies and methods related thereto as covered by [H01L 24/00](#)**
- U H01L 2224/01** · Means for bonding being attached to, or being formed on, the surface to be connected, e.g. chip-to-package, die-attach, "first-level" interconnects; Manufacturing methods related thereto

- U H01L 2224/34 · · Strap connectors, e.g. copper straps for grounding power devices; Manufacturing methods related thereto
- U H01L 2224/36 · · · Structure, shape, material or disposition of the strap connectors prior to the connecting process
- U H01L 2224/37 · · · · of an individual strap connector
- U H01L 2224/37001 · · · · · Core members of the connector
- U H01L 2224/37099 · · · · · Material
- U H01L 2224/37195 · · · · · · with a principal constituent of the material being a gas not provided for in groups ~~T01L224/44100~~[H01L 2224/371](#) to ~~T01L224/44191~~
[H01L 2224/37191](#)
- U H01L 2224/80 · Methods for connecting semiconductor or other solid state bodies using means for bonding being attached to, or being formed on, the surface to be connected
- U H01L 2224/80001 · · by connecting a bonding area directly to another bonding area, i.e. connectorless bonding, e.g. bumpless bonding
- U H01L 2224/809 · · · with the bonding area not providing any mechanical bonding
- U H01L 2224/80901 · · · · Pressing a bonding area against another bonding area by means of a further bonding area or connector (detachable pressure contact ~~H01L224/72~~[H01L 2224/72](#))
- U H01L 2224/81 · · using a bump connector
- U H01L 2224/819 · · · with the bump connector not providing any mechanical bonding
- U H01L 2224/81901 · · · · Pressing the bump connector against the bonding areas by means of another connector (detachable pressure contact ~~H01L224/72~~
[H01L 2224/72](#))
- U H01L 2224/84 · · using a strap connector
- U H01L 2224/848 · · · Bonding techniques
- U H01L 2224/84899 · · · · Combinations of bonding methods provided for in at least two different groups from [H01L 2224/848](#) to ~~T01L224/84896~~[H01L 2224/84898](#)
- U H01L 2224/85 · · using a wire connector
- U H01L 2224/85009 · · · Pre-treatment of the connector or the bonding area
- U H01L 2224/8503 · · · · Reshaping, e.g. forming the ball or the wedge of the wire connector
- U H01L 2224/85035 · · · · · by heating means, e.g. "free-air-ball"
- U H01L 2224/85045 · · · · · · using a corona discharge, e.g. electronic flame off (~~{EFO}~~)

Project: N/A (H01M)

- U H01M 6/00 Primary cells; Manufacture thereof**
NOTE
In this group, primary cells are electrochemical generators in which the cell energy is present in chemical form and is not regenerated.
- U H01M 6/14 · Cells with non-aqueous electrolyte ~~{(H01M 10/05 takes precedence)}~~
- U H01M 6/16 · · with organic electrolyte ([H01M 6/18](#) , ~~{H01M 10/05 take precedence}~~)
- U H01M 8/00 Fuel cells; Manufacture thereof**
NOTE
Fuel cells are electrochemical generators wherein the reactants are supplied from outside
- U H01M 8/08 · Fuel cells with aqueous electrolytes
- U H01M 8/086 · · {Phosphoric acid fuel cells (~~{PAFC}~~)}
- U H01M 8/10 · Fuel cells with solid electrolytes

- U H01M 8/1002
 - • {with anode and cathode gas-diffusion electrodes or electrode layers, e.g. using gaseous or vaporised reactants ([H01M 8/12](#) takes precedence)}
- U H01M 8/1004
 - • • {characterised by the electrode/electrolyte combination}
- H01M 8/1006
 - • • • {Undulated, corrugated, curved or wave-shaped membrane-electrode-assemblies (~~{/MEA}~~)}
- U H01M 8/1009
 - • {with one of the reactants being liquid, solid or liquid-charged ([H01M 8/12](#) takes precedence)}
- H01M 8/1011
 - • • {Direct methanol fuel cells (~~{/DMFC}~~)}
- H01M 8/1013
 - • • {Other direct alcohol fuel cells (~~{/DAFC}~~)}
- U H01M 8/12
 - • operating at high temperature, e.g. with stabilised ZrO₂ electrolyte
- U H01M 8/1206
 - • • {with the anode and the cathode in the form of gas diffusion electrodes}
- U H01M 8/1213
 - • • • {characterised by the electrodes, the electrode/electrolyte combination or the supporting material}
- H01M 8/122
 - • • • • {Undulated, corrugated, curved or wave-shaped membrane electrode assemblies (~~{/MEA}~~)}
- U H01M 8/14
 - Fuel cells with fused electrolytes
- H01M 8/146
 - • {Fuel cells with molten hydroxide (~~molten hydroxide electrolyte T01M300/B6H~~ molten hydroxide electrolyte [H01M 2300/006](#))}
- U H01M 14/00

Electrochemical current or voltage generators not provided for in groups [H01M 6/00](#) - [H01M 12/00](#); Manufacture thereof
- H01M 14/005
 - {Photoelectrochemical storage cells (light sensitive devices [H01G 9/20](#), semiconductors sensitive to light ~~H01L131/00~~[H01L 31/00](#))}

Project: N/A (H01P)

- U H01P 3/00

Waveguides; Transmission lines of the waveguide type
- U H01P 3/02
 - with two longitudinal conductors
- H01P 3/026
 - • {Coplanar striplines (~~{/CPS}~~)}
- H01P 3/06
 - • Coaxial lines (not suitable for handling frequencies considerably beyond the audio range, {coaxial cables in general} [H01B 11/18](#))
- NOTE

This subgroup is only used for documents disclosing typical HF-features of coaxial cables, e.g. propagation of non-TEM-modes, multimoding, oversized coaxial cables, particular cross-section adapted for HF-propagation

Project: N/A (H01Q)

- U H01Q 1/00

Details of, or arrangements associated with, aerials (arrangements for varying orientation of directional pattern [H01Q 3/00](#))

NOTES

 1. This group covers only:
 - structural details or features of aerials not dependent on electric operation;
 - structural details or features applicable to more than one type of aerial or aerial element.
 2. Structural details or features described with reference to, or clearly applicable only to, aerials or aerial elements of a particular type are classified in the group appropriate to that type.
- U H01Q 1/02
 - Arrangements for de-icing; Arrangements for drying-out; {Arrangements for cooling; Arrangements for preventing corrosion (radomes [H01Q 1/42](#))}

- U H01Q 1/08
 - Means for collapsing aerials or parts thereof; {Collapsible aerials} ({collapsible supports [H01Q 1/1235](#)}; collapsible loop aerials [H01Q 7/02](#); { collapsible helical aerials [H01Q 11/086](#); collapsible reflecting surfaces [H01Q 15/161](#), [H01Q 15/20](#)}; collapsible H-aerials or Yagi aerials [H01Q 19/04](#))
- U H01Q 1/12
 - Supports; Mounting means ({for the purpose of scanning [H01Q 3/00](#); mounting structure for reflecting surfaces [H01Q 15/14](#); Towers, masts, or poles [E04H 12/00](#)}; supporting conductors in general [H02G 7/00](#))
- U H01Q 1/22
 - • by structural association with other equipment or articles ({portable transceivers [H04B 1/3827](#))}
- H01Q 1/2208
 - • • {associated with components used in interrogation type services, i.e. in systems for information exchange between an interrogator/reader and a tag/transponder, e.g. in Radio Frequency Identification ([RFID](#)) systems ([G06K 7/00](#) and [G06K 19/00](#) take precedence)}
- H01Q 1/2291
 - • • {used in bluetooth or WI-FI devices of Wireless Local Area Networks ([WLAN](#))} ([H01Q 1/241](#) takes precedence; WLAN in general [H04W](#))}
- U H01Q 1/36
 - Structural form of radiating elements, e.g. cone, spiral, umbrella; {Particular materials used therewith} ([H01Q 1/08](#), [H01Q 1/14](#) take precedence)
- U H01Q 1/44
 - using equipment having another main function to serve additionally as an aerial; {Means for giving an aerial anaesthetic aspect} ([H01Q 1/28](#) to [H01Q 1/34](#) take precedence)
- U H01Q 3/00**

Arrangements for changing or varying the orientation or the shape of the directional pattern of the waves radiated from an aerial or aerial system {(means for positioning [H01Q 1/125](#))}
- H01Q 3/26
 - varying the relative phase or relative amplitude of energisation between two or more active radiating elements; varying the distribution of energy across a radiating aperture ({[H01Q 3/12](#)}, [H01Q 3/22](#), [H01Q 3/24](#) take precedence; ~~{ use of steered beams for mobile service area coverage [H04Q7/3615](#)~~; { use of steered beams for mobile service area coverage [H04W 16/28](#)})
- H01Q 3/30
 - • varying the {relative} phase {between the radiating elements of an array ([H01Q 3/2605](#), [H01Q 3/2658](#), [H01Q 3/2682](#), [H01Q 3/44](#) take precedence)}
- U H01Q 13/00**

Waveguide horns or mouths; Slot aerials; Leaky-waveguide aerials; Equivalent structures causing radiation along the transmission path of a guided wave {(multimode aerials [H01Q 25/04](#))}
- U H01Q 13/10
 - Resonant slot aerials
- U H01Q 13/18
 - • the slot being backed by, or formed in boundary wall of, a resonant cavity (longitudinally slotted cylinder [H01Q 13/12](#)); {Open cavity antennas}

Project: N/A (H01R)

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 23/00 **Two-part coupling devices having four or more poles, with or without additional protective earth connection; Separate parts thereof**

WARNING

This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 24/00](#) and its subgroups. See also ~~[H01R107/00](#)~~[H01R 2107/00](#) as part of the indexing scheme associated with group [H01R 24/00](#) and its subgroups, relating to the number of poles in a two-part coupling device.

- H01R 23/02
- having parallelly-arranged contacts for sliding engagement with their counter-contacts
- WARNING
- This group and its subgroups is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group and its subgroups is being continuously reclassified to [H01R 24/00](#) and its subgroups. See also [H01R107/00](#)[H01R 2107/00](#) as part of the indexing scheme associated with group [H01R 24/00](#) and its subgroups, relating to the number of poles in a two-part coupling device.
- H01R 23/26
- having concentrically or coaxially arranged contacts
- WARNING
- This group is no longer used for the classification of new documents as from January 01, 2011. The backlog of this group is being continuously reclassified to [H01R 24/38](#) and its subgroups. See also [H01R107/00](#)[H01R 2107/00](#) as part of the indexing scheme associated with group [H01R 24/00](#) and its subgroups, relating to the number of poles in a two-part coupling device.
- H01R 24/00**
- Two-part coupling devices, or either of their cooperating parts, characterised by their overall structure (specially adapted for printed circuits, flat or ribbon cables, or like structures [H01R 12/00](#); specially adapted for supporting apparatus [H01R 33/00](#))**
- NOTE
- In this group, it is desirable to add the indexing codes of groups [H01R101/00](#) [H01R 2101/00](#) to [H01R107/00](#)[H01R 2107/00](#)
- WARNING
- This group and its subgroups are not complete pending reclassification; see also groups [H01R 2201/16](#), [H01R 2201/16](#) and their respective subgroups, and [H01R 23/00](#), [H01R 23/26](#), [H01R 23/27](#)

Project: N/A (H01S)

- U H01S 1/00**
- Lasers, i.e. devices for generation, amplification, modulation, demodulation, or frequency-changing, using stimulated emission, of electromagnetic waves of wavelength longer than that of infra-red waves**
- H01S 1/06
- gaseous, {i.e. beam masers (atomic clocks [G04F 5/14](#) ; circuits using beam masers as a reference frequency for regulating frequency of oscillators [H03L 7/26](#) ; molecular or atomic beam generation [H05H 3/02](#))}
- U H01S 3/00**
- Lasers, i.e. devices for generation, amplification, modulation, demodulation, or frequency-changing, using stimulated emission, of infra-red, visible, or ultra-violet waves ({stimulated Brillouin or Raman effects [H01S 3/30](#)} ; semiconductor lasers [H01S 5/00](#))**
- U H01S 3/05
- Construction or shape of optical resonators; Accomodation of active medium therein; Shape of active medium
- U H01S 3/06
- • Construction or shape of active medium
- U H01S 3/0619
- • • {Coatings, e.g. AR, HR, passivation layer}
- U H01S 3/0621
- • • • {Coatings on the end-faces, e.g. input/output surfaces of the laser light}
- H01S 3/0623
- • • • {Antireflective ~~{[AR]}~~}
- 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](#))}
- H01S 3/0675
 - {Resonators including a grating structure, e.g. distributed Bragg reflectors ~~(/DBR/)~~ or distributed feedback ~~(/DFB/)~~ fibre lasers}
- H01S 3/10
 - . Controlling the intensity, frequency, phase, polarisation or direction of the emitted radiation, e.g. switching, gating, modulating or demodulating (mode locking [H01S 3/1106](#)); controlling of light beams, frequency-changing, non-linear optics, optical logic elements, in general [G02F](#))
- NOTE**
- Group [H01S 3/10007](#) takes precedence over groups [H01S 3/102](#) to [H01S 3/104](#)
- U H01S 3/11
 - . {Pulse generation, e.g. Q-switching, mode locking}
- H01S 3/1127
 - . . . {Q-switching using pulse transmission mode ~~(/PTM/)~~}
- H01S 3/113
 - . . . {Q-switching} using bleachable or solarising media
- H01S 3/115
 - . . . {Q-switching} using electro-optical devices
- H01S 3/117
 - . . . {Q-switching} using acousto-optical devices
- H01S 3/121
 - . . . {Q-switching} using mechanical devices
- 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 3/1655
 - {silicate}
- H01S 3/166
 - {La₃Ga₅SiO₁₄ ~~(/LGS/)~~}
- H01S 3/1661
 - {Y₂SiO₅ ~~(/YSO/)~~}
- U H01S 3/1663
 - {beryllate}
- H01S 3/1665
 - {La₂Be₂O₅ ~~(/BEL/)~~}
- U H01S 3/1671
 - {vanadate, niobate, tantalate}
- H01S 3/1673
 - {YVO₄ ~~(/YVO/)~~}
- U H01S 3/22
 - . . Gases
- U H01S 3/223
 - . . . the active gas being polyatomic, i.e. containing more than one atom ([H01S 3/227](#) takes precedence)
- H01S 3/2232
 - {Carbon dioxide (CO₂) or monoxide ~~(/CO/)~~}
- U H01S 5/00** **Semiconductor lasers {(superluminescent diodes [H01L 33/0045](#))}**
- U H01S 5/02
 - . Structural details or components not essential to laser action
- U H01S 5/028
 - . . Coatings; {Treatment of the laser facets, e.g. etching, passivation layers or reflecting layers}
- H01S 5/04
 - . Processes or apparatus for excitation, e.g. pumping, {e.g. by electron beams} ([H01S 5/06](#) takes precedence)
- U H01S 5/042
 - . . Electrical excitation; {Circuits therefor (discrete or monolithically integrated laser drive components on mountings [H01S 5/0261](#))}
- U H01S 5/06
 - . Arrangements for controlling the laser output parameters, e.g. by operating on the active medium (transmission systems employing light [H04B 10/00](#))
- U H01S 5/062
 - . . by varying the potential of the electrodes ([H01S 5/065](#) takes precedence)
- U H01S 5/06203
 - . . . {Transistor-type lasers ([H01S 5/0608](#) takes precedence)}
- H01S 5/06206
 - {Controlling the frequency of the radiation, e.g. tunable twin-guide lasers ~~(/TTG/)~~}

- U H01S 5/065
 - • Mode locking; Mode suppression; Mode selection; {Self pulsating}
- H01S 5/10
 - Construction or shape of the optical resonator, {e.g. extended or external cavity, coupled cavities, bent-guide, varying width, thickness or composition of the active region (H01S 5/20 takes precedence)}
- H01S 5/1028
 - • {Coupling to elements in the cavity, e.g. coupling to waveguides adjacent the active region, e.g. forward coupled {/DFC}} structures}
- U H01S 5/1032
 - • • {Coupling to elements comprising an optical axis that is not aligned with the optical axis of the active region}
- H01S 5/1035
 - • • • {Forward coupled structures {/DFC}}
- U H01S 5/20
 - Structure or shape of the semi-conductor body to guide the optical wave; {Confining structures perpendicular to the optical axis, e.g. index- or gain-guiding, stripe geometry, broad area lasers, gain tailoring, transverse or lateral reflectors, special cladding structures, MQW barrier reflection layers}
- U H01S 5/22
 - • having a ridge or stripe structure
- H01S 5/2203
 - • • {with a transverse junction stripe {/TJS}} structure}
- U H01S 5/227
 - • • Buried mesa structure; {Striped active layer}
- U H01S 5/2275
 - • • • {mesa created by etching}
- H01S 5/2277
 - • • • • {double channel planar buried heterostructure {/DCPBH}} laser}
- H01S 5/24
 - • having a grooved structure, e.g. V-grooved, {crescent active layer in groove, VSIS laser}
- U H01S 5/30
 - Structure or shape of the active region; Materials used for the active region
- U H01S 5/32
 - • comprising PN junctions, e.g. hetero- or double- heterostructures (H01S 5/34 , H01S 5/36 take precedence)
- H01S 5/323
 - • • in A(III)-B(V) compounds, e.g. AlGaAs-laser, {InP-based laser}
- U 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 (GRINSCHE lasers) (H01S 5/36 takes precedence)
- H01S 5/342
 - • • {containing short period superlattices {/SPS}}
- H01S 5/343
 - • • in A(III)-B(V) compounds, e.g. AlGaAs-laser, {InP-based laser}
- H01S 5/50
 - Amplifier structures not provided for in groups H01S 5/02 to H01S 5/30 (as repeaters in transmission systems H04B10/17 H04B 10/291)

Project: N/A (H02G)

- U H02G 5/00** **Installations of bus-bars**
- U H02G 5/06
 - Totally-enclosed installations, e.g. in metal casings
- U H02G 5/063
 - • {filled with oil or gas}
- H02G 5/065
 - • • {Particle traps (gettering in vacuum switches H01H33/66E1 H01H 33/6683; in discharge or vacuum tubes H01J 7/18 , H01J 19/70)}

Project: N/A (H02J)

- U H02J 3/00** **Circuit arrangements for ac mains or ac distribution networks**
- U H02J 3/18
 - Arrangements for adjusting, eliminating, or compensating reactive power in networks (for adjustment of voltage H02J 3/12; use of Petersen coils H02H 9/08)
- U H02J 3/1807
 - • {using series compensators}
- H02J 3/1814
 - • • {wherein at least one reactive element is actively controlled by a bridge converter, e.g. unified power flow controllers {/UPFC}}
- U H02J 3/1821
 - • {using shunt compensators (H02J 3/1807, H02J 3/1878 take precedence)}

- U H02J 3/1835 · · · {with stepless control}
- U H02J 3/1842 · · · · {wherein at least one reactive element is actively controlled by a bridge converter, e.g. active filters}
- H02J 3/185 · · · · · {wherein such reactive element is purely inductive, e.g. superconductive magnetic energy storage systems ~~(/SMES/)~~}

Project: N/A (H02K)

- 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 7/14 · Structural association with mechanical load, e.g. hand-held machine tool, fan (~~{H02K 7/006 takes precedence;}~~ with fan or impeller for cooling the machine [H02K 9/06](#); for suction cleaners [A47L](#))
- U 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**
- H02K 44/08 · Magnetohydrodynamic ~~(/MHD/)~~ generators

Project: N/A (H02M)

- U H02M 1/00 **Details of apparatus for conversion**
- H02M 1/36 · Means for starting or stoping converters
WARNING
Group [H02M 1/36](#) is not complete, see provisionally also ~~H02M1/00S~~; [H02M 3/00](#) and subgroups, [H02M 7/00](#) and subgroups
- H02M 1/38 · Means for preventing simultaneous conduction of switches
WARNING
Group [H02M 1/38](#) is not complete, see provisionally also ~~H02M1/00P2~~; [H02M 3/337](#) and subgroups, [H02M 7/538](#) and subgroups

Project: N/A (H02N)

- H02N 11/00 **Generators or motors not provided for elsewhere; Alleged perpetua mobilia obtained by electric or magnetic means (by hydrostatic pressure [F03B 17/04](#); { by mechanical means [F03G 7/10](#);} by dynamo-electric means, { including arrangements of permanent magnets interacting with other permanent magnets,} [H02K 53/00](#))**

Project: N/A (H02P)

- U H02P 21/0039 · {not involving the use of rotor position or speed sensors}
- U H02P 21/0046 · · {Stator flux based control}
- H02P 21/005 · · · {Direct torque control ~~(/DTC/)~~ or field acceleration method ~~(/FAM/)~~}

- U H02P 23/00** Arrangements or methods for the control of AC motors characterised by a control method other than vector control (starting [H02P 1/00](#); stopping or slowing [H02P 3/00](#); of two or more motors [H02P 5/00](#); of synchronous motors with electronic commutators [H02P 6/00](#); of DC motors [H02P 7/00](#); of stepping motors [H02P 8/00](#))

NOTE

When classifying in this group, it is desirable to also classify in groups [H02P 25/00](#) to [H02P 27/00](#) if the kind of AC motor, structural details, or the kind of supply voltage are of interest.

- U H02P 23/0036 · {Control strategies related to the functioning of the motor}
 H02P 23/004 · · {Direct torque control ([DTC](#)); Field acceleration method ([FAM](#))}

Project: N/A (H03B)

- U H03B 9/00** Generation of oscillations using transit-time effects {(construction of tube and circuit arrangements not adapted to a particular application [H01J](#) ; construction of the semiconductor devices [H01L](#))}

- U H03B 9/12 · using solid state devices, e.g. Gunn-effect devices
 H03B 2009/126 · · {using impact ionization avalanche transit time ([IMPATT](#)) diodes}

- U H03B 21/00** Generation of oscillations by combining unmodulated signals of different frequencies ([H03B 19/00](#) takes precedence; frequency changing circuits in general [H03D](#))

- U H03B 21/01 · by beating unmodulated signals of different frequencies
 U H03B 21/02 · · by plural beating, i.e. for frequency synthesis; {Beating in combination with multiplication or division of frequency (digital frequency synthesis using a ROM [G06F 1/02](#) ; digital frequency synthesis in general [H03K](#) ; indirect frequency synthesis using a PLL [H03L 7/16](#))}

- U H03B 2200/00** Indexing scheme relating to details of oscillators covered by [H03B](#)

- U H03B 2200/0014 · Structural aspects of oscillators
 H03B 2200/0028 · · based on a monolithic microwave integrated circuit ([MMIC](#))

Project: N/A (H03F)

- U H03F 3/00** Amplifiers with only discharge tubes or only semiconductor devices as amplifying elements

- H03F 3/30 · Single-ended push-pull ([SEPP](#)) amplifiers {(single-ended sense amplifiers [G11C 7/067](#)); Phase-splitters therefor}

Project: N/A (H03G)

- U H03G 1/00** Details of arrangements for controlling amplification {(for arrangements combined with means for generating a controlling signal, or these means per se, see the other main groups of [H03G](#))}

- U H03G 1/0005 · {Circuits characterised by the type of controlling devices operated by a controlling current or voltage signal}
 U H03G 1/0017 · · {the device being at least one of the amplifying solid state elements of the amplifier}
 H03G 1/0023 · · · {in emitter-coupled or cascode amplifiers ([H03GB4FH03G 1/0029](#) takes precedence)}

- U H03G 3/00** Gain control in amplifiers or frequency changers {without distortion of the input signal}(gated amplifiers [H03F 3/72](#) ; peculiar to television receivers [H04N](#))

- U H03G 3/20 · Automatic control ([H03G 3/005](#) takes precedence } ; combined with volume compression or expansion [H03G 7/00](#))
- U H03G 3/22 · · in amplifiers having discharge tubes
- U H03G 3/26 · · · Muting amplifier when no signal is present {or when only weak signals are present, or caused by the presence of noise, e.g. squelch systems}
- U H03G 3/28 · · · · in frequency-modulation receivers; {in angle-modulation receivers}
- U **H03G 11/00** **Limiting amplitude; Limiting rate of change of amplitude; {Clipping in general}**

Project: N/A (H03H)

- U **H03H 3/00** **Apparatus or processes specially adapted for the manufacture of impedance networks, resonating circuits, resonators**
- U H03H 3/007 · for the manufacture of electromechanical resonators or networks
- U H03H 3/013 · · for obtaining desired frequency or temperature coefficient ([H03H 3/0076](#) [H03H 3/04](#) , [H03H 3/10](#) take precedence)
- U **H03H 9/00** **Networks comprising electromechanical or electro-acoustic devices; Electromechanical resonators (making single crystals [C30B](#); selection of materials thereof [H01L](#); piezo-electric, electrostrictive or magnetostrictive devices per se [H01L 41/00](#) ; electromechanical transducers [H04R](#))**
- U H03H 9/02 · Details
- U H03H 9/02535 · · {of surface acoustic wave devices}
- U H03H 9/02637 · · · {Details concerning reflective or coupling arrays}
- U H03H 9/02669 · · · · {Edge reflection structures, i.e. resonating structures without metallic reflectors, e.g. Bleustein-Gulyaev-Shimizu ([BGS](#)), shear horizontal ([SH](#)), shear transverse ([ST](#)), Love waves devices}
- U H03H 9/15 · Constructional features of resonators consisting of piezo-electric or electrostrictive material ([H03H 9/25](#) takes precedence)
- U H03H 9/17 · · having a single resonator (crystal tuning forks [H03H 9/21](#))
- U H03H 9/171 · · · {implemented with thin-film techniques, i.e. of the film bulk acoustic resonator ([FBAR](#)) type}
- U H03H 9/24 · Constructional features of resonators of material which is not piezo-electric, electrostrictive, or magnetostrictive
- U H03H 9/2405 · · {of micro-electro-mechanical resonators}
- U H03H 9/2468 · · · {Tuning fork resonators}
- U H03H 9/2473 · · · · {Double-Ended Tuning Fork ([DETF](#)) resonators}
- U H03H 9/46 · Filters (multiple-port electromechanical filters [H03H 9/70](#))
- U H03H 9/54 · · comprising resonators of piezo-electric or electrostrictive material ([H03H 9/64](#) takes precedence)
- U H03H 9/58 · · · Multiple crystal filters
- U H03H 9/582 · · · · {implemented with thin-film techniques}
- U H03H 9/583 · · · · · {comprising a plurality of piezoelectric layers acoustically coupled}
- U H03H 9/584 · · · · · · {Coupled Resonator Filters ([CFR](#))}
- U H03H 9/585 · · · · · · {Stacked Crystal Filters ([SCF](#))}

U H03H 11/00 Networks using active elements**WARNING**

Group [H03H 11/11](#) does not correspond to former or current IPC groups.
Concordance CPC : IPC for these groups is as follows: - [H03H 11/11](#) - [H03H 11/04](#)

- U H03H 11/02 • Multiple-port networks
- U H03H 11/04 • • Frequency selective two-port networks
- U H03H 11/0422 • • • {using transconductance amplifiers, e.g. gmC filters}
- H03H 11/0427 • • • • {Filters using a single transconductance amplifier; Filters derived from a single transconductor filter, e.g. by element substitution, cascading, parallel connection ([H03H 11/0433](#) to ~~H03H11/C10~~[H03H 11/0472](#) take precedence)}

Project: N/A (H03K)**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 19/0175 • Coupling arrangements; Interface arrangements (interface arrangements for digital computers [G06F 3/00](#), [G06F 13/00](#))
- U H03K 19/017509 • • {Interface arrangements}
- H03K 19/017518 • • • {using a combination of bipolar and field effect transistors ~~{[BIFET]}~~}
- WARNING**
 Not complete, see also [H03K 19/018](#), [H03K 19/0185](#)
- U H03K 19/017545 • • {Coupling arrangements; Impedance matching circuits}
- H03K 19/017554 • • • {using a combination of bipolar and field effect transistors ~~{[BIFET]}~~}
- WARNING**
 Not complete, see also [H03K 19/01806](#), [H03K 19/018507](#)
- U H03K 19/0185 • • using field effect transistors only
- U H03K 19/018507 • • • {Interface arrangements}
- H03K 19/018535 • • • • {of Schottky barrier type ~~{[MESFET]}~~}
- WARNING**
 Not complete, see also [H03K 19/018507](#)
- U H03K 19/02 • using specified components ({[H03K 19/0005](#) to [H03K 19/0021](#)}, [H03K 19/003](#) to [H03K 19/0175](#) take precedence)
- U H03K 19/08 • • using semiconductor devices ([H03K 19/173](#) takes precedence; wherein the semiconductor devices are only diode rectifiers [H03K 19/12](#))
- U H03K 19/082 • • • using bipolar transistors {(in combination with field-effect transistor [H03K 19/094](#))}
- U H03K 19/084 • • • • Diode-transistor logic
- H03K 19/0843 • • • • • {Complementary transistor logic ~~{[CTL]}~~}
- H03K 19/0846 • • • • • {Schottky transistor logic ~~{[STL]}~~}
- U H03K 19/086 • • • • Emitter coupled logic
- H03K 19/0863 • • • • • {Emitter function logic ~~{[EFL]}~~; Base coupled logic ~~{[BCL]}~~}
- U H03K 19/091 • • • • Integrated injection logic or merged transistor logic
- H03K 19/0912 • • • • • {Static induction logic ~~{[STIL]}~~ (when the logic function is fulfilled by a fet [H03K 19/09414](#))}

- H03K 19/0915 {Integrated schottky logic ~~{[ISL]}~~}
- U H03K 19/094 . . . using field-effect transistors
- U H03K 19/09403 {using junction field-effect transistors ([H03K 19/096](#) takes precedence)}
- H03K 19/09414 {with gate injection or static induction ~~{[STIL]}~~} ([H03K 19/0912](#) takes precedence)}
- H03K 19/09418 {in combination with bipolar transistors ~~{[BIFET]}~~}
- U H03K 19/09432 {with coupled sources or source coupled logic ([H03K 19/096](#) takes precedence)}
- H03K 19/09436 {Source coupled field-effect logic ~~{[SCFL]}~~}
- U H03K 19/0944 using MOSFET {or insulated gate field-effect transistors, i.e. IGFET} ([H03K 19/096](#) takes precedence)
- H03K 19/09448 {in combination with bipolar transistors ~~{[BIMOS]}~~}
- U H03K 19/173 . . using elementary logic circuits as components
- U H03K 19/1733 . . . {Controllable logic circuits ([H03K 19/177](#) takes precedence)}
- H03K 19/1738 {using cascode switch logic ~~{[CSL]}~~} or cascode emitter coupled logic ~~{[CECL]}~~}
- U H03K 19/20 . characterised by logic function, e.g. AND, OR, NOR, NOT circuits ([H03K 19/003](#) to [H03K 19/01](#) take precedence)
- U H03K 19/21 . . EXCLUSIVE-OR circuits, i.e. giving output if input signal exists at only one input; COINCIDENCE circuits, i.e. giving output only if all input signals are identical
- U H03K 19/215 . . . {using field-effect transistors}
- H03K 19/217 {using Schottky type FET ~~{[MESFET]}~~}
- U H03K 23/40 . Gating or clocking signals applied to all stages, i.e. synchronous counters ([H03K 23/74](#) to [H03K 23/84](#) take precedence)}
- U H03K 23/50 . . using bi-stable regenerative trigger circuits ([H03K 23/42](#) to [H03K 23/48](#) take precedence)
- H03K 23/56 . . . Reversible counters ([H03K 23/52](#) {and [H03K 23/548](#)} take precedence)
- 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 2217/0063 . High side switches, i.e. the higher potential ~~{[DC]}~~ or life wire ~~{[AC]}~~ being directly connected to the switch and not via the load
- H03K 2217/0072 . Low side switches, i.e. the lower potential ~~{[DC]}~~ or neutral wire ~~{[AC]}~~ being directly connected to the switch and not via the load

Project: N/A (H03M)

- U H03M 1/00 Analogue/digital conversion; Digital/analogue conversion (conversion of analogue values to or from differential modulation [H03M 3/00](#))**
- H03M 1/06 . Continuously compensating for, or preventing, undesired influence of physical parameters (~~periodically, {e.g. by using stored correction values,}~~[H03M 1/10](#)~~periodically, {e.g. by using stored correction values,}~~[H03M 1/10](#))
- U H03M 1/12 . Analogue/digital converters ([H03M 1/001](#) to [H03M 1/004](#) as well as [H03M 1/02](#) to [H03M 1/10](#) take precedence)
- H03M 1/64 . . with intermediate conversion to phase of sinusoidal {or similar periodical} signals

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 13/00	Coding, decoding or code conversion, for error detection or error correction; Coding theory basic assumptions; Coding bounds; Error probability evaluation methods; Channel models; Simulation or testing of codes (error detection or error correction for analogue/digital, digital/analogue or code conversion H03M 1/00 to H03M 11/00 ; specially adapted for digital computers G06F 11/08 , for information storage based on relative movement between record carrier and transducer G11B , e.g. G11B 20/18 , for static stores G11C ; { use of error detection or error correction in transmission systems H04L 1/004 , in television systems H04N 7/0357 })
U H03M 13/03	<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 13/13	<ul style="list-style-type: none"> • • • Linear codes
H03M 13/15	<ul style="list-style-type: none"> • • • • 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)
U H03M 13/25	<ul style="list-style-type: none"> • Error detection or forward error correction by signal space coding, i.e. adding redundancy in the signal constellation, e.g. Trellis Coded Modulation [TCM] {(modulation codes H03M 13/31)}
H03M 13/255	<ul style="list-style-type: none"> • • {with Low Density Parity Check (LDPC) codes}
H03M 13/258	<ul style="list-style-type: none"> • • {with turbo codes, e.g. Turbo Trellis Coded Modulation (TTCM)}
U H03M 13/37	<ul style="list-style-type: none"> • Decoding methods or techniques, not specific to the particular type of coding provided for in groups H03M 13/03 to H03M 13/35
U H03M 13/39	<ul style="list-style-type: none"> • • Sequence estimation, i.e. using statistical methods for the reconstruction of the original codes
H03M 13/3905	<ul style="list-style-type: none"> • • • {Maximum a posteriori probability (MAP) decoding and approximations thereof based on trellis or lattice decoding, e.g. forward-backward algorithm, log-MAP decoding, max-log-MAP decoding; MAP decoding also to be found in H04L 1/0055}
H03M 13/3922	<ul style="list-style-type: none"> • • • • {Add-Compare-Select (ACS) operation in forward or backward recursions}
H03M 13/3927	<ul style="list-style-type: none"> • • • • {Log-Likelihood Ratio (LLR) computation by combination of forward and backward metrics into LLRs}
U H03M 13/41	<ul style="list-style-type: none"> • • • using the Viterbi algorithm or Viterbi processors
H03M 13/4107	<ul style="list-style-type: none"> • • • • {implementing add, compare, select (ACS) operations}
U H03M 13/65	<ul style="list-style-type: none"> • {Purpose and implementation aspects}
U H03M 13/6522	<ul style="list-style-type: none"> • • {Intended application, e.g. transmission or communication standard}
H03M 13/6527	<ul style="list-style-type: none"> • • • {IEEE 802.11 (WLAN)}
H03M 13/6533	<ul style="list-style-type: none"> • • • {ITU 992.X (ADSL)}

Project: N/A (H04B)

- U H04B 1/00** **Details of transmission systems, not covered by a single one of groups [H04B 3/00](#) to [H04B 13/00](#); Details of transmission systems not characterised by the medium used for transmission (tuning resonant circuits [H03J](#))**
- NOTE**
In this group, group [H04B 1/0003](#) takes precedence over groups [H04B 1/005](#) to [H04B 1/76](#)
- U H04B 1/06** • Receivers (control of amplification [H03G](#) ; television receivers [H04N 5/44](#) , [H04N 5/64](#))
- U H04B 1/16** • • Circuits {(demodulators [H03D](#))}
- H04B 1/1607** • • • {Supply circuits (~~converters [92P](#), [92Q](#), [H02M](#)~~; ~~converters [H02M](#)~~; filters therefor [H02M 1/14](#) ; voltage stabilisers [G05F 1/46](#))}
- H04B 1/20** • • • for coupling gramophone pick-up, recorder output, or microphone to receiver, {e.g. for Hi-Fi systems or audio/video combinations (constructional details for associated working of receivers and recording devices [G11B 31/003](#) ; for television signals only [H04N 5/00](#))}
- H04B 1/66** • for reducing bandwidth of signals (in pictorial communication systems [H04N](#)); for improving efficiency of transmission ([H04B 1/68](#) takes precedence; ~~{vocoders [42T2B](#), [G10L](#)~~}; ~~{vocoders [G10L](#)~~)}
- U H04B 7/00** **Radio transmission systems, i.e. using radiation field ([H04B 10/00](#) , [H04B 15/00](#) take precedence)**
- U H04B 7/02** • Diversity systems (for direction finding [G01S 3/72](#) ; aerial arrays or systems [H01Q](#); { reducing multipath interference in spread spectrum systems [H04B 1/7115](#) ; specially adapted for satellite systems [H04B 7/18534](#) ; for telegraphy or data transmission [H04L 1/02](#))}
- U H04B 7/022** • • {Site diversity, e.g. macro-diversity (for co-located independent aerials [H04B 7/04](#))}
- H04B 7/024** • • • {Cooperative use of antennas of several nodes, e.g. in coordinated multipoint or cooperative MIMO [Multiple Input Multiple Output]}
- U H04B 7/04** • • using a plurality of spaced independent aerials
- U H04B 7/06** • • • at transmitting station, e.g. time diversity
- U H04B 7/0613** • • • • {using simultaneous transmission ([H04B 7/0686](#) takes precedence)}
- U H04B 7/0615** • • • • • {of weighted versions of same signal}
- U H04B 7/0619** • • • • • {using feedback from receiving side (feedback signaling for adaptive modulation/coding [H04L 1/0001](#))}
- U H04B 7/0621** • • • • • • {Feedback content}
- H04B 7/0623** • • • • • • • {Auxiliary parameters, e.g. power control (~~{PCB}~~) or not acknowledged commands (~~{NACK}~~)}, used as feedback information}
- H04B 7/0626** • • • • • • • {Channel coefficients, e.g. channel state information (~~{CSI}~~)}
- H04B 7/0632** • • • • • • • {Channel quality parameters, e.g. channel quality indicator (~~{CQI}~~)}
- U H04B 7/0636** • • • • • • • {Feedback format}
- H04B 7/0639** • • • • • • • {Using selective indices, e.g. of a codebook, e.g. pre-distortion matrix index (~~{PMI}~~) or for beam selection}
- U H04B 7/0658** • • • • • • • {Feedback reduction}
- H04B 7/066** • • • • • • • {Combined feedback for a number of channels, e.g. over several subcarriers like in orthogonal frequency division multiplexing (~~{OFDM}~~)}

- U H04B 7/08 . . . at receiving station, e.g. space diversity
- U H04B 7/0837 {using pre-detection combining ([H04B 7/0868](#) takes precedence)}
- U H04B 7/0842 {Weighted combining}
- U H04B 7/0848 {Joint weighting}
- H04B 7/0854 {using error minimizing algorithms, e.g. minimum mean squared error ([MMSE](#)), "cross-correlation" or matrix inversion}
- H04B 7/0857 {using maximum ratio combining techniques, e.g. signal-to-interference ratio ([SIR](#)), received signal strength indication ([RSS](#))}
- H04B 7/086 {using weights depending on external parameters, e.g. direction of arrival ([DOA](#)), predetermined weights or beamforming}
- U H04B 7/14 . Relay systems (interrogator-responder radar systems [G01S 13/74](#) ; {CATV [community antenna television] systems [H04H 20/78](#) ; adapted for television [H04N 7/20](#)})
- U H04B 7/15 . . Active relay systems
- U H04B 7/185 . . . Space-based or airborne stations; {Stations for satellite systems ([H04B 7/204](#) takes precedence)}
- H04B 7/18521 {Systems of inter linked satellites, i.e. inter satellite service (for optical links between satellites ~~H04B 10/105~~ [H04B 10/118](#))}
- H04B 7/18528 {Satellite systems for providing two-way communications service to a network of fixed stations, i.e. fixed satellite service or very small aperture terminal ([VSAT](#)) system}
- U H04B 7/204 . . . Multiple access
- H04B 7/208 Frequency-division multiple access ([FDMA](#))
- H04B 7/212 Time-division multiple access ([TDMA](#))
- H04B 7/22 . Scatter propagation systems, {e.g. ionospheric, tropospheric or meteor scatter}
- U H04B 7/24 . for communication between two or more posts (for selecting [H04W](#) ; {wireless communication networks [H04W](#)})
- U H04B 7/26 . . at least one of which is mobile
- U H04B 7/2662 . . . {Arrangements for Wireless System Synchronisation}
- H04B 7/2665 {Arrangements for Wireless Frequency Division Multiple Access ([FDMA](#)) System Synchronisation}
- H04B 7/2668 {Arrangements for Wireless Code-Division Multiple Access ([CDMA](#)) System Synchronisation, for code acquisition [H04B 1/7075](#) , for code tracking [H04B 1/7085](#)}
- H04B 7/2671 {Arrangements for Wireless Time-Division Multiple Access ([TDMA](#)) System Synchronisation}
- U H04B 7/2678 {Time synchronisation}
- U H04B 7/2687 {Inter base stations synchronisation}
- H04B 7/2693 {Centralised synchronisation, i.e. using external universal time reference, e.g. by using a global positioning system ([GPS](#)) or by distributing time reference over the wireline network}

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**

NOTE

Groups [H04B 10/03](#) , [H04B 10/07](#) , [H04B 10/11](#) , [H04B 10/25](#) , [H04B 10/27](#) , [H04B 10/29](#) and [H04B 10/40](#) to [H04B 10/90](#) , and their subgroups are based on IPC2013.01

WARNING

Group [H04B 10/2572](#) does not correspond to former or current IPC groups. Concordance CPC:IPC for this group is as follows: - [H04B 10/2572](#) : [H04B 10/2507](#)

- U H04B 10/60 · Receivers
- U H04B 10/61 · · Coherent receivers {i.e., optical receivers using an optical local oscillator (delay line interferometer based DPSK optical receivers [H04B 10/677](#))}
- H04B 10/63 · · · Homodyne {, i.e., coherent receivers where the local oscillator is locked in frequency and phase to the carrier signal}
- H04B 10/64 · · · Heterodyne {, i.e., coherent receivers where, after the opto-electronic conversion, an electrical signal at an intermediate frequency [fIF] is obtained}

U H04B 14/00 **Transmission systems not characterised by the medium used for transmission (details thereof [H04B 1/00](#))**

- U H04B 14/02 · characterised by the use of pulse modulation (in radio transmission relays [H04B 7/17](#) ; transmission of digital information per se [H04L](#))
- U H04B 14/06 · · Using differential modulation, e.g. delta modulation (conversion of analogue values to or from differential modulation [H03M 3/00](#))
- H04B 14/066 · · · {using differential modulation with several bits ([NDPCM](#))}

Project: N/A (H04H)

U H04H 20/00 **Arrangements for broadcast or for distribution combined with broadcast**

- U H04H 20/02 · Arrangements for relaying broadcast information
- H04H 20/04 · · from field pickup units ([FPU](#))

U H04H 60/00 **Arrangements for broadcast applications with a direct linking to broadcast information or broadcast space-time; Broadcast-related systems**

- U H04H 60/56 · Arrangements characterised by components specially adapted for monitoring, identification or recognition covered by groups [H04H 60/29-H04H 60/54](#)
- H04H 60/58 · · of audio {(determination or detection of speech characteristics in general [G10L11/00](#)[G10L 25/00](#); speech recognition in general [G10L 15/00](#))}

Project: N/A (H04J)

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](#))
- U H04J 3/06 · · Synchronising arrangements {(for television systems [H04N 5/04](#) ; bit-synchronisation [H04L 7/00](#))}
- U H04J 3/062 · · · {Synchronisation of signals having the same nominal but fluctuating bit rates, e.g. using buffers (pulse-stuffing [H04J 3/07](#) ; asynchronous-synchronous conversion [H04L 5/24](#) ; speed conversion [H04L 25/05](#) ; speed conversion in computers [G06F 5/06](#))}

- H04J 3/0626
- • • {plesiochronous multiplexing systems, e.g. plesiochronous digital hierarchy ~~{(PDH)}~~, jitter attenuators}
- H04J 3/0632
- • • {Synchronisation of packets and cells, e.g. transmission of voice via a packet network, circuit emulation service ~~{(CES)}~~}
- U H04J 3/16
- in which the time allocation to individual channels within a transmission cycle is variable, e.g. to accommodate varying complexity of signals, to vary number of channels transmitted ([H04J 3/17](#) , [H04J 3/24](#) take precedence)
- U H04J 3/1605
- {Fixed allocated frame structures}
- H04J 3/1623
- • • {Plesiochronous digital hierarchy ~~{(PDH)}~~}
- H04J 3/1652
- • • {Optical Transport Network ~~{(OTN)}~~}
- H04J 3/167
- • • {interaction with SDH/SONET, e.g. carrying SDH/SONET frames, interfacing with SDH/SONET ~~{(H04J 3/1664 takes precedence)}~~; ~~H04J 3/1664 takes precedence~~}
- H04J 11/00**
- Orthogonal multiplex systems, {e.g. using WALSH codes}{[H04J 13/00](#) takes precedence}**
- U H04J 11/0023
- {Interference mitigation or co-ordination (traffic scheduling [H04W 72/082](#) , [H04W 72/1226](#) ; power management [H04W 52/00](#) ; allocation criteria for ingress interference avoidance [H04L 5/0062](#) ; frequency allocation criteria for requirements on out-of-channel emissions [H04L 5/0066](#) ; peak power aspects in multicarrier modulation [H04L 27/2614](#) ; arrangements for removing intersymbol interference or baseband equalisers [H04L 25/03006](#) ; direct sequence spread spectrum [DSSS] systems [H04B 1/7097](#) ; frequency hopping [H04B 1/713](#))}
- U H04J 11/0026
- • {of multi-user interference}
- H04J 11/003
- • • {at the transmitter (transmission to multiple receive units in multiple input multiple output ~~{(MIMO)}~~) [H04B 7/0452](#) ; transmit antenna weighting [H04B 7/0615](#)}
- H04J 14/0298
- • {with sub-carrier multiplexing ~~{(SCM)}~~}
- U H04J 2203/00**
- Aspects of optical multiplex systems other than those covered by [H04J 14/00](#)**
- H04J 2203/0001
- Provisions for broadband connections in integrated services digital network using frames of the Optical Transport Network ~~{(OTN)}~~ or using synchronous transfer mode ~~{(STM)}~~, e.g. SONET, SDH
- H04J 2203/0057
- • Operations, administration and maintenance ~~{(OAM)}~~}
- U H04J 2203/0089
- • Multiplexing, e.g. coding, scrambling, SONET
- H04J 2203/0092
- • • Code Division Multiple Access ~~{(CDMA)}~~}
- U H04J 2211/00**
- Orthogonal indexing scheme relating to orthogonal multiplex systems**
- U H04J 2211/003
- within particular systems or standards
- H04J 2211/005
- • Long term evolution ~~{(LTE)}~~}
- H04J 2211/006
- • Single carrier frequency division multiple access ~~{(SC FDMA)}~~}
- H04J 2211/008
- • Interleaved frequency division multiple access ~~{(IFDMA)}~~}

Project: N/A (H04K)

H04K 3/00

Jamming of communication; Counter-measures (counter-measures used in radar or analogous systems [G01S 7/00](#); { in radar [G01S 7/36](#), [G01S 7/38](#); in lidar [G01S 7/495](#); in sonar [G01S 7/537](#)})

NOTES

1. This group covers: "Jamming", only when it means purposefully trying to interfere with the physical transmission and reception of communication. Provided this condition is met, this group covers devices and methods for:

- a. jamming of communication:
 - i. jamming by intentionally decreasing the signal to noise ratio
 - ii. deceptive jamming
 - iii. passive jamming
 - iv. destructive jamming
- b. countermeasures against jamming
- c. countermeasures against undesired self-jamming resulting from jamming
- d. countermeasures against surveillance, interception or detection
- e. other electronic countermeasures using or against electromagnetic or acoustic waves
- f. signal detection techniques used in relation to
 - i. jamming: for interception and monitoring of the jamming target signal
 - ii. anti-jamming: for jamming detection,
 - iii. anti-surveillance: for surveillance detection
- g. jamming for testing or assessing countermeasures
- h. jamming used to prevent:
 - cellular phone communication
 - i. in a vehicle during motion
 - ii. in particular areas, including prisons, hospitals, planes, petrol stations, theatres
 - iii. to trigger RCIEDs - reception of positioning data using GPS
 - wireless communication in ad hoc networks or in sensor networks
 - exchange of data between wirelessly connected devices or device units, on Bluetooth, infrared or near field links
 - unauthorized access to network, service or information, including:
 - i. access to a WLAN network
 - ii. access to information stored in contactless carriers, including RFID carriers
 - transmission of an alarm, against burglary or vehicle theft
 - remote control of devices
 - surveillance
 - i. of speech in meeting rooms
 - ii. of electromagnetic emissions from a computer screen
 - interception or detection of a wirelessly transmitted signal]

2. In this group, the following acronyms are used: ~~GPS = global positioning system~~ ~~RCIED = remote controlled improvised explosive device~~ ~~RFID = radio frequency identification~~ ~~WLAN = wireless local area network~~

GPS = global positioning system

RCIED = remote controlled improvised explosive device

RFID = radio frequency identification

WLAN = wireless local area network

WARNING

Groups [H04K 3/00](#) - [H04K 3/94](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04K 3/00](#) - [H04K 3/94](#) : [H04K 3/00](#)

Project: N/A (H04L)**H04L**

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 [G09C](#); coding, decoding or code conversion, in general [H03M](#); arrangements common to telegraphic and telephonic communication [H04M](#); selecting [H04Q](#))

NOTE

This subclass 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	"	H04L25/02G1C H04L 25/027
H04L 25/28	"	H04L25/02G1A 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	"	H04L25/02A 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 1/02 • by diversity reception (in general [H04B 7/02](#))
- U H04L 1/06 • • using space diversity
- U H04L 1/0618 • • • {Space-time coding}
- U H04L 1/0637 • • • • {Properties of the code}
- U H04L 1/0656 • • • • • {Cyclotomic systems, e.g. Bell Labs Layered Space-Time (~~{BLAST}~~)}
- U H04L 1/0675 • • • • {characterised by the signaling}
- U H04L 1/0693 • • • • • {Partial feedback, e.g. partial channel state information (~~{CSI}~~)}
- 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 1/20 • using signal quality detector

WARNING

see ~~95C20~~, [G01R 29/02](#)

- U H04L 7/00** Arrangements for synchronising receiver with transmitter {(synchronisation of electronic time-pieces [G04G 7/00](#) ; synchronisation of generators of electric oscillations or pulses [H03L](#) ; synchronising in TV system [H04N 5/04](#) ; regeneration of clock signals for television systems [H04N 7/0352](#))}
- U H04L 7/02** . Speed or phase control by the received code signals, the signals containing no special synchronisation information {([H04L 7/0075](#) takes precedence; tuning or selecting resonant circuits [H03J](#) ; using the properties of error detecting or correcting codes [H04L 7/048](#))}
- U H04L 7/033** . . using the transitions of the received signal to control the phase of the synchronising-signal-generating means, e.g. using a phase-locked loop
- H04L 7/0331** . . . {with a digital phase-locked loop ([PLL](#)) processing binary samples, e.g. add/subtract logic for correction of receiver clock ([H04L 7/0337](#) takes precedence)}
- U H04L 7/04** . Speed or phase control by synchronisation signals {([H04L 7/0075](#) takes precedence)}
- U H04L 7/041** . {using special codes as synchronising signal}
- H04L 7/043** . . . {Pseudo-noise ([PN](#)) codes variable during transmission (synchronisation of spread spectrum receivers [H04B 1/69](#))}
- H04L 9/00** **{Cryptographic mechanisms or cryptographic} arrangements for secret or secure communication {(network architectures or network communication protocols for network security [H04L 63/00](#) or for wireless network security [H04W 12/00](#) ; security arrangements for protecting computers or computer systems against unauthorized activity [G06F 21/00](#))}**

NOTES

1. This group covers: ~~1.1 Cryptographic mechanisms including cryptographic protocols and cryptographic algorithms, whereby a cryptographic protocol is a distributed cryptographic algorithm defined by a sequence of steps precisely specifying the actions required of two or more entities to achieve specific security objectives (e.g. cryptographic protocol for key agreement), and whereby a cryptographic algorithm is specifying the steps followed by a single entity to achieve specific security objectives (e.g. cryptographic algorithm for symmetric key encryption).~~ 1.2 — H04L 9/00 — focuses on cryptographic mechanisms such as encryption schemes, digital signatures, hash functions, random number generation, key management, said cryptographic mechanisms providing information security such as privacy or confidentiality, data integrity, message authentication, entity authentication, authorization, validation, certification, time-stamping, anonymity, revocation, non-repudiation. 1.3 — H04L 9/00 covers also countermeasures against attacks on cryptographic mechanisms.

1.1 Cryptographic mechanisms including cryptographic protocols and cryptographic algorithms, whereby a cryptographic protocol is a distributed cryptographic algorithm defined by a sequence of steps precisely specifying the actions required of two or more entities to achieve specific security objectives (e.g. cryptographic protocol for key agreement), and whereby a cryptographic algorithm is specifying the steps followed by a single entity to achieve specific security objectives (e.g. cryptographic algorithm for symmetric key encryption).

1.2 H04L 9/00 focuses on cryptographic mechanisms such as encryption schemes, digital signatures, hash functions, random number generation, key management, said cryptographic mechanisms providing information security such as privacy or confidentiality, data integrity, message authentication, entity authentication, authorization, validation, certification, time-stamping, anonymity, revocation, non-repudiation.

1.3 H04L 9/00 covers also countermeasures against attacks on cryptographic mechanisms.

2. This group does not cover: ~~2.1 Networking architectures or network communication protocols for securing the traffic flowing through data packet networks and providing secure exchanges among applications communicating through data packet networks, which are covered by H04L 63/00.~~ Attention is drawn to the Note 1. after group ~~H04L 63/00~~ ~~2.2 Security arrangements for protecting computers or computer systems against unauthorised activity, which are covered by G06F 21/00~~

2.1 Networking architectures or network communication protocols for securing the traffic flowing through data packet networks and providing secure exchanges among applications communicating through data packet networks, which are covered by H04L 63/00. Attention is drawn to the Note 1. after group H04L 63/00

2.2 Security arrangements for protecting computers or computer systems against unauthorised activity, which are covered by G06F 21/00

- H04L 9/06
- the encryption apparatus using shift registers or memories for block-wise {or stream} coding, e.g. DES systems {or RC4; Hash functions; Pseudorandom sequence generators}
- 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](#))}
- 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 [G06Q 20/00](#))}
- U H04L 12/16
- Arrangements for providing special services to substations {contains provisionally no documents}
- H04L 12/18
- for broadcast or conference {, e.g. multicast (multicast or broadcast switches [H04L 49/201](#))}
- 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 12/2406 {using object oriented techniques, e.g. CORBA [Common Object Request Broker Architecture]} for representation of network management data}
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 41/0233](#)
- H04L 12/2407 {using relational databases for representation of network management data, e.g. managing via SQL [Structured Query Language]}
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 41/024](#)
- U H04L 12/2409 . . . {Architectural aspects of network management arrangements}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/04](#)
- H04L 12/2413 {Arrangements involving CNM [Customer Network Management]}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 41/18](#)
- U H04L 12/2455 . . . {Hardware and software tools for network management}
WARNING
 This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to subgroups of [H04L 41/14](#) , [H04L 41/20](#) , [H04L 41/22](#) , [H04L 41/24](#) , [H04L 41/26](#)
- H04L 12/2458 {using GUI [Graphical User Interface]}
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 41/22](#)
- H04L 12/28 . . . characterised by path configuration, e.g. local area networks [{LAN}](#), wide area networks [{WAN}](#)
- U H04L 12/2803 . . {Home automation networks}
- H04L 12/2805 {Home Audio Video Interoperability [{HAVI}](#) networks}
- U H04L 12/283 {Processing of data at an internetworking point of a home automation network}
- H04L 12/2836 {Protocol conversion between an external network and a home network (protocol conversion [H04L 29/06068](#); adaptation of digital video signals for transport over a specific home network [H04N7/24T6](#)[H04N 7/24](#) ; controlling appliance services of a home automation network from a device located outside the home and the home network [H04L 12/2818](#))}

- H04L 12/2838
 - • • {Distribution of signals within a home automation network, e.g. involving splitting/multiplexing signals to/from different paths (adaptations of television systems for transmission by electric cable for domestic distribution [H04N 7/106](#); hybrid transport [H04L 12/6418](#); home network arrangements specially adapted for distribution of digital video signals [H04N7/24N](#)[H04N 7/24](#))}
- U H04L 12/40
 - • Bus networks
- U H04L 12/40052
 - • • {High-speed IEEE 1394 serial bus (bus transfer protocol on a daisy chain bus using an embedded synchronisation [G06F 13/426](#))}
- H04L 12/40117
 - • • • {Interconnection of audio or video/imaging devices (home automation networks [H04L 12/2803](#); bitstream network arrangements specially adapted for distribution of digital video signals [H04N7/24N](#)[H04N 7/24](#))}
- H04L 2012/40208
 - • • {characterized by the use of a particular bus standard}

NOTE

In this group the following terms or expressions are used with the meaning indicated:

- ~~Controller-area network (CAN or CAN-bus) designates a computer network protocol and bus standard developed in 1983 by Intel Corporation and Robert Bosch GmbH to allow microcontrollers and devices to communicate with each other without a host computer;~~
- ~~PROFIBUS (Process Field Bus) designates a standard for field bus communication in automation technology first implemented in 1989 by BMBF, the german department of education and research;~~
- ~~Modbus designates a serial communications protocol published by Modicon in 1979 for use with its programmable logic controller;~~
- ~~LIN-Bus (Local Interconnect Network) designates a computer networking bus-system released in 1999 used within current automotive network architectures;~~
- ~~FlexRay designates an automotive network communications protocol developed by the FlexRay Consortium;~~
- ~~LON or LonWorks designates a network standard operating on twisted pair or electrical wiring or coaxial cable and used for building automation;~~
- ~~ASI or AS-Interface (Actuator Sensor Interface) designates the simplest of the industrial networking protocols used in programmable logic controller systems~~

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- U H04L 12/42
 - • Loop networks
- U H04L 12/427
 - • • with decentralised control

- H04L 12/43
 - • • with synchronous transmission, e.g. time division multiplex [\(TDM\)](#), slotted rings
- H04L 12/54
 - Store-and-forward switching systems (packet switching systems [H04L12/70](#) [H04L 12/56](#))
- U H04L 12/56
 - {Packet switching systems}
- U H04L 12/5601
 - • {Transfer mode dependent, e.g. ATM}
- U H04L 2012/5614
 - • • {User Network Interface}
- H04L 2012/5618
 - • • • {Bridges, gateways [\(GW\)](#) or interworking units [\(IWU\)](#)}
- U H04L 2012/5619
 - • • • {Network Node Interface, e.g. tandem connections, transit switching}
- H04L 2012/5621
 - • • • {Virtual private network [\(VPN\)](#); Private-network - network-interface (P-NNI)}
- H04L 2012/5625
 - • • • {Operations, administration and maintenance [\(OAM\)](#)}
- U H04L 2012/5638
 - • • • {Services, e.g. multimedia, GOS, QOS}
- U H04L 2012/5646
 - • • • • {Cell characteristics, e.g. loss, delay, jitter, sequence integrity}
- U H04L 2012/5652
 - • • • • • {Cell construction, e.g. including header, packetisation, depacketisation, assembly, reassembly}
- H04L 2012/5653
 - • • • • • • {using the ATM adaptation layer [\(AAL\)](#)}
- U H04L 2012/5665
 - • • • • {Interaction of ATM with other protocols}
- H04L 2012/5668
 - • • • • • {Next hop resolution protocol [\(NHRP\)](#)}
- H04L 2012/5669
 - • • • • • • {Multiprotocol over ATM [\(MPOA\)](#)}
- U H04L 2012/5672
 - • • • {Multiplexing, e.g. coding, scrambling}
- H04L 2012/5676
 - • • • • {Code Division Multiple Access [\(CDMA\)](#)}
- H04L 12/58
 - • Message switching systems, {e.g. electronic mail systems}

WARNING
This subgroup and all its subgroups are no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 51/00](#)
- U H04L 12/64
 - Hybrid switching systems
- U H04L 12/6418
 - • {Hybrid transport}
- U H04L 2012/6445
 - • • {Admission control}
- H04L 2012/6448
 - • • • {Medium Access Control [\(MAC\)](#)}
- H04L 2012/6475
 - • • {N-ISDN, Public Switched Telephone Network [\(PSTN\)](#)}
- 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 25/024
 - • • {channel estimation algorithms}
- H04L 25/025
 - • • • {using least-mean-square [\(LMS\)](#) method}
- U H04L 25/03
 - • Shaping networks in transmitter or receiver, e.g. adaptive shaping networks (impedance networks per se [H03H](#)); {Receiver end arrangements for processing baseband signals}
- U H04L 25/03006
 - • • {Arrangements for removing intersymbol interference}

- H04L 25/03171 {Arrangements involving maximum a posteriori probability (~~H04L 25/03171~~) detection}
- NOTE
This group contains provisionally all documents which deal with turbo equalisation
- U H04L 2025/03433 {characterised by equaliser structure}
- U H04L 2025/03439 {Fixed structures}
- U H04L 2025/03445 {Time domain}
- H04L 2025/03471 {Tapped delay lines (~~T04L25/0B13F1N~~[H04L 2025/03464](#) takes precedence)}
- U H04L 2025/03592 {Adaptation methods}
- U H04L 2025/03598 {Algorithms}
- U H04L 2025/03611 {Iterative algorithms}
- H04L 2025/03617 {Time recursive algorithms (~~T04L25- 03B15A3C~~[H04L 2025/03643](#) takes precedence)}
- U H04L 2025/03745 {Timing of adaptation}
- H04L 2025/03751 {only once, at installation (~~T04L25- 03B15M~~[H04L 2025/03738](#) takes precedence)}
- U H04L 25/08 . . Modifications for reducing interference; Modifications for reducing effects due to line faults; {Receiver end arrangements for detecting or overcoming line faults}
- U H04L 25/20 . . Repeater circuits; Relay circuits
- H04L 25/26 . . . Circuits with optical sensing means, {i.e. using opto-couplers for isolation}
- U H04L 25/38 . . Synchronous or start-stop systems, e.g. for Baudot code
- H04L 25/40 . . Transmitting circuits; Receiving circuits (repeater circuits, relay circuits [H04L 25/20](#))
- U H04L 25/49 . . . using code conversion at the transmitter; using predistortion; using insertion of idle bits for obtaining a desired frequency spectrum; using three or more amplitude levels; {Baseband coding techniques specific to data transmission systems (spectral shaping [H04L 25/03828](#))}
- 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 27/02 . . Amplitude-modulated carrier systems, e.g. using on-off keying; Single sideband or vestigial sideband modulation ([H04L 27/32](#) takes precedence)
- H04L 27/04 . . Modulator circuits (in general [H03C](#) [H03K 7/02](#)); Transmitter circuits
- H04L 27/06 . . Demodulator circuits (in general [H03D](#) [H03K 9/02](#)); Receiver circuits
- U H04L 27/10 . . Frequency-modulated carrier systems, i.e. using frequency-shift keying ([H04L 27/32](#) takes precedence; { continuous phase systems [H04L 27/18](#))}
- H04L 27/12 . . Modulator circuits (in general [H03C](#) [H03K 7/06](#)); Transmitter circuits {(continuous phase modulation [H04L 27/20](#))}
- H04L 27/14 . . Demodulator circuits (in general [H03D](#) [H03K 9/06](#)); Receiver circuits {(for continuous phase modulation systems [H04L 27/22](#))}
- U H04L 27/18 . . Phase-modulated carrier systems, i.e. using phase-shift keying ([H04L 27/32](#) takes precedence){includes continuous phase systems}
- H04L 27/20 . . Modulator circuits (in general [H03C](#) [H03K 7/04](#)); Transmitter circuits

- H04L 27/22 · · Demodulator circuits (in general [H03D](#) [{H03K 9/04}](#)); Receiver circuits
- U H04L 27/26 · Systems using multi-frequency codes ([H04L 27/32](#) takes precedence)
- U H04L 27/2601 · · {Multicarrier modulation systems}
- U H04L 27/2626 · · · {Arrangements specific to the transmitter}
- U H04L 27/2627 · · · · {Modulators}
- H04L 27/264 · · · · · {Filterbank multicarrier [{FBMC}](#)}
- U H04L 29/00** **Arrangements, apparatus, circuits or systems, not covered by a single one of groups [H04L 1/00](#) to [H04L 27/00](#)(interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units [G06F 13/00](#)){contains provisionally no documents}**
- 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 29/06074 · · · {Streamlined, light-weight or high-speed protocols, e.g. express transfer protocol [{XTP}](#)}, byte stream}
- U H04L 29/06551 · · · {Arrangements for network security (security arrangements for protecting computers or computer systems against unauthorised activity [G06F 21/00](#) ; arrangements for secret or secure communication [H04L 9/00](#) ; security arrangements specially adapted for wireless communication networks [H04W 12/00](#))}
- U H04L 29/06823 · · · · {Access control}
- H04L 29/06829 · · · · · {Access control lists [{ACL}](#)}
- U H04L 29/08 · · · Transmission control procedure, e.g. data link level control procedure
- H04L 29/08009 · · · · {Open systems interconnection [{OSI}](#) architecture, e.g. layering, entities, standards; Interface between layers; Software aspects}
- 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](#))}
- H04L 29/0809 · · · · · {involving the use of web-based technology, e.g. Hyper Text Transfer Protocol [{HTTP}](#)}, (information retrieval from the Internet [G06F 17/30861](#))}
- H04L 29/08117 · · · · · {adapted for file transfer, e.g. File Transfer Protocol [{FTP}](#)}
- U H04L 29/08135 · · · · · {in which application tasks are distributed across nodes in the network (multiprogramming arrangements [G06F 9/46](#))}
- H04L 29/08549 · · · · · · {Arrangements and networking functions for distributed storage of data in a network, e.g. Storage Area Networks [{SAN}](#)}, Network Attached Storage [{NAS}](#)}
- U H04L 29/12 · characterised by the data terminal {contains provisionally no documents}
- H04L 29/12009 · · {Arrangements for addressing and naming in data networks}

NOTES

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**

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 29/12018 . . . {Mapping of addresses of different types; address resolution}

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 61/10](#)

- H04L 29/12028 {across network layers, e.g. resolution of network layer into physical layer addresses, Address Resolution Protocol [\(ARP\)](#)}

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 61/103](#)

- 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](#)

- U H04L 29/12056 {involving standard directories and standard directory access protocols}

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 61/1505](#)

- H04L 29/12066 {using Domain Name System [\(DNS\)](#)}

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 61/1511](#)

- H04L 29/12084 {using Lightweight Directory Access Protocol [\(LDAP\)](#)}

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 61/1523](#)

- H04L 29/12094 {using Voice over IP [\(VoIP\)](#) directories, e.g. Session Initiation Protocol [\(SIP\)](#) registrar or H.323 gatekeeper}

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 61/1529](#)

- H04L 29/12188 {containing mobile subscriber information, e.g. Home Subscriber Server [\(HSS\)](#)}
- 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 61/1588](#)
- U H04L 29/12207 . . . {Address allocation}
- WARNING
This subgroup is no longer used for classification as from 01.05.2012. The backlog of this subgroup is being continuously reclassified to [H04L 61/20](#)
- H04L 29/12216 {Internet Protocol [\(IP\)](#) 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 61/2007](#)
- H04L 29/12226 {using the Dynamic Host Configuration Protocol [\(DHCP\)](#) or variants}
- 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 61/2015](#)
- H04L 29/12235 {using the Bootstrap Protocol [\(BOOTP\)](#) or variants}
- 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 61/2023](#)
- H04L 29/12254 {for local use, e.g. on Local Area Networks [LAN] or on Universal Serial Bus [\(USB\)](#) networks (bus addresses inside a computer [G06F 13/42](#))}
- 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 61/2038](#)
- H04L 29/12283 {involving aspects of pools of addresses, e.g. assignment of different pools of addresses to different Dynamic Host Configuration Protocol [\(DHCP\)](#) servers}
- 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 61/2061](#)
- H04L 29/12301 {involving update or notification mechanisms, e.g. update of a Domain Name Server with Dynamic Host Configuration Protocol [\(DHCP\)](#) assigned 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 61/2076](#)

- U H04L 29/1233 . . . {Mapping of addresses of the same type; Address translation}
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 61/25](#)
- H04L 29/12339 {Internet Protocol ([IP](#)) address translation}
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 61/2503](#)
- H04L 29/12386 {Special translation architecture, different from a single Network Address Translation ([NAT](#)) server}
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 61/2521](#)
- U H04L 29/1249 {NAT-Traversal}
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 61/256](#)
- H04L 29/12528 {using address mapping retrieval, e.g. Simple Traversal of UDP through NATs ([STUN](#))}
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 61/2575](#)
- H04L 29/12556 {through Application Level Gateway ([ALG](#))}
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 61/2585](#)
- U H04L 29/12792 . . . {Details}
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 61/60](#)
- U H04L 29/1283 {about address types}
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 61/6018](#)
- H04L 29/12839 {Layer 2 addresses, e.g. Medium Access Control ([MAC](#)) 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 61/6022](#)

- H04L 29/12858 {Small Computer System Interface ([SCSI](#)) 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 61/6031](#)
- H04L 29/12877 {Asynchronous Transfer Mode ([ATM](#)) 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 61/604](#)
- H04L 29/12905 {International Mobile Subscriber Identity ([IMSI](#)) numbers}
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 61/6054](#)
- H04L 29/12924 {Transport layer addresses, e.g. aspects of Transmission Control Protocol ([TCP](#)) or User Datagram Protocol ([UDP](#)) ports}
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 61/6063](#)
- U H04L 45/00** **{Routing or path finding of packets in data switching networks (specially adapted for wireless routing [H04W 40/00](#))}**
WARNING
 Groups [H04L 45/00](#) - [H04L 45/74](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for this groups is as follows: - [H04L 45/00](#) - [H04L 45/74](#) : [H04L 12/56](#)
- U H04L 45/74 . {Address processing for routing}
- U H04L 45/745 . . {Address table lookup or address filtering}
- H04L 45/7457 . . . {using content-addressable memories ([CAM](#))}
- 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](#))}**
WARNING
 [N: WARNING Groups [H04L 63/00](#) - [H04L 63/20](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 63/00](#) - [H04L 63/20](#) : [H04L 29/06](#)
- U H04L 63/04 . {for providing a confidential data exchange among entities communicating through data packet networks}
- U H04L 63/0428 . . {wherein the data content is protected e.g. by encrypting or encapsulating the payload}

- H04L 63/045
- • {wherein the sending and receiving network entities apply hybrid encryption, i.e. combination of symmetric and asymmetric encryption (~~cryptographic mechanisms or cryptographic arrangements using a plurality of keys or algorithms H04L 9/14~~ *cryptographic mechanisms or cryptographic arrangements using a plurality of keys or algorithms H04L 9/14*)}
- U H04L 63/10
- {for controlling access to network resources (restricting network management access [H04L 12/2461](#))}
- H04L 63/101
- {Access control lists (~~ACL~~)}
- 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](#))}**

NOTE*1. This group covers:*

- *only communications which fulfill the following two conditions:*
 - i. they are based on packet data;*
 - ii. there is real-time or pseudo-real-time temporal association between source and destination, or source and network, or destination and network;*
- *provided that the above two conditions are met, this group covers arrangements relating to*
 - a. the transmission of the multimedia data itself,*
 - b. the user-to-user, user-to-network, inter-network or intra-network signalling supporting:*
 - b1. the establishment of a session for the subsequent transmission of the multimedia data, or*
 - b2. the maintenance of the session or*
 - b3. the application services available to the user during the session (unless explicitly excluded in certain cases).*

2. This group does not cover:

- *non-real-time multimedia file transfer, which is covered by [H04L 67/06](#)*
- *multimedia store or forward messaging as in e-mail, MMS or the like, which is covered by [H04L 12/58](#)*
- *analogue video streaming, as in analogue television systems, which is covered by [H04N 7/00](#)*
- *selective distribution of MPEG elementary or transport streams, containing video and additional data, which is covered by [H04N 21/00](#)*
- *bit streaming, i.e. not packet-based, as in ISDN which is covered by [H04Q 11/0428](#)*
- *instant messaging, which is covered by [H04L 12/581](#)*
- *any other multimodal data communications which do not meet the conditions of being packet-based and real-time or pseudo-real-time - flow control in packet switching networks, which is covered by [H04L 12/569](#).*

~~1. 3. Notes 1. This group covers: - only communications which fulfill the following two conditions: i. they are based on packet data; ii. there is real-time or pseudo-real-time temporal association between source and destination, or source and network, or destination and network; - provided that the above two conditions are met, this group covers arrangements relating to a. the transmission of the multimedia data itself, b. the user-to-user, user-to-network, inter-network or intra-network signalling supporting: b1. the establishment of a session for the~~

subsequent transmission of the multimedia data, or b2. the maintenance of the session or b3. the application services available to the user during the session (unless explicitly excluded in certain cases). 2. This group does not cover: -- non-real-time multimedia file transfer, which is covered by H04L 67/06 -- multimedia store or forward messaging as in e-mail, MMS or the like, which is covered by H04L 12/58 -- analogue video streaming, as in analogue television systems, which is covered by H04N 7/00 -- selective distribution of MPEG elementary or transport streams, containing video and additional data, which is covered by H04N 21/00 -- bit streaming, i.e. not packet-based, as in ISDN which is covered by H04Q 11/0428 -- instant messaging, which is covered by H04L 12/581 -- any other multimodal data communications which do not meet the conditions of being packet-based and real-time or pseudo-real-time -- flow control in packet switching networks, which is covered by H04L 12/569. 3. In this group the following terms or expressions are used with the meaning indicated: -- H.323 means International Telecommunication Union Recommendation no. 323, series H, entitled "Packet-based multimedia communications systems" -- IP means Internet Protocol -- IMS means IP Multimedia Subsystem -- ISDN means Integrated Services Digital Network -- MGC means Media Gateway Control/Controller -- MGCP means Media Gateway Control Protocol -- MMS means Multimedia Messaging Service -- PBX means Private Branch Exchange -- PSTN means Public Switched Telephone Network -- QoS means Quality of Service -- RTP means Real Time Protocol -- RTCP means Real Time Control Protocol -- RTSP means Real Time Streaming Protocol -- SIP means Session Initiation Protocol -- SPAM means unsolicited electronic mail -- SPIT means SPAM Prevention in IP Telephony]

- *H.323 means International Telecommunication Union Recommendation no. 323, series H, entitled "Packet-based multimedia communications systems"*
- *IP means Internet Protocol*
- *IMS means IP Multimedia Subsystem*
- *ISDN means Integrated Services Digital Network*
- *MGC means Media Gateway Control/Controller*
- *MGCP means Media Gateway Control Protocol*
- *MMS means Multimedia Messaging Service*
- *PBX means Private Branch Exchange*
- *PSTN means Public Switched Telephone Network*
- *QoS means Quality of Service*
- *RTP means Real Time Protocol*
- *RTCP means Real Time Control Protocol*
- *RTSP means Real Time Streaming Protocol.*
- *SIP means Session Initiation Protocol*
- *SPAM means unsolicited electronic mail*
- *SPIT means SPAM Prevention in IP Telephony]*

WARNING

Groups [H04L 65/00](#) - [H04L 65/80](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 65/00](#) - [H04L 65/80](#) : [H04L 29/06](#)]

U H04L 69/00 {Application independent communication protocol aspects or techniques in packet data networks (interconnection arrangements between CPUs, memories, or peripherals within a single computer [G06F 13/00](#) ; data switching networks [H04L 12/00](#); flow control [H04L 12/569](#) ; routing of packets [H04L 12/5689](#) ; network management [H04L 12/24](#) ; network monitoring or testing [H04L 12/26](#) ; network topologies, i.e. networks characterized by the path configuration, media access control [H04L 12/28](#) ; intermediate storage or scheduling [H04L 12/5694](#) ; packet switches and switching fabrics [H04L 12/5696](#) ; message switching systems, e.g. email, [H04L 12/58](#) ; broadcast or multicast [H04L 12/18](#) ; hybrid switching systems [H04L 12/64](#) ; gateways [H04L 12/66](#) ; networks specially adapted for wireless communication [H04W](#); transmission systems [H04B](#))}

WARNING

Groups [H04L 69/00](#) - [H04L 69/40](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for these groups is as follows: - [H04L 69/00](#) -
[H04L 69/28](#) : [H04L 29/06](#) - [H04L 69/30](#)
- [H04L 69/329](#) : [H04L 29/08](#) -
[H04L 69/40](#) : [H04L 29/14](#)]

H04L 69/03 · {Protocol definition or specification (protocol conformance testing [H04L 1/244](#) ; specification techniques [G06F9/44G4S](#)[G06F 8/10](#))}

U H04L 2201/00 **Algorithms used for the adjustment of time-domain equalizers**

H04L 2201/08 · Algorithms not covered by groups [T04L200:02](#)[H04L 2201/02](#) to [T04L200:06](#) [H04L 2201/06](#)

U H04L 2209/00 {Additional information or applications relating to cryptographic mechanisms or cryptographic arrangements for secret or secure communication [H04L 9/00](#)}

U H04L 2209/60 · {Digital content management, e.g. content distribution}

H04L 2209/603 · · {Digital right management ([/DRM](#))}

Project: N/A (H04M)

U H04M 3/00 **Automatic or semi-automatic exchanges {(constructional details of telephone exchanges [H04Q 1/02](#))}**

U H04M 3/005 · {Interface circuits for subscriber lines (current supply [H04M 19/00](#) and subgroups; supervisory, monitoring or testing arrangements [H04M 3/22](#) and subgroups; in key telephone systems [H04M 9/006](#))}

H04M 3/007 · · {Access interface units for simultaneous transmission of speech and data, e.g. digital subscriber line ([/DSL](#)) access interface units (DSL access multiplexers [H04Q 11/0478](#), and [H04L 12/2856](#))}

U H04M 3/42 · Systems providing special services or facilities to subscribers

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 · · · Centralised call answering arrangements requiring operator intervention, { e.g. call or contact centers for telemarketing}

U H04M 3/523 · · · · with call distribution or queueing

U H04M 3/5232 · · · · · {Call distribution algorithms}

H04M 3/5235 · · · · · · {Dependent on call type or called number ([/DNIS](#))}

- U H04M 7/00** **Interconnection arrangements between switching centres (transmission arrangements in general [H04B](#); { interconnection arrangements between PSTN/ISDN switching centres [H04Q 3/00](#)})**
- H04M 7/0012
- {Details of application programming interfaces [[API](#)]} for telephone networks; Arrangements which combine a telephonic communication equipment and a computer, i.e. computer telephony integration [[CPI](#)] arrangements}}
- 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 2017/25
- {using a code}
- U H04M 2017/2506
- · {code input or reading}
- H04M 2017/2525
- · · {optical code recognition ([OCR](#)), e.g. bar code reader}
- U H04M 2215/00** **Metering arrangements; Time controlling arrangements; Time indicating arrangements**
- U H04M 2215/01
- Details of billing arrangements
- H04M 2215/0108
- · Customization according to wishes of subscriber, e.g. customer preferences, friends and family, selecting services or billing options, Personal Communication Systems ([PCS](#))
- H04M 2215/016
- · Billing using Intelligent Networks ([IN](#)) or Advanced Intelligent Networks ([AIN](#))
- H04M 2215/0164
- · Billing record, e.g. Call Data Record ([CDR](#)), Toll Ticket([TT](#)), Automatic Message Accounting ([AMA](#)), Call Line Identifier ([CLI](#)), details, i.e. parameters, identifiers, structure
- H04M 2215/82
- Advice-of-Charge ([AOC](#)), i.e. notify subscriber of charges/cumulative charge; meter at the substation

Project: N/A (H04N)**H04N**

PICTORIAL COMMUNICATION, e.g. TELEVISION (measuring, testing [G01](#); systems for autographic writing, e.g. writing telegraphy, which involve following an outline {[G08C 21/00](#)}; information storage based on relative movement between record carrier and transducer [G11B](#); coding, decoding or code conversion, in general [H03M](#); broadcast distribution or the recording of use made thereof [H04H](#))

NOTES

1. This subclass covers :

- {generation, recording or} transmission of pictures or their transient or permanent reproduction either locally or remotely {and the corresponding electronic image capture and reproduction process employing image representative electric signals,} by methods or arrangements {involving at least one of} the following steps:
 - a. the {electronic acquisition or} scanning of a picture {or scene} , i.e. resolving the whole picture-containing area into individual picture-elements and the derivation of picture-representative electric signals related thereto, simultaneously or in sequence {, e.g. by reading an electronic solid-state image sensor [[SSIS](#)] pickup device (e.g. CCD or CMOS image sensor) as electronic image sensor converting optical image information into said electrical signals;}
 - b. the reproduction of the whole picture-containing area {or scene} by the reproduction of individual picture-elements into which the picture is resolved by means of picture representative electric signals derived therefrom, simultaneously or in sequence by converting an electric image signal into light e.g. with an electronic spatial light modulator;
- concerning cameras or projectors:

- video cameras or TV cameras, e.g. in studios, CCTV cameras, surveillance cameras, camcorders; constructional or mechanical details related to such cameras even when not peculiar to the presence of an electronic image sensor [EIS] e.g. housings;
- arrangements or methods for image capture using an EIS or image projection using an electronic spatial light modulator [ESLM], i.e.
 - i. sensor read-out;
 - ii. processing of electrical image signals from the EIS or provided to the ESLM for the generation of respective camera or projector control signals,
 - for controlling the EIS or its read-out for e.g. exposure, scene selection for auto focussing, or electronic image enhancement or processing of the image signals captured by the EIS, e.g. white balance, electronic motion blur correction, noise suppression [H04N 5/00](#) ,
 - for controlling the ESLM, e.g. control of the light source based on electronic image signal, light conditioning specially adapted for the ESLM, or
 - for controlling other camera functions, e.g. exposure, shaking by influencing optical parts of the camera (generation of control signals for focussing for optical elements [G02B 7/28](#) ; using such signals to control focus of particular apparatus, see the subclasses for the apparatus, e.g. [G03B](#), [G03F](#), [H04N](#));
- electronic image data storage (data storage in general [G11B](#), [G11C](#));
- in-camera image processing e.g. correction of lens distortion, defect pixel correction, noise suppression, removal of motion blur, improving of the dynamic range of the image, in-projector image processing, electronic image data manipulation, e.g. during display or projection (image processing per se [G06T](#));
- electronic viewfinders e.g. control of image pickup devices based on information indicated by the electronic viewfinder displaying an image signal generated by the EIS ;
- electrical or mechanical aspects of camera modules using electronic image sensors, as well as related constructional details as in webcams or mobile phones (see [H04M 1/0264](#) for mounting structure in mobile phones);
- details of projectors peculiar to the use of an ESLM, e.g. dichroic or polarizing arrangements specially adapted for the ESLM (dichroic or polarizing arrangements in general [G02B](#), [G03B](#));
- remote control of cameras or projectors peculiar to the EIS or the ESLM, e.g. affecting their operation, or based on a generated image signal;
- adaptations peculiar to the use of a EIS or ESLM and/or the display, the transmission, recording or other use of electrical image data and related circuitry, e.g. mounting of EIS or ESLM, integrated cleaning system for the EIS, dust mapping, cooling of the EIS, controlling the operation of the EIS by external input signals;
- systems or apparatus wherein the inventive contribution lies in the interaction between features covered in Notes 1 above, concerning cameras and projectors, when interacting with those covered in Note 1 of [G03B](#), e.g. switch-over between electronic motion-blur correction of electronic viewfinder during focussing and optical motion-blur correction of the lens during exposure, electronic motion blur correction of the electronic image sensor based on output signals of additional sensor, or interaction between mechanical shutter and electronic control of the charge accumulation period of the EIS;]
- (in group [H04N 1/00](#)) systems for the transmission or the reproduction of arbitrarily composed pictures or patterns in which the local light

variations composing a picture are not subject to variation with time, e.g. documents (both written and printed), maps, charts, photographs (other than cinematograph films);

- circuits specially designed for dealing with pictorial communication signals, e.g. television signals, as distinct from merely signals of a particular frequency range.

2. This subclass does not cover :

- circuits or other parts of systems which form the subject of other subclasses, which are covered by the corresponding subclasses, e.g. [H03C](#), [H03F](#), [H03J](#), [H04B](#), [H04H](#);
- systems in which legible alphanumeric or like character forms are analysed according to step (a) of Note (1) to derive an electric signal from which the character is recognised by comparison with stored information, which are covered by subclass [G06K](#);
- systems for the direct photographic copying of an original picture in which an electric signal representative of the picture is derived according to the said step (a) of and employed to modify the operation of the system, e.g. to control exposure, which are covered by class [G03](#);
- systems for the reproduction according to step (b) of Note (1) of pictures comprising alphanumeric or like character forms but involving the production of the equivalent of a signal which would be derived according to the abovementioned step (a), e.g. by cams, punched card or tape, coded control signal, or other means, which are covered by the subclass for the application, e.g. [G01D](#), [G06T](#), [H04L](#);
- systems for the reproduction to the above-mentioned step (b) of pictures comprising alphanumeric or like character forms and involving the generation according to the abovementioned step (a) of picture-representative electric signals from a pre-arranged assembly of such characters, or records thereof, forming an integral part of the systems, which are covered by the subclass for the application, e.g. [B41B](#), [G06K](#), subject to those applications which are covered by this subclass;
- printing, duplication or marking methods, or materials or processes therefor, which are covered by the relevant subclasses, e.g. [B41C](#), [B41M](#), [G03C](#), [G03F](#), [G03G](#);
- apparatus or methods for taking photographs using light sensitive film for image capture, apparatus/methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, and their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;
- aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus methods for taking photographs using light sensitive film, i.e. insofar as not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, and their related controls insofar as they are not peculiar to the presence or use of the EIS, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake);
- aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus/ methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, and their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystone correction;
- (opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;
- optical viewfinders;

- remote control of cameras and projectors insofar not peculiar to the EIS or ESLM, e.g. not affecting their operation, or being based on a generated image signal;
 - optical aspects of camera modules using electronic image sensors and related constructional details (optical elements or arrangements associated with solid state imager structures [H01L 27/14625](#));
 - constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM;]
3. In this subclass, the following expression is used with the meaning indicated: "television systems" means those systems for the {electronic generation}, transmission and reproduction of arbitrarily composed pictures in which the local light variations composing a picture may change with time, e.g. natural "live" scenes, {electronic} recordings of such scenes such as cinematograph films].
4. In this subclass, as in subclass [G03B](#), the following terms are used with the meaning indicated:
- "camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;
 - "projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an electric image signal into an optical signal using an electronic spatial light modulator;
 - "electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;
 - "additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;
 - "electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.]

WARNING

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

- [H04N 5/31](#) covered by [G01S 7/52](#), [G01S 15/89](#)
- [H04N 5/761](#) covered by [H04N 5/782](#)
- [H04N 5/7613](#) covered by [H04N 5/782](#)
- [H04N 5/7617](#) covered by [H04N 5/782](#)
- [H04N 5/922](#) covered by [H04N 5/92](#)
- [H04N 5/924](#) covered by [H04N 5/92](#)
- [H04N 9/815](#) covered by [H04N 9/81](#)
- [H04N 11/24](#) covered by [H04N 11/002](#)
- [H04N 15/00](#) covered by [H04N 13/00](#)

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 1/0035

• {User-machine interface; Control console (input or output arrangements for computers [G06F 3/00](#))}

U H04N 1/00352

• • {Input means ([H04N 1/00411](#) takes precedence; input arrangements for computers [G06F 3/00](#))}

- H04N 1/00381
 - • • {Input by recognition or interpretation of visible user gestures (manual input means, e.g. digitisers, writing tablets [H04N 1/00392](#) ; recognition algorithms [G06K 9/00335](#) ; gesture input to computers [G06F3/00B8](#)[G06F 3/017](#))}
- U H04N 1/00405
 - • {Output means (output arrangements for computers [G06F 3/00](#))}
- H04N 1/00477
 - • • {Indicating status, e.g. of a job (for control or supervision between transmitter and receiver or between image input and image output device [H04N1/3219](#)[H04N 2201/3219](#))}
- U H04N 1/024
 - Details of scanning heads; {Means for illuminating the original (circuit details thereof [H04N 1/40](#))}
- H04N 1/04
 - Scanning arrangements, {i.e. arrangements for the displacement of active reading or reproducing elements relative to the original or reproducing medium, or vice versa}{[H04N 1/387](#) takes precedence; { scanning by varying the direction of light in general [G02B 26/10](#))}
- H04N 1/06
 - • using cylindrical picture-bearing surfaces, {i.e. scanning a main-scanning line substantially perpendicular to the axis and lying in a curved cylindrical surface (for feeding a sheet in the subscanning direction by rotation about its axis only [H04N 1/12](#))}
- H04N 1/12
 - • using the sheet-feed movement {or the medium-advance or the drum-rotation movement} as the slow scanning component, {e.g. arrangements for the main-scanning}{sheet-feed movement by translatory movement of a flat picture-bearing surface [H04N 1/1008](#) ; main-scanning using oscillating or rotating mirrors [H04N 1/113](#) ; } using multi-element arrays [H04N 1/19](#)}
- U H04N 1/19
 - • using multi-element arrays
- H04N 1/191
 - • • the array comprising a one-dimensional array, {or a combination of one-dimensional arrays, or a substantially one-dimensional array, e.g. an array of staggered elements}
- H04N 1/192
 - • • • Simultaneously {or substantially simultaneously} scanning picture elements on one main scanning line {(details of the sub-scanning [H04N 1/10](#) , [H04N 1/12](#))}
- H04N 1/193
 - • • • using electrically scanned linear arrays, {e.g. linear CCD arrays}
- H04N 1/203
 - • Simultaneous scanning of two or more separate pictures, {e.g. two sides of the same sheet (refeeding a sheet for double-sided scanning [H04N 1/00572](#))}
- 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 1/32101
 - • {Display, printing, storage or transmission of additional information, e.g. ID code, date and time or title}
- U H04N 1/32106
 - • • {separate from the image data, e.g. in a different computer file}
- H04N 1/32117
 - • • • {in a separate transmission or protocol signal prior to or subsequent to the image data transmission, e.g. in digital identification signal ([DIS](#)), in non standard setup ([NSS](#)) or in non standard field ([NSF](#)) (for mode signalling [H04N 1/333](#))}
- U H04N 1/34
 - • for coin-freed systems; {pay systems (telephonic metering [H04M 15/00](#) , coin-freed or like apparatus per se [G07F](#))}
- H04N 1/387
 - Composing, repositioning or otherwise {geometrically} modifying originals (photoelectronic composing of characters [B41B 19/00](#) ; { image data processing or generation, in general [G06T](#))}
- U H04N 1/40
 - Picture signal circuits ([H04N 1/387](#) takes precedence)

- 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 1/4055
- • • {producing a clustered dots or a size modulated halftone pattern}
- H04N 1/4056
- • • • {the pattern varying in one dimension only, e.g. dash length, pulse width modulation ([PDM](#))}
- U H04N 1/41
- Bandwidth or redundancy reduction (by scanning [H04N 1/17](#) ; {[H04N 19/00](#) takes precedence; for data acquisition [G06F 17/40](#) ; coding for image data processing in general [G06T 9/00](#) ; data compression in general [H03M 7/30](#)})
- H04N 1/411
- • for the transmission {or storage} or reproduction of two-tone pictures, e.g. black and white pictures
- 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](#) to [H04N 5/378](#) are based on IPC2012.01
- U H04N 5/14
- Picture signal circuitry for video frequency region ([H04N 5/222](#) takes precedence)
- 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 5/222
- Studio circuitry; Studio devices; Studio equipment; {Cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in other devices e.g. mobile phones, computers or vehicles}
- U H04N 5/225
- • 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](#))}
- U H04N 5/232
- • • Devices for controlling television cameras, e.g. remote control; {Control of cameras comprising an electronic image sensor, e.g. digital cameras, video cameras, TV cameras, video cameras, camcorders, webcams, camera modules for embedding in e.g. mobile phones, computers or vehicles} ([H04N 5/235](#) takes precedence; { varying magnification for cameras, e.g. angle of view, by optical means only [G02B 7/00](#)}, [G03B](#))
- H04N 5/235
- • • Circuitry {or methods} for compensating for variation in the brightness of the object {based on an electric image signals provided by an electronic image sensor (exposure control for film cameras or cameras using an additional sensor [G03B 7/00](#))}
- H04N 5/238
- • • • by influencing the optical part of the camera, {e.g. diaphragm, intensifier, fibre bundle ([H04N 5/2352](#) takes precedence)}
- H04N 5/243
- • • • by influencing the picture signal, {e.g. signal amplitude gain control ([H04N 5/2352](#) takes precedence)}

- U H04N 5/262
 - • Studio circuits, e.g. for mixing, switching-over, change of character of image, other special effect ; {Cameras specially adapted for the electronic generation of special effects}
- U H04N 5/30
 - Transforming light or analogous information into electric information ([H04N 5/222](#) takes precedence; scanning details [H04N 3/00](#) ; light transforming elements [H01J](#) , [H01L](#))
- U H04N 5/335
 - • using solid-state image sensors [SSIS] ([H04N 5/32](#) , [H04N 5/33](#) take precedence)

NOTE
In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place
Groups [H04N 5/341](#) to [H04N 5/378](#) are based on IPC2012.01
- U H04N 5/341
 - • • Extracting pixel data from an image sensor by controlling scanning circuits, e.g. by modifying the number of pixels having been sampled or to be sampled
- H04N 5/345
 - • • • by partially reading an SSIS array, {i.e. by outputting a number of pixels less than the number of pixels present on the image sensor}
- H04N 5/349
 - • • • for increasing resolution by shifting the sensor relative to the scene, {e.g. microscanning}
- U H04N 5/44
 - Receiver circuitry ([H04N 5/14](#) takes precedence)
- H04N 5/4403
 - • {User interfaces for controlling a television receiver or set top box [STB] through a remote control device, e.g. graphical user interfaces [G08C](#)}; Remote control devices therefor (user interfaces for controlling a tuning device of a television receiver through a remote control [H03J 9/00](#) ; constructive details of casings for the remote control device [H01H 9/0235](#) ; remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver [H04B 1/205](#) ; remote control devices in general [G08C](#))
- U H04N 2005/4405
 - • • {Hardware details of remote control devices}
- U H04N 2005/4408
 - • • • {Display}
- H04N 2005/441
 - • • • • {for the display of non-command information, e.g. electronic program guide [E04G](#), e-mail, messages or a second television channel}
- H04N 2005/4412
 - • • • • {Dedicated function buttons, e.g. for the control of an electronic program guide [E04G](#), subtitles, aspect ratio, picture-in-picture or teletext}
- H04N 2005/4426
 - • • • • {Transmission circuitry, e.g. infrared [H04N 5/4426](#) or radio frequency [H04N 5/4426](#)}
- U H04N 5/445
 - • for displaying additional information ([H04N 5/50](#) takes precedence)
- U H04N 5/44513
 - • • {for displaying or controlling a single function of one single apparatus, e.g. TV receiver or VCR}
- H04N 2005/44539
 - • • • {involving multilingual on screen display [H04N 5/44539](#) options}
- U H04N 5/44543
 - • • {Menu-type displays ([H04N 5/44582](#) , [H04N 5/44591](#) take precedence)}
- U H04N 2005/44573
 - • • • {for using the television receiver as a multimedia terminal}
- H04N 2005/44578
 - • • • • {involving the communication via a network, e.g. local area network [H04N 2005/44578](#), wide area network [H04N 2005/44578](#), internet, intranet}
- U H04N 5/44582
 - • • {the additional information being controlled by a remote control apparatus}
- H04N 2005/44586
 - • • • {whereby remote controller buttons have been transferred to the on screen display [H04N 2005/44586](#) menu}

- U H04N 5/74
- Projection arrangements for image reproduction, e.g. using eidophor (optical systems in general [G02B](#))
- WARNING
[H04N 5/74](#) and subgroups are no longer used for the classification of new documents as from October 1, 2008. The backlog is being continuously reclassified to subgroups of [H04N 9/31](#)
- U H04N 5/7416
- {involving the use of a spatial light modulator, e.g. a light valve, controlled by a video signal}
- H04N 5/7458
- • {the modulator being an array of deformable mirrors, e.g. digital micromirror device [\(DMD\)](#)}
- U H04N 5/76
- Television signal recording (diagnosis, testing or measuring for television signal recorders [H04N 17/06](#) ; recording in connection with measuring [G01D](#) ; information storage {in which the television signal is not involved, driving, starting, stopping, head switching, editing, indexing} in general [G11](#) , e.g. [G11B](#))
- U H04N 5/91
- • Television signal processing therefor (of colour signals [H04N 9/79](#))
- U H04N 5/913
- • • for scrambling; {for copy protection} (scrambling of a television signal for transmission [H04N 7/167](#))
- U H04N 2005/91307
- • • • {by adding a copy protection signal to the video signal}
- H04N 2005/91328
- • • • • {the copy protection signal being a copy management signal, e.g. a copy generation management signal [\(CGMS\)](#)}
- U H04N 7/00** **Television systems (details [H04N 3/00](#), [H04N 5/00](#); methods or arrangements, for coding, decoding, compressing or decompressing digital video signals [H04N 19/00](#); selective content distribution [H04N 21/00](#))**
- H04N 7/08
- Systems for the simultaneous or sequential transmission of more than one television signal, e.g. additional information signals, the signals occupying wholly or partially the same frequency band, {e.g. by time division ([H04N 7/007](#) takes precedence)}
- H04N 7/083
- • with signal insertion during the vertical and the horizontal blanking interval, {e.g. MAC data signals}
- U H04N 9/00** **Details of colour television systems**
- U H04N 9/79
- Processing of colour television signals in connection with recording
- U H04N 9/87
- • Regeneration of colour television signals ([H04N 9/80](#) takes precedence)
- H04N 9/873
- • • for restoring the colour component sequence of the reproduced {chrominance} signal
- H04N 13/00** **Stereoscopic {or multiview} television systems; Details thereof**
- NOTE
This group covers systems where a three-dimensional effect or different views according to the viewpoint location are provided to one or more viewers by means of electronic signals representing a plurality of images or signals including depth information, e.g. taken from different viewpoint locations representing the interocular distance (optical systems for producing stereoscopic or other three dimensional effects [G02B 27/22](#))]
- U H04N 13/02
- Picture signal generators
- H04N 13/0271
- • {wherein the generated image signal comprises a depth map or a disparity map (depth map generation as such [G06T 7/0075](#) , ~~[G06T/00R7S](#)~~)}
- U H04N 13/04
- Picture reproducers {(optical systems for producing stereoscopic or other three dimensional effects [G02B 27/22](#))}

H04N 13/0468

- {using observer tracking (computer input or output arrangements in interaction with the human body [G06F3/00B8](#)[G06F 3/011](#))}

U H04N 21/00

Selective content distribution, e.g. interactive television, VOD [Video On Demand] (broadcast communication [H04H](#) ; arrangements, apparatus, circuits or systems for communication control or processing being characterised by a protocol [H04L 29/06](#) ; { broadcast or conference over packet-switching networks [H04L 12/18](#) , } real-time bi-directional transmission of motion video data [H04N 7/14](#))

NOTES

1. This group covers :

- interactive video distribution processes, systems, or elements thereof, which are characterised by point-to-multipoint system configurations, and which are mainly used for motion video data unidirectional distribution or delivery resulting from interactions between systems operators, e.g. access or service providers, or users e.g. subscribers, and system elements.
- such systems include dedicated communication systems, such as television distribution systems, which primarily distribute or deliver motion video data in the manner indicated, which may, in addition, provide a framework for further, diverse data communications or services in either unidirectional or bi-directional form. However, video will occupy most of the downlink bandwidth in the distribution process.
- typically, system operators interface with transmitter-side elements or users' interface with receiver-side elements in order to facilitate, through interaction with such elements, the dynamic control of data processing or data flow at various points in the system. This interaction is typically occasional or intermittent in nature.
- processes, systems or elements thereof specially adapted to the generation, distribution and processing of data, which is either associated with video content, e.g. metadata, ratings, or related to the user or his environment and which has been actively or passively gathered. This data is either used to facilitate interaction or to alter or target the content.

2. In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place

3. In this main group, the following terms and expressions are used with the meaning indicated:

additional data - designates still pictures, textual, graphical or executable data such as software. It is used to convey supplemental information and can be generated prior to or during the distribution process itself, e.g. metadata, keys.

content designates video or audio streams, which may be combined with additional data. Video data will always be present and occupy most of the downlink bandwidth in the distribution process

server - designates an apparatus designed for adapting the content received from the content provider to the distribution network. It also manages the distribution to client devices or intermediate components over a network. Further servers may also be present for gathering or generating additional data, e.g. rights management server

additional data server - designates a server, which sole purpose is the distribution or management of additional data. It is not in charge of the distribution of video or audio data

client - designates an apparatus such as a TV receiver, a set-top-box, a PC-TV, a mobile appliance (e.g. mobile phone or receiver in a vehicle), for receiving video, audio and possibly additional data from one or several servers or intermediate components via a network for further processing, storing or displaying. It can also transmit this data on a home-based local network to further devices, e.g. a home server transmitting video to PCs and set-top-boxes within a home.

local network - pertains to a restricted area, e.g. a home or a vehicle, and designates the link between a client and its peripheral devices
network - is to be distinguished from "local network": "network" designates the link between the server and the clients, or between the server and the intermediate components, or between the intermediate components and the clients, or between remotely located clients
distribution - encompasses broadcasting, multicasting and unicasting techniques for transmitting content from one or more sources to one or more receiving stations. The distribution follows a request by a receiving station to the source, e.g. VOD or from a customization of the content by the source, e.g. targeting advertisements to a demographic group in a unidirectional or bidirectional system. Additionally, distribution encompasses techniques where the client acts as a source and another client acts as a receiving station, e.g. a peer-to-peer system for sharing video among client devices
end-user - designates a physical person, e.g. a TV viewer, who consumes the content using the client device. He is the final recipient of the content distributed by the server
interaction - covers actions occurring between or among two or more objects that have an effect upon one another, wherein objects comprise users, system operators, system elements, or content. The user may interact with content locally at the client device, e.g. for requesting additional data stored within the client device. The user may interact with content remotely through a server e.g. for VOD playback control or for uploading video to a server. The client device may interact with the content e.g. selecting content based upon the user profile. The client device may interact with a server using a return channel, e.g. for authenticating client or uploading client hardware capabilities. The server may interact with a client device, e.g. to force a client to tune to an advertisement channel
upstream - designates the direction of data flow towards the source, e.g. a server receiving a request via a mobile phone network
downstream - designates the direction of data flow towards a client, e.g. a client receiving data originating from a server
elementary stream (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}
- H04N 21/226 • • • {Characteristics of the server or} Internal components of the server
- U H04N 21/23 • • {Processing of content or additional data; Elementary server operations; Server middleware}
- H04N 21/232 • • • Content retrieval operation {locally} within server, e.g. reading video streams from disk arrays {(storage management [G06F 3/0604](#) ; details of querying and searching of video data from a database [G06F 17/30843](#))}
- U H04N 21/238 • • • {Interfacing the downstream path of the transmission network, e.g. adapting the transmission rate of a video stream to network bandwidth; Processing of multiplex streams (hybrid Fiber Coaxial HFC networks for downstream channel allocation for video distribution [H04L 12/2801](#) ; flow control in packet networks [H04L 12/569](#) ; formation of RTP packets [H04L 29/06176](#) ; application layer Quality of Service and content dependent routing [H04L 29/08945](#))}
- H04N 21/2383 • • • Channel coding (or modulation) of digital bit-stream, e.g. QPSK modulation (arrangements for detecting or preventing errors in the information received by adapting the channel coding [H04L 1/0009](#) ; analogue front ends or means for connecting modulators, demodulators or transceivers to a transmission line [H04L 27/0002](#))

- H04N 21/239
 - • • Interfacing the upstream path of the transmission network, e.g. prioritizing client {content} requests (hybrid Fiber Coaxial [HFC] networks for upstream channel allocation for video distribution [H04L 12/2801](#) ; flow control in data networks [H04L 12/569](#) ; formation of RTP packets [H04L 29/06176](#) ; application layer Quality of Service and content dependent routing of client requests [H04L 29/08945](#))
- U H04N 21/27
 - • {Server based end-user applications}
- H04N 21/274
 - • • Storing end-user {multimedia} data in response to end-user request {, e.g. network recorder}
- 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 21/4227
 - • • • {Providing} Remote input by a user located remotely from the client device, e.g. at work
- H04N 21/426
 - • • {Characteristics of or} Internal components of the client ([H04N 5/44](#) takes precedence)
- 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](#))}
- H04N 21/436
 - • • Interfacing a local distribution network, e.g. communicating with another STB, inside the home {; Interfacing an external card to be used in combination with the client device} (arrangements specially adapted plural spots in a confined site in broadcast systems [H04H 20/63](#))
- H04N 21/43615
 - • • • {Interfacing a Home Network, e.g. for connecting the client to a plurality of peripherals (home Audio Video Interoperability ([H04H 20/63](#)))} data switching networks [H04L 12/2805](#))}
- 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 21/458
 - • • Scheduling content for creating a personalized stream, e.g. by combining a locally stored advertisement with an incoming stream; Updating operations, e.g. for OS modules {; time-related management operations (arrangements for replacing or switching information during the broadcast or during the distribution [H04H 20/10](#))}
- U H04N 21/462
 - • • {Content or additional data management e.g. creating a master electronic program guide from data received from the Internet and a Head-end, controlling the complexity of a video stream by scaling the resolution or bit-rate based on the client capabilities}
- H04N 21/4627
 - • • • Rights management {associated to the content (protecting software against unauthorised usage in a vending or licensing environment [G06F 21/10](#) ; security in data switching network management [H04L 12/2461](#) ; security management or policies for network security [H04L 29/06986](#) ; access security in wireless networks [H04W 12/08](#))}

- U H04N 21/47
 - • {End-user applications (interaction techniques for graphical user interfaces [G06F 3/048](#) ; receiver circuitry for displaying additional information [H04N 5/445](#) ; software engineering for user interfaces [G06F 8/20](#) ; services or applications for real-time multimedia communications [H04L 29/06387](#))}
- U H04N 21/478
 - • • {Supplemental services, e.g. displaying phone caller identification, shopping application}
- H04N 21/4782
 - • • • Web browsing {, e.g. WebTV (information retrieval from the Internet [G06F 17/30861](#) ; protocols for network applications involving the use of web-based technology [H04L 29/0809](#))}
- H04N 21/60
 - {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](#))
- 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 21/6375
 - • • • for requesting retransmission {, e.g. of data packets lost or corrupted during transmission from server}{ARQ protocols [H04L 1/18](#) ; Transmission Control Protocol / Internet Protocol [TCP/IP] [H04L 29/06095](#)}
- U H04N 21/6377
 - • • • {directed to server (control of source by destination in one way streaming for real-time multimedia communications [H04L 29/06469](#))}
- H04N 21/6379
 - • • • • directed to encoder {, e.g. for requesting a lower encoding rate}
- H04N 21/643
 - • • {using dedicated} Communication protocols (streaming protocols for real-time multimedia communications [H04L 29/06517](#))
- U H04N 21/80
 - {Generation or processing of content or additional data by content creator independently of the distribution process; Content per se (arrangements for generating broadcast information [H04H 60/02](#))}
- U H04N 21/81
 - • {Monomedia components thereof}
- H04N 21/812
 - • • {involving advertisement data (advertising per se [G06Q30/00A](#) [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 2201/32
 - 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 2201/3246

- • • of data relating to permitted access or usage, e.g. level of access or usage parameters for digital rights management ([{/DRM}](#)) related to still images

Project: N/A (H04Q)**U H04Q 3/00****Selecting arrangements ([H04Q 5/00](#) to [H04Q 11/00](#) take precedence)**

U H04Q 3/0016

- {Arrangements providing connection between exchanges}

U H04Q 3/0029

- • {Provisions for intelligent networking}

H04Q 3/0037

- • • {involving call modelling techniques, e.g. modifications to the basic call state model ([{/BCSM}](#))}

U H04Q 11/00**Selecting arrangements for multiplex systems (multiplex systems [H04J](#))**

U H04Q 11/0001

- {using optical switching}

U H04Q 11/0005

- • {Switch and router aspects}

U H04Q 2011/0007

- • • {Construction}

U H04Q 2011/0026

- • • • {using free space propagation (e.g. lenses, mirrors)}

H04Q 2011/003

- • • • • {using switches based on micro-electro-mechanical systems ([{/MEMS}](#))}

H04Q 2011/0032

- • • • • {using static wavelength routers (e.g. arrayed waveguide grating router ([{/AWGR}](#)))}

U H04Q 11/0062

- • {Network aspects}

H04Q 2011/0077

- • • {Labelling aspects, e.g. multiprotocol label switching ([{/MPLS}](#)), G-MPLS, MPAS}

U H04Q 2213/00**Indexing scheme relating to selecting arrangements in general and for multiplex systems**

H04Q 2213/202

- Network termination ([{/NT}](#))

H04Q 2213/203

- Exchange termination ([{/ET}](#))

H04Q 2213/208

- Inverse multiplexing; Time slot sequence integrity ([{/TSSI}](#)) aspects

H04Q 2213/246

- Instant speaker's algorithm ([{/ISA}](#))

H04Q 2213/286

- Direct inward dialling ([{/PBX}](#))

H04Q 2213/407

- Push-button dialling (~~not [T04Q13/405](#)~~ ~~not [H04Q 2213/405](#)~~)

Project: N/A (H04R)**H04R 1/00****Details of transducers, {loudspeakers or microphones}**

H04R 1/02

- Casings; Cabinets; {Supports therefor;} Mountings therein ([H04R 1/28](#) takes precedence; {attachments for microphones [H04R 1/08](#) ; mounting of transducers in earpieces [H04R 1/1075](#)})

H04R 1/08

- Mouthpieces; {Microphones;} Attachments therefor

U H04R 1/10

- Earpieces; Attachments therefor; {Earphones; Monophonic headphones ([H04R 1/28](#) takes precedence; stereophonic headphones [H04R 5/033](#))}

NOTES

1. This group covers details of headphones, both of monophonic and stereophonic type.

2. When classifying in this group or in its subgroups, aspects relating to stereophonic headphones are to be classified in [H04R 5/033](#) as well

U H04R 1/20

- Arrangements for obtaining desired frequency or directional characteristics (for stereophonic purpose [H04R 5/00](#))

- U H04R 1/22
- for obtaining desired frequency characteristic only (circuit for combining transducers having different responses [H04R 3/00](#){ for hearing aids [H04R 25/407](#)})
- H04R 1/30
- • Combinations of transducers with horns, e.g. with mechanical matching means {, i.e. front-loaded horns}(horns in general [G10K](#)){ transducer enclosures or mountings using a back-loaded horn [H04R 1/2861](#) ; application of horns as guiding means to obtain a predetermined directivity characteristic [H04R 1/345](#)})
- H04R 3/00** **Circuits for transducers {, loudspeakers or microphones}**
- H04R 3/02
- for preventing acoustic reaction {, i.e. acoustic oscillatory feedback (specially adapted for hearing aids [H04R 25/453](#)})
- U H04R 5/00
- Stereophonic arrangements (stereophonic pick-ups [H04R 9/16](#) , [H04R 11/12](#) , [H04R 17/08](#) , [H04R 19/10](#))**
- NOTE
- In this group, the expression "stereophonic arrangements" covers quadraphonic or similar arrangements.
- H04R 5/04
- Circuit arrangements, {e.g. for selective connection of amplifier inputs/outputs to loudspeakers, for loudspeaker detection, or for adaptation of settings to personal preferences or hearing impairments (combinations of amplifiers [H03F 3/68](#) ; stereophonic systems [H04S](#)})
- H04R 23/00
- Transducers other than those covered by groups [H04R 9/00](#) to [H04R 21/00](#) {(diaphragms for transducers of the distributed-mode type [H04R 7/045](#)})**
- H04R 2499/00
- Aspects covered by [T04R H04R](#) or [T04S H04S](#) not otherwise provided for in their subgroups**

Project: N/A (H04S)

- U H04S 3/00
- Systems employing more than two channels, e.g. quadraphonic ([H04S 5/00](#), [H04S 7/00](#) take precedence)**
- H04S 3/008
- {in which the audio signals are in digital form, i.e. employing more than two discrete digital channels, e.g. Dolby Digital, Digital Theatre Systems (~~[DTS]~~) (data reduction aspects thereof based on psychoacoustics [G10L 19/02](#)})

Project: N/A (H04T)

H04T

INDEXING SCHEME RELATING TO STANDARDS FOR ELECTRIC COMMUNICATION TECHNIQUE (CLASS [H04](#))NOTES

1. This scheme constitutes a non-associated internal scheme for indexing exclusively documents issued by standardisation bodies (herein called standards) for electric communication technique ([H04](#)).
As standardisation bodies organize their documents in different ways, the present scheme is subdivided into main groups related to a particular CPC range to allow different indexing approaches.
2. Scheme index:
- 3.

Wireless communication standards	H04T 2001/00	-
H04T2001/999 H04T 2001/231		
Standards related to data switching networks in general	H04T 2012/00	-
H04T2012/99 H04T 2012/00		

Internet standards [H04T 2029/00](#) -
~~H04T2029/99~~[H04T 2029/06](#)

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](#) , ~~H04Q7/20 to H04Q7/3883~~.

In order to keep the structure adopted by the standardisation bodies considered, a matrix type of scheme is used as indicated below:

- [H04T 2001/101](#) to ~~H04T2001/199~~[H04T 2001/113](#) codes are used for information relating to the physical aspects, e.g. radio resources, core network resources...
- [H04T 2001/201](#) to ~~H04T2001/299~~[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~~

U H04T 2001/209

- Applications

NOTE

This subgroup covers

- functional aspects relating to applications other than the basic network and call/session services.

H04T 2001/2091

- • Call related supplementary Services, e.g. Call Forwarding (~~{CF}~~), Cell Barring (~~{CB}~~)

Project: N/A (H04W)

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 4/02
- {Mobile application} Services making use of the location of users or terminals {, e.g. OMA SUPL, OMA MLP or 3GPP LCS}(mobility data transfer [H04W 8/08](#) ; access restriction based on user location or mobility data [H04W 48/04](#) ; registration, e.g. affiliation to network, de-registration, e.g. terminating affiliation [H04W 60/00](#) ; locating users or terminals for network management purpose [H04W 64/00](#) ; navigation or navigational instruments [G01C 21/00](#) ; radio direction-finding, radio navigation, determining distance or velocity by use of radio waves, locating or presence-detecting by use of the reflection or re-radiation of radio waves or analogous arrangements using other waves [G01S](#))
- H04W 4/04
- • {using association of physical positions and logical data} in a dedicated environment, e.g. buildings or vehicles
- H04W 4/06
- Selective distribution or broadcast {application services; Mobile application} services to user groups; One-way selective calling services {(connection management for selective distribution or broadcast [H04W 76/002](#) ; resource management for broadcast services [H04W 72/005](#))}
- H04W 4/10
- • Push-to-Talk {mobile application services} or Push-on-Call {mobile application} services {(arrangements for real-time multimedia Push-to-X-Services [H04L 65/4061](#) ; connection management for Push-to-Talk or Push-on-Call services [H04W 76/005](#))}
- H04W 4/12
- {Mobile application service signalling using} messaging, e.g. SMS [Short Message Service]; {Mobile application service signalling using} mailboxes; {Mobile application service signalling using} announcements, e.g. informing users on the status or progress of a communication request {(message switching systems [H04L 12/58](#) ; voice mail systems [H04M 3/533](#) ; arrangements for providing announcements [H04M 3/487](#))}
- H04W 4/14
- • {Mobile application service signalling using} short messaging services, e.g. SMS or USSD [Unstructured Supplementary Service Data]
- H04W 4/16
- {Mobile application service signalling using} communication-related supplementary services, e.g. call-transfer or call-hold {(automatic or semi-automatic exchange systems providing special services or facilities to subscribers [H04M 3/42](#))}
- H04W 4/18
- {Customizing content of application services or} information format or content conversion, e.g. adaptation by the network of the transmitted or received information for the purpose of wireless delivery to users or terminals {(network arrangements or communication protocols for networked applications involving intermediate processing or storage in the network, e.g. proxy, [H04L 67/28](#) ; message adaptation based on network or terminal capabilities for message switching systems [H04L 12/5825](#))}
- H04W 4/20
- {Signalling of application services or} auxiliary data signalling, i.e. transmitting data via a non-traffic channel
- H04W 4/22
- {Mobile application service} emergency connection handling {or mobile application services handling urgent or hazardous situations, e.g. 3GPP earthquake and tsunami warning system [ETWS] (connection management for emergency connection handling [H04W 76/007](#) ; centralised arrangements for answering calls for emergency applications requiring operator intervention [H04M 3/5116](#))}
- U H04W 8/00 Network data management**
- U 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 8/08
- • Mobility data transfer
- H04W 8/16
- • selectively restricting mobility {data} tracking
- U H04W 8/26
- Network addressing or numbering for mobility support

- U H04W 8/28
 - • Number portability; {Network address portability}
- U H04W 8/30
 - Network data restoration; {Network data reliability; Network data fault tolerance}
- U H04W 24/00** **Supervisory, monitoring or testing arrangements**
 - H04W 24/06
 - Testing, {supervising or monitoring} using simulated traffic
 - H04W 24/08
 - Testing, {supervising or monitoring} using real traffic
 - U H04W 24/10
 - Scheduling measurement reports; {Arrangements for measurement reports}
- U H04W 28/00** **Network traffic or resource management**
 - U H04W 28/02
 - Traffic management, e.g. flow control or congestion control
 - H04W 28/04
 - • Error control {, e.g. treating errors, collisions, noise or interference (arrangements for detecting or preventing errors in the information received [H04L 1/00](#))}
- U H04W 36/00** **Hand-off or reselection arrangements**

NOTE
In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout [H04W](#)

 - U H04W 36/02
 - Buffering or recovering information during reselection; {Modification of the traffic flow during hand-off}
- 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 52/04
 - TPC [Transmission power control]
 - U H04W 52/18
 - • TPC being performed according to specific parameters
 - U H04W 52/24
 - • • using SIR [Signal to Interference Ratio] or other wireless path parameters
 - U H04W 52/243
 - • • • {taking into account interferences}
 - H04W 52/244
 - • • • • {Interferences in heterogeneous networks, e.g. among macro and femto or pico cells or other sector / system interference [\(OSI\)](#)}
 - U H04W 52/28
 - • • using user profile, e.g. mobile speed, priority or network state, e.g. standby, idle or non transmission
 - H04W 52/286
 - • • • {during data packet transmission, e.g. high speed packet access [\(HSPA\)](#)}
- H04W 64/00** **Locating users or terminals {or network equipment} for network management purposes, e.g. mobility management**
- U H04W 72/00** **Local resource management, e.g. wireless traffic scheduling or selection or allocation of wireless resources**

NOTE
In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout [H04W](#)

 - U H04W 72/04
 - Wireless resource allocation
 - H04W 72/06
 - • {where an allocation plan is defined} based on a ranking criteria of the wireless resources
 - H04W 72/08
 - • {where an allocation plan is defined} based on quality criteria
 - H04W 72/10
 - • {where an allocation plan is defined} based on priority criteria
 - H04W 72/12
 - {Dynamic} Wireless traffic scheduling; {Dynamically scheduled allocation on shared channel}
 - H04W 72/14
 - • using a grant {or specific} channel

- U H04W 74/00** **Wireless channel access, e.g. scheduled or random access**
 H04W 74/04 · Scheduled {or contention-free} access
 H04W 74/08 · Non-scheduled {or contention based} access, e.g. random access, ALOHA, CSMA [Carrier Sense Multiple Access]
- U H04W 80/00** **Wireless network protocols or protocol adaptations to wireless operation, e.g. WAP [Wireless Application Protocol]**
 U H04W 80/08 · Upper layer protocols {(network arrangements or communication protocols for networked applications [H04L 67/00](#))}
 H04W 80/10 · · adapted for {application} session management, e.g. SIP [Session Initiation Protocol] {(connection management [H04W 76/00](#) ; arrangements for session management [H04L 67/14](#))}
- U H04W 84/00** **Network topologies**
 NOTE
 In this group, local priority rules supersede the first-place priority rule (FPPR) applying throughout [H04W](#)
- U H04W 84/18 · Self-organizing networks, e.g. ad-hoc networks or sensor networks
 H04W 84/20 · · Master-slave {selection or change} arrangements

Project: N/A (H05G)

- U H05G 1/00** **X-ray apparatus involving X-ray tubes; circuits therefor**
 U H05G 1/08 · Electrical details
 U H05G 1/10 · · Power supply arrangements for feeding the X-ray tube {(supply circuits with converters in general [H02M](#); supply circuits for emitters and amplifiers [H04B 1/16](#) to [H04B 1/1623](#))}
- U H05G 1/22 · · · with single pulses
 H05G 1/24 · · · · Obtaining pulses by using energy storage devices (pulse generators [H03K](#) {current and voltage pulse generators [H03K 3/53](#))}
- U H05G 1/26 · · Measuring, controlling, protecting (measuring electric values [G01R](#); measuring X-ray intensity [G01T](#))
- U H05G 1/30 · · · Controlling
 H05G 1/32 · · · · supply voltage of the X-ray apparatus or tube (regulating supply without reference to operating characteristics of the apparatus [G05F](#) {voltage regulation in general [G05F](#)})
 H05G 1/34 · · · · anode current, heater current, heater voltage of X-ray tube (regulating supply without reference to operating characteristics of the apparatus [G05F](#) {current regulation in general [G05F](#)})
 H05G 1/48 · · · · Compensating the voltage drop occurring at the instant of switching-on of the apparatus (regulating supply without reference to the operating characteristics of the apparatus [G05F](#) {voltage regulation in general [G05F](#)})
 H05G 1/64 · · Circuit arrangements for X-ray apparatus incorporating image intensifiers
- WARNING**
 Material provisionally in [97DP27](#); image intensifiers [H01J 31/00](#)

Project: N/A (H05H)

- U H05H 1/00** **Generating plasma; Handling plasma**

- U H05H 1/24 · Generating plasma {(gas-filled discharge reactors [H01J 37/32](#); nuclear fusion reactors [G21B 1/00](#); ohmic heating [H05H 1/20](#); injection heating [H05H 1/22](#))}
- H05H 1/26 · · Plasma torches {(metal working with constricted arc [B23K 10/00](#), [H05H10/02](#) [B23K 10/02](#); metal spraying [B05B 7/18](#), [B05B 7/20](#))}
- U H05H 1/32 · · · using an arc ([H05H 1/28](#) takes precedence)
- H05H 1/42 · · · · with provision for introducing materials into the plasma, e.g. powder, liquid (electrostatic spraying, spraying apparatus with means for charging the spray electrically [B05B 5/00](#) {cf. [B23K 9/324](#), [B05B 7/22](#); arc stabilising or constricting arrangements [H05H 1/3405](#); coaxial protecting fluids [H05H 1/341](#))}
- H05H 6/00** **Targets for producing nuclear reactions (supports for targets or objects to be irradiated [G21K 5/08](#) {preparation of tritium [C01B 4/00](#)}); {targets, e.g. pellets for fusion reactions by laser or charged particles beam injection [H05H 1/22](#)}**

Project: N/A (H05K)

H05K

PRINTED CIRCUITS; CASINGS OR CONSTRUCTIONAL DETAILS OF ELECTRIC APPARATUS; MANUFACTURE OF ASSEMBLAGES OF ELECTRICAL COMPONENTS (details of instruments or comparable details of other apparatus not otherwise provided for [G12B](#); thin-film or thick-film circuits [H01L 27/01](#) , [H01L 27/13](#) ; non-printed means for electric connections to or between printed circuits, {electric connections or line connectors, apparatus or processes for manufacturing, assembling, maintaining or repairing such connections or connectors} [H01R](#); casings for, or constructional details of, particular types of apparatus, see the relevant subclasses; processes involving only a single technical art, e.g. heating, spraying, for which provision exists elsewhere, see the relevant classes)

NOTES

- This subclass covers:
 - combinations of a radio or television receiver with apparatus having a different main function;
 - printed circuits structurally associated with non-printed electric components;
 - {printed connectors (non printed connectors [H01R](#))}
- In this subclass, the following expression is used with the meaning indicated:
 - "printed circuits" covers all kinds of mechanical constructions of circuits that consist of an insulating base or support carrying the conductor and are combined structurally with the conductor throughout their length, especially in a two-dimensional plane, the conductors of which are secured to the base in a non-dismountable manner, and also covers the processes or apparatus for manufacturing such constructions, e.g. forming the circuit by mechanical or chemical treatment of a conductive foil, paste, or film on an insulating support.

- 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](#)})**
- H05K 5/0026 · {provided with connectors and printed circuit boards ([PCB](#))}, e.g. automotive electronic control units}
- 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 7/10 · · Plug-in assemblages of components, {e.g. IC sockets (for connection on printed circuit board [H01R 23/6806](#))}

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](#))}

U H05K 9/0007 · {Casings (standardised racks [H05K 9/0062](#))}

U H05K 9/002 · · {with localised screening}

H05K 9/0022 · · · {of components mounted on printed circuit boards [PCB]} (shields integrated within component packages [H01L 23/552](#) ; shields integrated within PCB [H05K 1/0218](#))}

Project: N/A (Y02C)

Y02C 10/00 CO₂ capture or storage (not used, see subgroups)

Y02C 20/00 Capture or disposal of greenhouse gases [GHG] other than CO₂ (not used, see subgroups)

Project: N/A (Y02E)

U Y02E 20/00 Combustion technologies with mitigation potential

U Y02E 20/30 · Technologies for a more efficient combustion or heat usage (not used, see subgroups)

Y02E 20/32 · · Direct CO₂ mitigation (not used, see subgroups)

Y02E 20/34 · · Indirect CO₂ mitigation, i.e. by acting on non CO₂ directly related matters of the process, e.g. more efficient use of fuels (not used, see subgroups)