

CPC**COOPERATIVE PATENT CLASSIFICATION****C****CHEMISTRY; METALLURGY****NOTE**

In section C, the definitions of groups of chemical elements are as follows:

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

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

Section C covers:

pure chemistry, which covers inorganic compounds, organic compounds, macromolecular compounds, and their methods of preparation;

applied chemistry, which covers compositions containing the above compounds, such as: glass, ceramics, fertilisers, plastics compositions, paints, products of the petroleum industry. It also covers certain compositions on account of their having particular properties rendering them suitable for certain purposes, as in the case of explosives, dyestuffs, adhesives, lubricants, and detergents;

certain marginal industries, such as the manufacture of coke and of solid or gaseous fuels, the production and refining of oils, fats, and waxes, the fermentation industry, (e.g. brewing and wine-making) the sugar industry;

certain operations or treatments, which are either purely mechanical, e.g. the mechanical treatment of leather and skins, or partly mechanical, e.g. the treatment of water, or the prevention of corrosion in general;

metallurgy, ferrous or non-ferrous alloys.

In the case of operations, treatments, products, or articles which have both a chemical and non-chemical part or aspect, the general rule is that the chemical part or aspect is covered by section C.

In some of these cases, the chemical part or aspect brings with it a non-chemical one, even though purely mechanical, because this latter aspect either is essential to the operation or treatment or constitutes an important element of it; it has seemed, in fact, more logical not to dissociate the different parts or aspects of a coherent whole. This is the case for applied chemistry and for the industries, operations, and treatments mentioned in Notes 1), c), d) and e). For example, furnaces peculiar to the manufacture of glass are covered by class [C03](#) and not by class [F27](#).

There are, however, some exceptions in which the mechanical (or non-chemical) aspect carries with it the chemical aspect, for example:

- certain extractive processes in subclass [A61K](#);
- the chemical purification of air in subclass [A61L](#);
- chemical methods of fire-fighting in subclass [A62D](#);
- chemical processes and apparatus in class [B01](#);
- impregnation of wood in subclass [B27K](#);
- chemical methods of analysis or testing in subclass [G01N](#);
- photographic materials and processes in class [G03](#), and generally, the chemical treatment of textiles and the production of cellulose or paper in section D.

In still other cases, the pure chemical aspect is covered by section C and the applied chemical aspect by another section such as A, B, F, e.g. the use of a substance or composition for

- treatment of plants or animals covered by subclass [A01N](#);
- foodstuffs covered by class [A23](#);
- munitions or explosives covered by class [F42](#).

When the chemical and mechanical aspects are so closely interlocked that a neat and simple division is not possible, or when certain mechanical processes follow as a natural or logical continuation of a chemical treatment, section C may cover, in addition to the chemical aspect, a part only of the mechanical aspect, e.g. after-treatments of artificial stone covered by class [C04](#). In this latter case a note or a reference is usually given to make the position clear, even if sometimes the division is rather arbitrary.

SUBSECTION: Chemistry

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](#))

NOTE

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](#)}.

1. 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
2. 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](#)**

C01B

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

NOTE

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.

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

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:

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

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](#)

C01C

AMMONIA; CYANOGEN; COMPOUNDS THEREOF ({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](#); thiosulfates, dithionites, polythionates [C01B 17/64](#); compounds containing selenium or tellurium [C01B 19/00](#); azides [C01B 21/08](#); {compounds other than ammonia or cyanogen, containing nitrogen, non-metals and optionally metals [C01B 21/082](#)}; metal imides or 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](#); compounds containing silicon [C01B 33/00](#); compounds containing boron [C01B 35/00](#))

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](#))

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](#)})

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](#)

C01P **INDEXING SCHEME RELATING TO STRUCTURAL AND PHYSICAL ASPECTS OF SOLID INORGANIC COMPOUNDS**

NOTE

This subclass constitutes an internal scheme for indexing only.

The indexing scheme is used to identify structural and physical aspects of solid inorganic compounds, already classified in class [C01](#) or subclass [C09C](#).

C02 **TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE** (settling tanks, filtering, e.g. sand filters or screening devices, [B01D](#))

C02F **TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE** (separation in general [B01D](#); special arrangements on waterborne vessels of installations for treating water, waste water or sewage, e.g. for producing fresh water, [B63J](#); adding materials to water to prevent corrosion [C23F](#); treating radioactively-contaminated liquids [G21F 9/04](#) ; regeneration of reactants for recirculation into processes, see the relevant places for the processes)

NOTE

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

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:
[C02F 9/02](#) to [C02F 9/14](#) covered by [C02F 9/00](#) and subgroup

C03 **GLASS; MINERAL OR SLAG WOOL** {(organic glasses [C08](#); metallic glasses, amorphous metals [B22F](#), [C22C](#))}

C03B **MANUFACTURE, SHAPING, OR SUPPLEMENTARY PROCESSES**

WARNING

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

[C03B 8/00](#) covered by [C03B 19/00](#) , [C03B 37/00](#)
[C03B 8/02](#) covered by [C03B 19/1065](#) , [C03B 19/12](#) , [C03B 37/01 B](#) ,
[C03B 37/016](#)
[C03B 8/04](#) covered by [C03B 19/106](#) , [C03B 19/14](#) , [C03B 37/014](#)

C03C

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

NOTE

This subclass covers compositions of polycrystalline fibres

This subclass does not cover the preparation of single-crystal fibres, which is covered by subclass [C30B](#)

WARNING

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

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

C04

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

NOTE

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

C04B

LIME, MAGNESIA; SLAG; CEMENTS; COMPOSITIONS THEREOF, e.g. MORTARS, CONCRETE OR LIKE BUILDING MATERIALS; ARTIFICIAL STONE{(roofing granules [E04D 7/005](#))}; **CERAMICS**(devitrified glass-ceramics [C03C 10/00](#)); **REFRACTORIES; TREATMENT OF NATURAL STONE**

NOTE

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

- "fillers" includes pigments, aggregates and fibrous reinforcing materials;

- "active ingredients" includes processing aids or property improvers, e.g. grinding aids used after the burning process or used in the absence of a burning process;
- "mortars", "concrete" and "artificial stone" are to be considered as a single group of materials, and therefore, in the absence of an indication to the contrary, they include mortar, concrete and other cementitious compositions.

In groups [C04B 7/00](#) to [C04B 32/00](#) , in the absence of an indication to the contrary, classification is made in the last appropriate place.

A composition classified in groups [C04B 26/00](#) or [C04B 28/00](#) is also classified in groups [C04B 14/00](#) to [C04B 24/00](#) if a filler or active ingredient is of interest.

In groups [C04B 2/00](#) to [C04B 32/00](#) and [C04B 38/00](#) to [C04B 41/00](#) it is desirable to classify the individual constituents of the mixtures, or other aspects relating to the mixtures or constituents, using Combination Sets with symbols chosen from groups [C04B 2/00](#) to [C04B 41/00](#) .

In groups [C04B 2/00](#) to [C04B 32/00](#) and [C04B 38/00](#) to [C04B 41/00](#) it is desirable to classify the function of the individual constituents of the mixtures, or other aspects relating to the properties or uses of the mixtures or products obtained, using Combination Sets with symbols chosen from groups [C04B 2103/00](#) to [C04B 2111/00](#) .

Groups [C04B 20/123](#) and [C04B 20/126](#) are used for indexing purposes only of documents classified in [C04B 20/12](#)

WARNING

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

[C04B 5/02](#) covered by [B01J 2/00](#) , [C21B 3/06](#)
[C04B 33/132](#) to [C04B 33/138](#) covered by [C04B 33/13](#)
[C04B 35/035](#) covered by [C04B 35/26](#) +s.gr.
[C04B 35/567](#) , [C04B 35/569](#) , [C04B 35/576](#) , [C04B 35/577](#) covered by [C04B 35/565](#) , [C04B 35/571](#) to [C04B 35/5755](#) , [C04B 35/806](#)
[C04B 35/582](#) covered by [C04B 35/581](#) , [C04B 35/806](#)
[C04B 35/5833](#) , [C04B 35/5835](#) covered by [C04B 35/583](#) , [C04B 35/806](#)
[C04B 35/586](#) , [C04B 35/587](#) , [C04B 35/594](#) , [C04B 35/596](#) covered by [C04B 35/584](#) , [C04B 35/589](#) to [C04B 35/5935](#) , [C04B 35/806](#)
[C04B 35/599](#) covered by [C04B 35/597](#)
[C04B 35/81](#) covered by [C04B 35/78](#)
[C04B 35/84](#) covered by [C04B 35/628](#) , [C04B 35/78](#)

C05

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

NOTE

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](#).

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](#)+D1/02+D9/02

C05B**PHOSPHATIC FERTILISERS****WARNING**

IPC group [C05B 21/00](#) is not used in the CPC scheme. Subject matter covered by this group is classified in one of the CPC groups [C05B 1/00](#) to [C05B 19/00](#) (see internal note after the title of class [C05](#))

C05C**NITROGENOUS FERTILISERS****WARNING**

IPC group [C05C 13/00](#) is not used in the CPC scheme. Subject matter covered by this group is classified in one of the CPC groups [C05C 1/00](#) to [C05C 11/00](#) (see internal note after the title of class [C05](#))

C05D**INORGANIC FERTILISERS NOT COVERED BY SUBCLASSES [C05B](#), [C05C](#); FERTILISERS PRODUCING CARBON DIOXIDE****WARNING**

IPC group [C05D 11/00](#) is not used in the CPC scheme. Subject matter covered by this group is classified in one of the CPC groups [C05D 1/00](#) to [C05D 9/00](#) (see internal note after the title of class [C05](#))

C05F

ORGANIC FERTILISERS NOT COVERED BY SUBCLASSES [C05B](#), [C05C](#), e.g. FERTILISERS FROM WASTE OR REFUSE {(breeding of earthworms [A01K 67/0332](#))}

NOTE

Processes where the composting step is the characterising feature, or apparatus therefor, are classified in group [C05F 17/00](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups (see also internal note after the title of class [C05](#)):

[C05F 15/00](#) covered by [C05F 1/00-C05F 11/00](#)

C05G

MIXTURES OF FERTILISERS COVERED INDIVIDUALLY BY DIFFERENT SUBCLASSES OF CLASS [C05](#); MIXTURES OF ONE OR MORE FERTILISERS WITH MATERIALS NOT HAVING A SPECIFIC FERTILISING ACTIVITY, e.g. PESTICIDES, SOIL-CONDITIONERS, WETTING AGENTS (organic fertilisers containing added bacterial cultures, mycelia, or the like [C05F 11/08](#); organic fertilisers containing plant vitamins or hormones [C05F 11/10](#)); **FERTILISERS CHARACTERISED BY THEIR FORM**

NOTE

This subclass covers mixtures of fertilisers with soil-conditioning or soil-stabilising materials characterised by their fertilising activity.

This subclass does not cover mixtures of fertilisers with soil-conditioning or soil-stabilising materials characterised by their soil-conditioning or soil-stabilising activity, which are covered by group [C09K 17/00](#).

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups (see internal note after the title of class [C05](#)):

[C05G 1/02-C05G 1/10](#) covered by [C05](#)

[C05G 3/10](#) covered by [C05G 3/0088](#)

[C05G 5/00](#) covered by [C05G 3/00B](#)

C06

EXPLOSIVES; MATCHES

C06B

EXPLOSIVES OR THERMIC COMPOSITIONS (blasting [F42D](#));
MANUFACTURE THEREOF; USE OF SINGLE SUBSTANCES AS
EXPLOSIVES (compounds in general [C01](#), [C07](#) or [C08](#); {demolition agents based on
 cementitious or like materials [C04B 41/0009](#)})

NOTE

This subclass covers:

- compositions which are:

- a) explosive: compositions included are those containing both a fuel and sufficient oxidiser so that, upon initiation, they are capable of undergoing a chemical change of a relatively high rate of speed, resulting in the production of usable force for blasting, firearms, propelling missiles, or the like;
 - b) thermic: compositions included have (i) a consumable fuel component which consists of any element which is a metal, B, Si, Se or Te, or mixtures, intercompounds, or hydrides thereof; and (ii) in combination an oxidant component which is either a metal oxide or a salt (organic or inorganic) capable of yielding a metal oxide on decomposition;
 - c) fuels for rocket engines and intended for reaction with an oxidant, excluding air, in order to provide thrust for motive power purposes;
 - d) for use in affecting the explosion environment, e.g. for neutralising the poisonous gases of explosives, for cooling the explosion gases, or the like;
- methods or apparatus for preparing or treating such compositions not otherwise provided for;
- methods of using single substances as explosives.

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

- "nitrated" covers compounds having a nitro group or a nitrate ester group.

Methods or apparatus for preparing or treating such compositions are classified according to the particular components of the compositions.

In this subclass, the words "based on", with reference to explosive compositions, refer to the explosive ingredient present in the largest proportion by weight

In the absence of an indication to the contrary a composition is classified in the last place that provides for an ingredient

C06C **DETONATING OR PRIMING DEVICES; FUSES** (ammunition fuzes [F42C](#));
CHEMICAL LIGHTERS; PYROPHORIC COMPOSITIONS

C06D **MEANS FOR GENERATING SMOKE OR MIST; GAS-ATTACK COMPOSITIONS; GENERATION OF GAS FOR BLASTING OR PROPULSION** (CHEMICAL PART)(fuels [C10](#))

C06F **MATCHES; MANUFACTURE OF MATCHES**

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](#))

NOTE

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.

In this class, 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, e.g. a compound containing 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 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 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.

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.

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 (2), 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.

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 classified in subclass [C07C](#) and not in subclass [C07F](#), the alcoholates in [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.

C07B

GENERAL METHODS OF ORGANIC CHEMISTRY; APPARATUS THEREFOR (preparation of carboxylic acid esters by telomerisation [C07C 67/47](#); telomerisation [C08F](#))

NOTE

In this subclass, the functional group which is present already in some residue being introduced and is not substantially involved in a chemical reaction, is not considered as the functional group which is formed or introduced as a result of the chemical reaction.

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

- "separation" means separation only for the purposes of recovering organic compounds.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place according to the type of reaction employed, noting the bond or the functional group which is formed or introduced as a result of the chemical reaction.

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.

[C07B 59/00](#) and subgroups thereof are used for the classification of individual labelled compounds as well as for general methods

[C07B 61/02](#) is used for the classification of individual free radicals as well as for general methods

C07C**ACYCLIC OR CARBOCYCLIC COMPOUNDS****NOTE**

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

- "bridged" means the presence of at least one fusion other than ortho, peri or spiro;
- two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed;
- "condensed ring system" is a ring system in which all rings are condensed among themselves;
- "number of rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
- "quinones" are compounds derived from compounds containing a six-membered aromatic ring or a system comprising six-membered aromatic rings (which system may be condensed or not condensed) by replacing two or four CH groups of the six-membered aromatic rings by C=O groups, and by removing one or two carbon-to-carbon double bonds, respectively, and rearranging the remaining carbon-to-carbon double bonds to give a ring or ring system with alternating double bonds, including the carbon-to-oxygen bonds; this means that acenaphthenequinone or camphorquinone are not considered as quinones.

In this subclass, in the absence of an indication to the contrary, a process is classified in the last appropriate place.

In this subclass, in the absence of an indication to the contrary, "quaternary ammonium compounds" are classified with the corresponding "non-quaternised nitrogen compounds".

For the classification of compounds in groups [C07C 1/00](#) to [C07C 71/00](#) and [C07C 401/00](#) to [C07C 409/00](#):

- a compound is classified considering the molecule as a whole (rule of the "whole molecule approach");
- a compound is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;
- a compound is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes six-membered aromatic ring, unless otherwise specified or implicitly derivable from the subdivision.

For the classification of compounds in groups [C07C 201/00](#) to [C07C 395/00](#), i.e. after the functional group has been determined according to the "last place rule", a compound is classified according to the following principles:

- compounds are classified in accordance with the nature of the carbon atom to which the functional group is attached;
- a carbon skeleton is a carbon atom, other than a carbon atom of a carboxyl group, or a chain of carbon atoms bound to each other, a carbon skeleton is considered to be terminated by every bond to an element other than carbon or to a carbon atom of a carboxyl group;
- when the molecule contains several functional groups, only functional groups linked to the same carbon skeleton as the one first determined are considered;
- a carbon skeleton is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;
- a carbon skeleton is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes a six-membered aromatic ring.

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.

When a process is classified in a process group, combination sets are used to indicate the product of the process. A combination set consists of a process group, followed by and linked to the group of the product. The products are selected from the corresponding product groups.

WARNING

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

[C07C 27/02](#) covered by [C07C 29/00](#), [C07C 51/00](#)
[C07C 47/042](#), [C07C 47/045](#), [C07C 47/048](#), [C07C 47/052](#),
[C07C 47/055](#), [C07C 47/058](#) covered by [C07C 47/04](#)
[C07C 47/07](#), [C07C 47/09](#) covered by [C07C 47/06](#)
[C07C 53/04](#) covered by [C07C 53/02](#)
[C07C 57/045](#), [C07C 57/05](#), [C07C 57/055](#), [C07C 57/065](#),
[C07C 57/07](#), [C07C 57/075](#) covered by [C07C 57/04](#)
[C07C 69/025](#), [C07C 69/03](#), [C07C 69/035](#) covered by
[C07C 69/003](#) to [C07C 69/017](#) and [C07C 69/02](#)[C07C 69/347](#),
[C07C 69/353](#) covered by [C07C 69/003](#) to [C07C 69/017](#)
and [C07C 69/34](#)[C07C 69/527](#) covered by [C07C 69/003](#) to
[C07C 69/017](#) and [C07C 69/52](#)[C07C 69/767](#), [C07C 69/773](#) covered
by [C07C 69/003](#) to [C07C 69/017](#) and [C07C 69/76](#)[C07C 69/83](#)
covered by [C07C 69/003](#) to [C07C 69/017](#) and [C07C 69/82](#)

C07D **HETEROCYCLIC COMPOUNDS****C07F** **ACYCLIC, CARBOCYCLIC OR HETEROCYCLIC COMPOUNDS
CONTAINING ELEMENTS OTHER THAN CARBON, HYDROGEN,
HALOGEN, OXYGEN, NITROGEN, SULFUR, SELENIUM OR
TELLURIUM** ([metal-containing porphyrins C07D 487/22](#))**NOTE**

Attention is drawn to Note (3) [C07](#), which defines the last place priority rule applied in the range of subclasses [C07C-C07K](#) and within these subclasses.

Attention is drawn to Note (6) following the title of class [C07](#).

Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers.

In this subclass, organic acid salts, alcoholates, phenates, chelates or mercaptides are classified as the parent compounds.

Compounds containing Se or Te are classified with their sulfur homologues

A hydrocarbon chain is considered to be terminated by a heteroatom or by a carbon atom having three bonds to heteroatoms with at the most one to halogen

When groups, e.g. aromatic or aliphatic groups, are mentioned without further indications, it means that the group concerned can be further substituted. Otherwise it will be indicated, e.g. [C07F 9/11](#) with hydroxyalkyl compounds without further substituents on alkyl.

WARNING

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

[C07F 9/6593](#) covered by [C07F 9/65815](#)

C07G**COMPOUNDS OF UNKNOWN CONSTITUTION****NOTE**

This subclass does not cover peptides or proteins of unknown constitution, which are covered by subclass [C07K](#)

C07H

SUGARS; DERIVATIVES THEREOF (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](#))

NOTE

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

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

In this subclass, the following expressions are used with the meaning 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:

It consists of an uninterrupted carbon skeleton and oxygen atoms directly attached thereto, and;

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;

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 to a carbon atom} has one double bond to an oxygen atom as the only hetero bond;

{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}

{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

Attention is drawn to the notes following the title of class [C07](#) .

The conditions 3) a) or 4) have not to be fulfilled in respect to [C07H 19/00E1](#)

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

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

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

In the absence of an indication to the contrary, a compound is classified in the last appropriate place

Groups [C07H 3/04](#) and [C07H 3/06](#) take precedence over [C07H 3/08](#) to [C07H 15/18D](#) -with the exception of [C07H 13/06](#) , [C07H 13/12U](#), [C07H 15/00F](#), [C07H 15/06](#) , [C07H 15/08](#) , [C07H 15/10D2](#) , [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](#) .

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](#) .

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]

C07J

STEROIDS(seco-steroids [C07C](#))

NOTE

This subclass covers compounds containing a cyclopenta[a]hydrophenanthrene skeleton or a ring structure derived therefrom:

- by contraction or expansion of one ring by one or two atoms;
- by contraction or expansion of two rings each by one atom;
- by contraction of one ring by one atom and expansion of one ring by one atom;
- by substitution of one or two carbon atoms of the cyclopenta[a]hydrophenanthrene skeleton, which are not shared by rings, by hetero atoms, in combination with the above defined contraction or expansion or not, or;
- by condensation with carbocyclic or heterocyclic rings in combination with one or more of the foregoing alterations or not.

C07K

PEPTIDES(peptides in foodstuffs [A23](#); obtaining protein compositions for foodstuffs, working-up proteins for foodstuffs [A23J](#); preparations for medicinal purposes [A61K](#); peptides containing beta-lactam rings [C07D](#); cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, [C07D](#); ergot alkaloids of the cyclic peptide type [C07D 519/02](#) ; macromolecular compounds having statistically distributed amino acid units in their molecules, i.e. when the preparation does not provide for a specific; but for a random sequence of the amino acid units, homopolyamides and block copolyamides derived from amino acids [C08G 69/00](#) ; macromolecular products derived from proteins [C08H 1/00](#) ; preparation of glue or gelatine [C09H](#); single cell proteins, enzymes [C12N](#); genetic engineering processes for obtaining peptides [C12N 15/00](#) ; compositions for measuring or testing processes involving enzymes [C12Q](#); investigation or analysis of biological material [G01N 33/00](#))

NOTE

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

- "amino acids" are compounds in which at least one amino group and at least one carboxyl group are bound to the same carbon skeleton and the nitrogen atom of the amino group may form part of a ring;
- "normal peptide link" is one between an alpha-amino group of an amino acid and the carboxyl group - in position 1 - of another alpha-amino acid;
- "abnormal peptide link" is a link where at least one of the linked amino acids is not an alpha-amino acid or a link formed by at least one carboxyl or amino group being part of the side chain of a alpha-amino acid;
- "peptides" are compounds containing at least two amino acid units, which are bound through at least one normal peptide link, including oligopeptides, polypeptides and proteins, where:
 - a. "linear peptides" may comprise rings formed through S-S bridges, or through a hydroxy or a mercapto group of an hydroxy- or mercapto-amino acid and the carboxyl group of another amino acid, (e.g. peptide lactones) but do not comprise rings which are formed only through peptide links;
 - b. "cyclic peptides" are peptides comprising at least one ring formed only through peptide links; the cyclisation may occur only through normal peptide links or through abnormal peptide links, e.g. through the 4-amino group of 2,4-diamino-butanoic acid.
 Thus, cyclic compounds in which at least one link in the ring is a non-peptide link are considered as "linear peptides";
- "depsipeptides" are compounds containing a sequence of at least two alpha-amino acids and at least one alpha-hydroxy carboxylic acid, which are bound through at least one normal peptide link and ester links, derived from the hydroxy carboxylic acids, where:
 - a. "linear depsipeptides" may comprise rings formed through S-S bridges, or through an hydroxy or a mercapto group of an hydroxy- or mercapto-amino acid and the carboxyl group of another amino- of hydroxy-acid but do not comprise rings formed only through peptide or ester links derived from hydroxy carboxylic acids,

e.g. Gly-Ala-Gly-OCH₂CO₂H and Gly-OCH₂CO-Ala-Gly are considered as "linear depsipeptides", but HOCH₂CO-Gly-Ala-Gly does not contain an ester link, and is thus a derivative of Gly-Ala-Gly which is covered by [C07K 5/08](#) ;

b. "cyclic depsipeptides" are peptides containing at least one ring formed only through peptide or ester links - derived from hydroxy carboxylic acids -,
e.g. Gly-Ala-Gly-OCH₂CO.

Fragments of peptides or peptides modified by removal or addition of amino acids, by substitution of amino acids by others, or by combination of these modifications, are classified as the parent peptides. However, fragments of peptides having only four or less amino acids are also classified in group [C07K 5/00](#).

Peptides prepared by chemical processes and having an amino acid sequence derived from naturally occurring peptides are classified with the natural one.

Peptides prepared by recombinant DNA technology are not classified according to the host, but according to the original peptide expressed, e.g. HIV peptide expressed in E. coli is classified with HIV peptides.

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

WARNING

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

[C07K 5/023](#) covered by [C07K 5/0202](#)
[C07K 5/027](#) covered by [C07K 5/0205](#)
[C07K 5/03](#) covered by [C07K 5/0207](#)
[C07K 5/033](#) covered by [C07K 5/021](#)
[C07K 5/037](#) covered by [C07K 5/0215](#)
[C07K 5/062](#) covered by [C07K 5/06017](#)
[C07K 5/065](#) covered by [C07K 5/06078](#)
[C07K 5/068](#) covered by [C07K 5/06086](#)
[C07K 5/072](#) covered by [C07K 5/06104](#)
[C07K 5/075](#) covered by [C07K 5/0613](#)
[C07K 5/078](#) covered by [C07K 5/06139](#)
[C07K 5/083](#) covered by [C07K 5/0804](#)
[C07K 5/087](#) covered by [C07K 5/0812](#)
[C07K 5/09](#) covered by [C07K 5/0815](#)
[C07K 5/093](#) covered by [C07K 5/0819](#)
[C07K 5/097](#) covered by [C07K 5/0821](#)
[C07K 5/103](#) covered by [C07K 5/1005](#)
[C07K 5/107](#) covered by [C07K 5/1016](#)
[C07K 5/11](#) covered by [C07K 5/1019](#)
[C07K 5/113](#) covered by [C07K 5/1021](#)
[C07K 5/117](#) covered by [C07K 5/1024](#)
[C07K 14/185](#) covered by [C07K 14/1816](#)
[C07K 14/725](#) covered by [C07K 14/705](#)
[C07K 14/73](#) covered by [C07K 14/70514](#)
[C07K 14/735](#) covered by [C07K 14/70535](#)
[C07K 14/74](#) covered by [C07K 14/70539](#)

- C08** **ORGANIC MACROMOLECULAR COMPOUNDS;
THEIR PREPARATION OR CHEMICAL WORKING-UP;
COMPOSITIONS BASED THEREON** ([manufacture or treatment of
artificial threads, fibres, bristles or ribbons D01](#))
- C08B** **POLYSACCHARIDES; DERIVATIVES THEREOF**([polysaccharides containing
less than six saccharide radicals attached to each other by glycosidic linkages C07H](#);
[fermentation or enzyme-using processes C12P 19/00](#) ; [sugar industry C13](#); [production of
cellulose D21](#))
- WARNING**
- [1202]
- The following IPC groups are not used in the CPC scheme. Subject matter covered
by these groups is classified in the following CPC groups:
- [C08B 37/06](#) covered by [C08B 37/0045](#) - [C08B 37/10](#) covered by
[C08B 37/0075](#) - [C08B 37/12](#) covered by [C08B 37/0039](#)
- C08C** **TREATMENT OR CHEMICAL MODIFICATION OF RUBBERS**
- NOTE**
- This subclass includes:
- processes directed to natural rubber or to conjugated diene
rubber (synthesis thereof [C08F](#))
 - processes directed to rubbers in general (to a specified
rubber, other than provided for
by (a) above, [C08F](#) to [C08H](#))
- 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:
- [C08C 1/16](#) covered by [C08C 1/14](#)
- C08F** **MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS
ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS**
- NOTE**

1. In this subclass, boron or silicon are considered as metals. 2. In this subclass, the following expression is used with the meaning indicated: - "aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to: a. an element other than carbon b. a carbon atom having a double bond to one atom other than carbon c. an aromatic carbocyclic ring or a heterocyclic ring. Examples: Polymers of (1) $\text{CH}_2=\text{CH}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{C}(=\text{O})-\text{O}-\text{CH}_2-\text{CH}_2-\text{OH}$ are classified in group [C08F 16/28](#) (2) $\text{CH}_2=\text{CH}-\text{C}(=\text{O})-\text{CH}=\text{CH}_2$ are classified in group [C08F 16/36](#) (3) para- $\text{C}_6\text{H}_4\text{Cl}(\text{CH}=\text{CH}_2)$ are classified in group [C08F 12/18](#). 3. In this subclass: a. in the absence of an indication to the contrary, a catalyst or a polymer is classified in the last appropriate place. [N: b. From April 2012 onwards, in a copolymer, the monomer in majority is given an Indexing Code and the monomer(s) in minority are given Indexing Code(s) in the form of a C-Set. The Indexing Codes are linked. The monomer in majority is always indicated first in the C-set. Example: a copolymer having ethylene in majority and styrene in minority is classified in ([C08F 210/02](#) , [C08F 212/08](#)).] 4. In this subclass: a. macromolecular compounds and their preparation are classified in the groups for the type of compound prepared. General processes for the preparation of macromolecular compounds according to more than one main group are classified in the groups for the processes employed ([C08F 2/00](#) 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](#).

C08G

MACROMOLECULAR COMPOUNDS OBTAINED OTHERWISE THAN BY REACTIONS ONLY INVOLVING UNSATURATED CARBON-TO-CARBON BONDS

NOTE

In this subclass, group [C08G 18/00](#) takes precedence over the other groups. A further classification is given if the polymers are obtained by reactions forming specific linkages for which an appropriate group is provided.

Within each main group of this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

In groups [C08G 61/00](#) to [C08G 79/00](#), in the absence of an indication to the contrary, macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.

This subclass covers also compositions based on monomers which from macromolecular compounds classifiable in this subclass. In this subclass:

if the monomers are defined, classification is made in groups [C08G 2/00](#) to [C08G 79/00](#), [C08G 83/00](#) according to the polymer to be formed;

if the monomers are defined in a way that a composition cannot be classified within one main group of this subclass, the composition is classified in group [C08G 85/00](#);

if the compounding ingredients are of interest per se, classification is also made in subclass [C08K](#).

WARNING

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

[C08G 14/067](#), [C08G 14/073](#), [C08G 14/09](#) covered by [C08G 14/06](#)
[C08G 59/16](#), [C08G 59/17](#) covered by [C08G 59/14](#)
[C08G 63/49](#) covered by [C08G 63/48](#)
[C08G 65/28](#) covered by [C08G 65/26](#)
[C08G 73/04](#) covered by [C08G 73/02](#)

C08H

DERIVATIVES OF NATURAL MACROMOLECULAR COMPOUNDS

(polysaccharides [C08B](#); natural rubber [C08C](#); natural resins or their derivatives [C09F](#) ; bituminous materials [C10](#))

C08J

WORKING-UP; GENERAL PROCESSES OF COMPOUNDING; AFTER-TREATMENT NOT COVERED BY SUBCLASSES [C08B](#), [C08C](#), [C08F](#), [C08G](#)(mechanical aspects [B29](#); layered products, manufacture thereof [B32B](#); treatment of macromolecular material specially adapted to enhance its filling properties in mortars, concrete or artificial stone [C04B 16/04](#) , [C04B 18/20](#) , [C04B 20/00](#) ; treatment of textiles [D06](#))

NOTE

1.This subclass covers processes, not covered by subclasses [C08B](#) to [C08H](#), for treating polymers.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place

2. When classifying in subclass [C08J](#), the treatment of specific polymers is indicated using indexing codes chosen from [M08J 300](#) or subgroups thereof.

Example:

- Preparation of particles of polystyrene by impregnation of the particles with the blowing agent: [C08J 9/18](#) and [C08J 2325/06](#) .

The use of a polymeric component in minority, e.g. masterbatch, coating, impregnating agent or thin binder is indicated using indexing codes chosen from [M08J 400](#) or subgroups thereof. Examples:

- Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/10](#)

- Bonding of polystyrene by heating: [C08J 5/121](#) and [C08J 2325/06](#)

- Coating of a polyethylene substrate with a polyurethane coating: [C08J 7/047](#) and [C08J 2323/06](#) and [C08J 2475/04](#) - Use of ABS as an additive for foamed polyacrylamide : [C08J 9/0061](#) and [C08J 2333/26](#) and [C08J 2455/02](#)

In the following subgroups, the codes of [C08J 2300/00](#) to [C08J 2399/00](#) are used to specify: - [C08J 3/226](#) : the polymeric material to which the masterbatch carrier is added. - [C08J 7/047](#) : the polymeric substrate to be coated. - [C08J 9/0061](#) : the polymeric component in majority in a multicomponents foamable blend.

3. Group **M08J 400** was introduced on January 1st, 2012. Patent documents are continuously being reclassified. As a consequence, documents published before 01/01/2012, and to which **M08J 400** indexing codes were allocated, are indexed in the corresponding head group. Example: - Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/00](#) , instead of [C08J 2433/10](#) . In the following subgroups, the codes of [C08J 2400/00](#) to [C08J 2499/00](#) are used to specify: - [C08J 3/226](#) : the polymeric carrier in a masterbatch. - [C08J 5/12](#) : the chemical nature of the adhesive - [C08J 7/047](#) : the chemical nature of the coating(s). - [C08J 9/0061](#) : the polymeric component in minority in a multicomponents foamable blend. - [C08J 9/224](#) , [C08J 9/236](#) , [C08J 9/36](#) , [C08J 9/40](#) and [C08J 9/42](#) : the polymer used for coating, binding, or impregnating the foam. [C08J 9/26](#) : the polymer to be leached out. - [C08J 9/33](#) and [C08J 9/35](#) : the foam fragments included in the (foamable) polymer matrix. - in all other subgroups, when the presence of a polymeric component in minority is of relevance.

WARNING

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

[C08J 5/14](#) covered by [B24D 3/20](#) , [F16D 69/02](#)

[C08J 5/16](#) covered by [C10M](#)

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](#))

NOTE

1. The use of an ingredient for a specific polymer is classified by adding, in a C-set, to the group symbol of [C08K](#), the subdivision of [C08L 1/00](#) to [C08L 99/00](#). Example: Polystyrene containing a carboxylic amide is classified in ([C08K 5/20](#), [C08L 25/06](#)).

2. From April 2012, the use of an ingredient for a specific polymer is classified by adding, in a C-set, to the group symbol of [C08K](#), the subdivision of [C08L 1/00](#) to [C08L 99/00](#). Example: Polystyrene containing a carboxylic amide is classified in ([C08K 5/20](#), [C08L 25/06](#)). 3. In this subclass, in the absence of an indication to the contrary, an ingredient is classified in the last appropriate place.

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](#)+L25/06

In this subclass are considered as compounding ingredients:

- inert additives

- radical crosslinking agents, e.g. peroxides, S-containing vulcanisation agents

- coupling agents, i.e. compounds able to improve the adhesion between filler and macromolecule

Are not considered as compounding ingredients:

- chemical modifying or crosslinking agents which react via a condensation or addition mechanism (for [C08B](#) polymers [C08B](#), for diene rubbers [C08C 19/30](#), for other vinyl polymers [C08F 8/-](#), 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](#)

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](#))

NOTE

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

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** codes: [C08L 23/00](#), [C08L 23/26](#), [C08L 25/00](#), [C08L 27/00](#), [C08L 27/04](#), **M08L 27/1 2**, [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 67/02B**, [C08L 67/03](#), [C08L 67/04](#), [C08L 67/06](#), [C08L 67/07](#), [C08L 69/00](#), **M08L 69/OOB**, **M08L 7 1/00**, [C08L 75/04](#), [C08L 77/00](#), [C08L 77/08](#), [C08L 77/12](#), [C08L 79/08](#), **C08L 79/08B**, [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](#)).

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** or **M08K** and they are linked or unlinked. The polymer in majority is always first in the C-Set. List of **M08L** codes in the C-Set: [C08L 1/00](#), [C08L 81/00](#), [C08L 83/00](#), [C08L 91/06](#), [C08L 95/00](#) or [C08L 2666/02](#) - [C08L 2666/08](#), [C08L 2666/14](#) - [C08L 2666/26](#). Examples:

a. A blend of 60 parts polyvinylchloride ([C08L 27/06](#)) and 40 parts polyamide is classified in ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08L 77/00](#). b. A blend of 50 parts polyvinylchloride ([C08L 27/06](#)) and 50 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 2666/20](#)) and [C08L 77/00](#), as well as in ([C08L 77/00](#) , [C08L 2666/04](#)) and [C08L 27/06](#). c. A composition based on polyvinylchloride and containing 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](#). d. A composition based

on a first polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/04](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) .

From April 2012 onwards, after the notation [C08L](#), notations concerning the other constituents of the composition may be added, in the form of C-Sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) - [C08L 555/86](#) or [C08K](#) and they may be linked or unlinked: - [C08L 1/00](#) - [C08L 101/10](#) are linked. - [C08L 2201/00](#) - [C08L 2555/86](#) are unlinked. The polymer in majority is always first in the C-Set. Examples:

a. A blend of 60 parts polyvinylchloride ([C08L 27/06](#)) and 40 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 77/00](#)). b. A blend of 50 parts polyvinylchloride ([C08L 27/06](#)) and 50 parts polyamide ([C08L 77/00](#)) is classified in ([C08L 27/06](#) , [C08L 77/00](#)) and ([C08L 77/00](#) , [C08L 27/06](#)). c. A composition based on polyvinylchloride and containing 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](#)). d. A composition based on a first polysiloxane ([C08L 83/04](#)) and containing a second polysiloxane, a phenol and silica is classified in ([C08L 83/04](#) , [C08L 83/00](#) , [C08K 5/13](#) , [C08K 3/36](#)) and [C08L 2205/02](#) . e. A composition containing a polyamide in majority, a polyester and a polyethylene is classified in ([C08L 77/00](#) , [C08L 67/00](#) , [C08L 23/06](#)) and [C08L 2205/03](#) .

WARNING

"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).

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.

C09

DYES; PAINTS; POLISHES; NATURAL RESINS; ADHESIVES; MISCELLANEOUS COMPOSITIONS; MISCELLANEOUS APPLICATIONS OF MATERIALS

C09B

ORGANIC DYES OR CLOSELY-RELATED COMPOUNDS FOR PRODUCING DYES; MORDANTS; LAKES([fermentation or enzyme-using processes to synthesise a desired chemical compound C12P](#))

NOTE

In this subclass, in the absence of an indication to the contrary, a compound is classified in the last appropriate place

WARNING

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

[C09B 23/01](#) covered by [C09B 23/0008](#) to [C09B 23/0091](#)
[C09B 29/01](#) " " [C09B 29/0003](#) to [C09B 29/0022](#)
[C09B 29/03](#) " " [C09B 29/0007](#)
[C09B 29/033](#) " " [C09B 29/0025](#)
[C09B 29/036](#) " " [C09B 29/0029](#)
[C09B 29/039](#) " " [C09B 29/0074](#) to [C09B 29/0081](#)
[C09B 29/042](#) " " [C09B 29/0085](#)
[C09B 29/045](#) " " [C09B 29/0088](#)
[C09B 29/048](#) " " [C09B 29/0092](#)
[C09B 29/085](#) " " [C09B 29/0003](#) , [C09B 29/0801](#) to [C09B 29/0848](#)
[C09B 29/09](#) " " [C09B 29/0025](#) , [C09B 29/0801](#) to [C09B 29/0848](#)
[C09B 29/15](#) " " [C09B 29/103](#)
[C09B 29/40](#) " " [C09B 29/3608](#) to [C09B 29/3613](#)
[C09B 29/42](#) " " [C09B 29/3617](#) to [C09B 29/3639](#)
[C09B 29/44](#) " " [C09B 29/3643](#)
[C09B 29/46](#) " " [C09B 29/3652](#)
[C09B 29/48](#) " " [C09B 29/3656](#)
[C09B 29/50](#) " " [C09B 29/366](#)
[C09B 29/52](#) " " [C09B 29/3665](#)
[C09B 33/13](#) " " [C09B 33/12](#)
[C09B 46/00](#) " " [C09B 27/00](#) to [C09B 45/00](#)
[C09B 67/02](#) " " [C09B 67/0097](#)
[C09B 67/04](#) " " [C09B 67/0001](#)
[C09B 67/06](#) " " [C09B 67/0003](#)
[C09B 67/08](#) " " [C09B 67/0004](#)
[C09B 67/10](#) " " [C09B 67/0014](#)
[C09B 67/12](#) " " [C09B 67/0016](#)
[C09B 67/14](#) " " [C09B 67/0017](#)
[C09B 67/16](#) " " [C09B 67/0019](#)
[C09B 67/18](#) " " [C09B 67/002](#)
[C09B 67/20](#) " " [C09B 67/006](#)
[C09B 67/22](#) " " [C09B 67/0033](#)
[C09B 67/24](#) " " [C09B 67/0072](#)
[C09B 67/26](#) " " [C09B 67/0073](#)
[C09B 67/28](#) " " [C09B 67/0077](#)
[C09B 67/30](#) " " [C09B 67/0078](#)
[C09B 67/32](#) " " [C09B 67/0075](#)
[C09B 67/34](#) " " [C09B 67/0076](#)
[C09B 67/36](#) " " [C09B 67/0079](#)

[C09B 67/38](#) " " [C09B 67/008](#)
[C09B 67/40](#) " " [C09B 67/0082](#)
[C09B 67/42](#) " " [C09B 67/0071](#)
[C09B 67/44](#) " " [C09B 67/0083](#)
[C09B 67/46](#) " " [C09B 67/0084](#)
[C09B 67/48](#) " " [C09B 67/0025](#)
[C09B 67/50](#) " " [C09B 67/0026](#)
[C09B 67/52](#) " " [C09B 67/0027](#)
[C09B 67/54](#) " " [C09B 67/0096](#)

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}

NOTE

In this subclass, in the absence of an indication to the contrary, a compound is classified in the last appropriate place

Treatment by polymerisation onto particle is classified in [C08F 292/00](#). Only treatment by already polymerised agents is classified in [C09C](#)

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](#)

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](#))

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

When classifying in this subclass, the indexing codes of subclass **M01P** 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](#)

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](#))

NOTE

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.

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.

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](#) .

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](#) .

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](#)).

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** 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 67/02B** , [C08L 67/03](#) , [C08L 67/04](#) , [C08L 67/06](#) , [C08L 67/07](#) , [C08L 69/00](#) , **C08L 69/00B** , [C08L 71/00](#) , [C08L 75/04](#) , [C08L 77/00](#) , [C08L 77/08](#) , [C08L 77/12](#) , [C08L 79/08](#) , **C08L 79/08B** , [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](#)).

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** or **M08K** 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](#) .

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](#)** 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](#)

- C09F** NATURAL RESINS; FRENCH POLISH; DRYING-OILS; DRIERS (SICCATIVES); TURPENTINE
- C09G** POLISHING COMPOSITIONS OTHER THAN FRENCH POLISH; SKI WAXES
- C09H** PREPARATION OF GLUE OR GELATINE
- 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](#))

NOTE

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.

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.

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

Examples: An adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in group [C09J 123/06](#) ;
 An adhesive containing 40 parts of polyethene and 40 parts of polyvinylchloride is classified in groups [C09J 123/06](#) and [C09J 127/06](#) .

An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#)

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** 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 67/02B](#)** , [C08L 67/03](#) , [C08L 67/04](#) , [C08L 67/06](#) , [C08L 67/07](#) , [C08L 69/00](#) , **[C08L 69/00B](#)** , [C08L 71/00](#) , [C08L 75/04](#) , [C08L 77/00](#) , [C08L 77/08](#) , [C08L 77/12](#) , [C08L 79/08](#) , **[C08L 79/08B](#)** , [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](#)). 3. 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](#)).

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](#) or [M08K](#) 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](#) .

From April 2012 onwards, after the notation of groups [C09J 101/00](#) to [C09J 201/00](#) , notations concerning the other constituents of the adhesive composition may be added, in the form of C-sets. The further constituent is added with an indexing code. The indexing codes are chosen from [C08L 1/00](#) -[C08L 555/86](#) or [C08K](#) and they may be linked or unlinked: - [C08L 1/00](#) - [C08L 101/16](#) are linked. - [C08L 2201/00](#) - [C08L 2555/86](#) are unlinked. The polymer in majority is always first in the C-set. Examples:

a. An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#) (unlinked). b. An adhesive containing 80 parts of polyethene and 20 parts of polyvinylchloride is classified in group ([C09J 123/06](#) , [C08L 27/06](#)). c. An adhesive containing 40 parts of polyethene and 40 parts of polyvinylchloride is classified in groups ([C09J 123/06](#) , [C08L 27/06](#)) and ([C09J 127/06](#) , [C08L 23/06](#)). d. An adhesive containing 90% of polysiloxane ([C09J 183/04](#)) further containing of polyester ([C08L 67/00](#)) and an alcohol is classified in ([C09J 183/04](#) , [C08L 67/00](#) , [C08K 5/05](#)).

WARNING

The following IPC group is not used in the CPC system: Subject matter covered by these groups is classified in the following CPC group:
[C09J 163/02](#) covered by [C09J 163/00](#)

C09K

MATERIALS FOR MISCELLANEOUS APPLICATIONS, NOT PROVIDED FOR ELSEWHERE

NOTE

This subclass covers also the use of specified materials in general or their use for the applications not specially provided for elsewhere.

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

- "materials" includes compositions.

C10

PETROLEUM, GAS OR COKE INDUSTRIES; TECHNICAL GASES CONTAINING CARBON MONOXIDE; FUELS; LUBRICANTS; PEAT

C10B

DESTRUCTIVE DISTILLATION OF CARBONAGEOUS MATERIALS FOR PRODUCTION OF GAS, COKE, TAR, OR SIMILAR MATERIALS (cracking oils [C10G](#); underground gasification of minerals [E21B 43/295](#))

C10C

WORKING-UP PITCH, ASPHALT, BITUMEN, TAR; PYROLIGNEOUS ACID (compositions of bituminous materials [C08L 95/00](#); carbon filaments by decomposition of organic filaments [D01F 9/14](#))

C10F**DRYING OR WORKING-UP OF PEAT****C10G**

CRACKING HYDROCARBON OILS; PRODUCTION OF LIQUID HYDROCARBON MIXTURES, e.g. BY DESTRUCTIVE HYDROGENATION, OLIGOMERISATION, POLYMERISATION([cracking to hydrogen or synthesis gas C01B](#); [cracking or pyrolysis of hydrocarbon gases to individual hydrocarbons or mixtures thereof of definite or specific constitution C07C](#); [cracking to cokes C10B](#)); **RECOVERY OF HYDROCARBON OILS FROM OIL-SHALE, OIL-SAND, OR GASES; REFINING MIXTURES MAINLY CONSISTING OF HYDROCARBONS; REFORMING OF NAPHTHA; MINERAL WAXES**([inhibiting corrosion or incrustation in general C23F](#))

NOTE

In this subclass,

- groups [C10G 9/00](#) to [C10G 49/00](#) are limited to one-step processes;
- combined or multi-step processes are covered by groups [C10G 51/00](#) to [C10G 69/00](#) ;
- refining or recovery of mineral waxes is covered by group [C10G 73/00](#) .

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

- "in the presence of hydrogen" or "in the absence of hydrogen" mean treatments in which hydrogen, in free form or as hydrogen generating compounds, is added, or not added, respectively;
- "hydrotreatment" is used for conversion processes as defined in group [C10G 45/00](#) or group [C10G 47/00](#) ;
- "hydrocarbon oils" covers mixtures of hydrocarbons such as tar oils or mineral oils.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

WARNING

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

[C10G 73/23](#) covered by [C10G 73/06](#)

Groups [C10G 2/30](#) to [C10G 2/50](#) do not correspond to former or current IPC groups. The concordance CPC : IPC is as follows: - [C10G 2/30](#) - [C10G 2/50](#) : [C10G 2/00](#)

- C10H** **PRODUCTION OF ACETYLENE BY WET METHODS** {(purification of acetylene [C07C 7/00](#))}
- C10J** **PRODUCTION OF PRODUCER GAS, WATER-GAS, SYNTHESIS GAS FROM SOLID CARBONACEOUS MATERIAL, OR MIXTURES CONTAINING THESE GASES**(synthesis gas from liquid or gaseous hydrocarbons [C01B](#) ; underground gasification of minerals [E21B 43/295](#)); **CARBURETTING AIR OR OTHER GASES**
- C10K** **PURIFYING OR MODIFYING THE CHEMICAL COMPOSITION OF COMBUSTIBLE GASES CONTAINING CARBON MONOXIDE**
- C10L** **FUELS NOT OTHERWISE PROVIDED FOR**(fuels for generating pressure gas, e.g. for rockets [C06D 5/00](#) ; candles [C11C](#); nuclear fuel [G21C 3/00](#)); **NATURAL GAS; SYNTHETIC NATURAL GAS OBTAINED BY PROCESSES NOT COVERED BY SUBCLASSES [C10G](#), [C10K](#); LIQUEFIED PETROLEUM GAS; ADDING MATERIALS TO FUELS OR FIRES TO REDUCE SMOKE OR UNDESIRABLE DEPOSITS OR TO FACILITATE SOOT REMOVAL; FIRELIGHTERS**

NOTE

In subclass [C10L](#) it is desirable to give indexing codes for information about components of solid, liquid and gaseous fuels or firelighters, their additives and constituents and their preparation and use. The indexing codes are taken from [C10L 2200/00](#) to [C10L 2290/60](#)

- 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](#))

NOTE

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

- "lubricant" or "lubricating composition" includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
- "aliphatic" includes "cycloaliphatic".

In respect of the classification of mixtures, attention is drawn to Note (4) (e) below.

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place. Thus, a compound having an aromatic ring is classified as aromatic regardless of whether the substituent(s) of interest are on the ring or on an aliphatic part of the molecule.

In this subclass:

metal or ammonium salts of a compound are classified as that compound;

salts or adducts formed between two or more organic compounds are classified according to all compounds forming the salt or adduct, if of interest;

a specified compound, e.g. phenols, acids, substituted by a macromolecular hydrocarbon radical is classified as that compound;

base-materials or thickeners or additives consisting of a mixture for which no specific main group is provided are classified in the most indented group covering all essential constituents of the mixture, for example,

- a base-material mixture of ketone and amide - group [C10M 105/00](#)
- a base-material mixture of ketone and ether - group [C10M 105/08](#)
- an additive mixture of long and short chain esters - group [C10M 129/00](#)
- an additive mixture of short chain aliphatic and aromatic carboxylic acids
- group [C10M 129/26](#) ;

except for aqueous lubricating compositions containing more than 10% water, which are classified separately, classification is made according to the type of ingredient or mixture of types of ingredient (base-material, thickener or additive) which characterises the composition. Attention is drawn to the fact that a mixture of essential ingredients characterised by only one of its components, rather than by the mixture as a whole, is not classified as a mixture, e.g. a lubricating composition consisting of:

- a known base-material and a new additive is classified only in the "additive" part of the classification scheme;
- a known base-material with both a thickener and a further additive as essential ingredients, which may be individually classified as a mixture of thickener and additive;
- known base-material with a combination of additives as essential ingredients, which may be individually known or not, is classified in the appropriate place for the additive mixture.

In this subclass, it is desirable to add the indexing codes of:

- subclass **M10M**, relating to the chemical constitution of individual compounds of the lubricating compositions;
 - subclass **M10N**, 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.

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.

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](#).

- C10N** **INDEXING SCHEME ASSOCIATED WITH SUBCLASS [C10M](#) RELATING TO LUBRICATING COMPOSITIONS**
- C11** **ANIMAL AND VEGETABLE OILS, FATS, FATTY SUBSTANCES AND WAXES; FATTY ACIDS THEREFROM; DETERGENTS; CANDLES** ([edible oil or fat compositions A23](#))
- C11B** **PRODUCING([pressing, extraction](#)), REFINING AND PRESERVING FATS, FATTY SUBSTANCES([e.g. lanolin](#)), FATTY OILS AND WAXES, INCLUDING EXTRACTION FROM WASTE MATERIALS; ESSENTIAL OILS; PERFUMES([drying-oils C09F](#))**

NOTE

In this subclass, boron and silicon are considered as metals

C11C

FATTY ACIDS FROM FATS, OILS OR WAXES; CANDLES; FATS, OILS OR FATTY ACIDS BY CHEMICAL MODIFICATION OF FATS, OILS, OR FATTY ACIDS OBTAINED THEREFROM

C11D

DETERGENT COMPOSITIONS (preparations specially adapted for washing the hair [A61K 7/075](#); 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 [C11D 10/06](#), 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](#)

C12

BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING

NOTE

In subclasses [C12M](#) to [C12Q](#) and within each of these subclasses, in the absence of an indication to the contrary, classification is made in the last appropriate place.

In this class, viruses, undifferentiated human, animal or plant cells, protozoa, tissues, and unicellular algae are considered as micro-organisms.

In this class, unless specifically provided for, undifferentiated human, animal or plant cells, protozoa, tissues and unicellular algae are classified together with micro-organisms. Sub-cellular parts, unless specifically provided for, are classified with the whole cell.

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](#) .

C12F

DISTILLATION OR RECTIFICATION OF FERMENTED SOLUTIONS; RECOVERY OF BY-PRODUCTS; DENATURING OF, OR DENATURED, ALCOHOL

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](#), **[C12G 1/18](#)**[C12G 1/12](#) " "
[C12H](#)
[C12G 3/07](#) " " [C12G 3/065](#)
[C12G 3/14](#) " " [C12G 3/105](#)

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](#)

C12J VINEGAR; ITS PREPARATION

C12L PITCHING OR DEPITCHING MACHINES; CELLAR TOOLS (cleaning of casks [B08B 9/00](#))

C12M APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY; { APPARATUS FOR CULTURING MICROORGANISMS FOR PRODUCING BIOMASS, FOR GROWING CELLS OR FOR OBTAINING FERMENTATION OR METABOLIC PRODUCTS, i.e. BIOREACTORS OR FERMENTERS}

NOTE

In this subclass the term microorganism includes prokaryotic and eukaryotic cells. Viruses, human, animal or plant cells, protozoa, tissues and unicellular algae are considered microorganisms.

When classifying an apparatus according to its use in group [C12M 21/00](#), classification should also be given in at least one of the groups [C12M 23/00-C12M 99/00](#).

This subclass covers apparatus or devices for the fermentation or for growing microorganisms or animal tissues of both laboratory and industrial scale, i.e. bioreactors.

This subclass covers also apparatus or devices for the pre-treatment or after-treatment of the biomass or microorganisms to be cultured or that have been cultured.

This subclass does not cover the methods or processes taking place in the bioreactors that are not based on the use of the parts of the apparatus.

This subclass does not cover:

apparatus for culturing plant tissue, which are covered by **A01H 4/00B**;

apparatus for preservation of living parts of bodies of humans or animals, which are covered by [A01N 1/0242](#);

apparatus or devices for testing sterility conditions not linked to a bioreactor or fermenter growing biomass, which are covered by [A61L 2/00](#), **G01N 31/22F**;

apparatus for biological treatment of water, waste water, sewage or sludge, which are covered by [C02F 3/00](#), [C02F 11/00](#);

apparatus for brewing of beer, which are covered by [C12C](#);

apparatus for production of wine or vinegar, which are covered by [C12G](#), [C12J 1/10](#);

apparatus or devices for DNA and RNA technology, which are covered by [B01L 7/52](#), **B01J 19/00C**, **C12N 15/10A**;

fermentation processes, which are covered by [C12P](#);

apparatus for bioleaching of ores, which are covered by [C22B 3/18](#);

removing cellulose from cellulosic substances, which is covered by [D21C](#);

apparatus or devices for sampling, detection, investigation or analysis of microorganisms or biosensors, which are covered by [G01N 33/48](#);

apparatus for automatic analysis not linked to a bioreactor or fermenter growing biomass, which are covered by [G01N 35/00](#);

testing or evaluating the effect of a chemical or biological compound involving human or animal cells, which are covered by **G01N 33/50D**;

apparatus for immunological test processes, which are covered by **G01N 33/53B**.

WARNING

Groups [C12M 21/00](#) to [C12M 99/00](#) do not correspond to former or current IPC groups.

Concordance CPC : IPC for these groups is as follows:

- [C12M 21/00](#) : [C12M 1/00](#) - [C12M 21/02](#) : [C12M 1/00](#)
- [C12M 21/04](#) : [C12M 1/107](#) - [C12M 21/06](#) : [C12M 3/00](#)
- [C12M 21/08](#) : [C12M 3/00](#) - [C12M 21/10](#) : [C12M 3/10](#)
- [C12M 21/12](#) : [C12M 1/00](#) - [C12M 21/14](#) : [C12M 1/00](#)
- [C12M 21/16](#) : [C12M 1/16](#) - [C12M 21/18](#) : [C12M 1/40](#)
- [C12M 23/00](#) : [C12M 1/00](#) - [C12M 23/02](#) : [C12M 1/00](#)
- [C12M 23/04](#) : [C12M 1/12](#) - [C12M 23/06](#) : [C12M 1/12](#)
- [C12M 23/08](#) : [C12M 1/24](#) - [C12M 23/10](#) : [C12M 1/22](#)
- [C12M 23/12](#) : [C12M 1/32](#) - [C12M 23/14](#) : [C12M 1/00](#)

- [C12M 23/16](#) : [C12M 3/06](#) - [C12M 23/18](#) : [C12M 1/00](#)
 - [C12M 23/20](#) : [C12M 1/00](#) - [C12M 23/22](#) : [C12M 1/00](#)
 - [C12M 23/24](#) : [C12M 1/04](#) - [C12M 23/26](#) : [C12M 1/00](#)
 - [C12M 23/28](#) : [C12M 1/00](#) - [C12M 23/30](#) : [C12M 1/00](#)
 - [C12M 23/32](#) : [C12M 1/00](#) - [C12M 23/34](#) : [C12M 1/00](#)
 - [C12M 23/36](#) : [C12M 1/107](#) - [C12M 23/38](#) : [C12M 1/00](#)
 - [C12M 23/40](#) : [C12M 1/00](#) - [C12M 23/42](#) : [C12M 3/00](#)
 - [C12M 23/44](#) : [C12M 3/00](#) - [C12M 23/46](#) : [C12M 3/00](#)
 - [C12M 23/48](#) : [C12M 3/00](#) - [C12M 23/50](#) : [C12M 1/00](#)
 - [C12M 23/52](#) : [C12M 1/00](#) - [C12M 23/54](#) : [C12M 3/00](#)
 - [C12M 23/56](#) : [C12M 1/09](#) - [C12M 23/58](#) : [C12M 1/00](#)
 - [C12M 25/00](#) : [C12M 1/12](#) - [C12M 25/02](#) : [C12M 1/12](#)
 - [C12M 25/04](#) : [C12M 1/12](#) - [C12M 25/06](#) : [C12M 1/12](#)
 - [C12M 25/08](#) : [C12M 1/12](#) - [C12M 25/10](#) : [C12M 1/12](#)
 - [C12M 25/12](#) : [C12M 1/12](#) - [C12M 25/14](#) : [C12M 1/12](#)
 - [C12M 25/16](#) : [C12M 1/12](#) - [C12M 25/18](#) : [C12M 1/12](#)
 - [C12M 25/20](#) : [C12M 1/12](#) - [C12M 27/00](#) : [C12M 1/02](#)
 - [C12M 27/02](#) : [C12M 1/06](#) - [C12M 27/04](#) : [C12M 1/04](#)
 - [C12M 27/06](#) : [C12M 1/06](#) - [C12M 27/08](#) : [C12M 1/06](#)
 - [C12M 27/10](#) : [C12M 3/04](#) - [C12M 27/12](#) : [C12M 3/04](#)
 - [C12M 27/14](#) : [C12M 3/06](#) - [C12M 27/16](#) : [C12M 3/06](#)
 - [C12M 27/18](#) : [C12M 1/00](#) - [C12M 27/20](#) : [C12M 1/00](#)
 - [C12M 27/22](#) : [C12M 1/00](#) - [C12M 27/24](#) : [C12M 1/08](#)
 - [C12M 29/00](#) : [C12M 1/00](#) - [C12M 29/02](#) : [C12M 1/00](#)
 - [C12M 29/04](#) : [C12M 1/00](#) - [C12M 29/06](#) : [C12M 1/00](#)
 - [C12M 29/08](#) : [C12M 1/00](#) - [C12M 29/10](#) : [C12M 1/00](#)
 - [C12M 29/12](#) : [C12M 1/00](#) - [C12M 29/14](#) : [C12M 1/00](#)
 - [C12M 29/16](#) : [C12M 1/00](#) - [C12M 29/18](#) : [C12M 1/00](#)
 - [C12M 29/20](#) : [C12M 1/00](#) - [C12M 29/22](#) : [C12M 1/00](#)
 - [C12M 29/24](#) : [C12M 1/00](#) - [C12M 29/26](#) : [C12M 1/00](#)
 - [C12M 31/00](#) : [C12M 1/00](#) - [C12M 31/02](#) : [C12M 1/00](#)
 - [C12M 31/04](#) : [C12M 1/00](#) - [C12M 31/06](#) : [C12M 1/00](#)
 - [C12M 31/08](#) : [C12M 1/00](#) - [C12M 31/10](#) : [C12M 1/00](#)
 - [C12M 31/12](#) : [C12M 1/00](#) - [C12M 33/00](#) : [C12M 1/26](#)
 - [C12M 33/02](#) : [C12M 1/30](#) - [C12M 33/04](#) : [C12M 1/26](#)
 - [C12M 33/06](#) : [C12M 1/32](#) - [C12M 33/08](#) : [C12M 1/26](#)
 - [C12M 33/10](#) : [C12M 1/26](#) - [C12M 33/12](#) : [C12M 1/26](#)
 - [C12M 33/14](#) : [C12M 1/26](#) - [C12M 33/16](#) : [C12M 1/26](#)
 - [C12M 33/18](#) : [C12M 1/26](#) - [C12M 33/20](#) : [C12M 1/26](#)
 - [C12M 35/00](#) : [C12M 1/42](#) - [C12M 35/02](#) : [C12M 1/42](#)
 - [C12M 35/04](#) : [C12M 1/42](#) - [C12M 35/06](#) : [C12M 1/42](#)
 - [C12M 35/08](#) : [C12M 1/42](#) - [C12M 37/00](#) : [C12M 1/12](#)
 - [C12M 37/02](#) : [C12M 1/12](#) - [C12M 37/04](#) : [C12M 1/12](#)
 - [C12M 37/06](#) : [C12M 1/12](#) - [C12M 39/00](#) : [C12M 1/00](#)
 - [C12M 41/00](#) : [C12M 1/34](#) - [C12M 41/02](#) : [C12M 1/21](#)
 - [C12M 41/04](#) : [C12M 1/34](#) - [C12M 41/06](#) : [C12M 1/00](#)
 - [C12M 41/08](#) : [C12M 1/00](#) - [C12M 41/10](#) : [C12M 1/00](#)
 - [C12M 41/12](#) : [C12M 1/34](#) - [C12M 41/14](#) : [C12M 1/00](#)
 - [C12M 41/16](#) : [C12M 1/34](#) - [C12M 41/18](#) : [C12M 1/02](#)
 - [C12M 41/20](#) : [C12M 1/02](#) - [C12M 41/22](#) : [C12M 1/02](#)
 - [C12M 41/24](#) : [C12M 1/02](#) - [C12M 41/26](#) : [C12M 1/34](#)
 - [C12M 41/28](#) : [C12M 1/34](#) - [C12M 41/30](#) : [C12M 1/34](#)
 - [C12M 41/32](#) : [C12M 1/34](#) - [C12M 41/34](#) : [C12M 1/34](#)
 - [C12M 41/36](#) : [C12M 1/34](#) - [C12M 41/38](#) : [C12M 1/34](#)
 - [C12M 41/40](#) : [C12M 1/34](#) - [C12M 41/42](#) : [C12M 1/34](#)
 - [C12M 41/44](#) : [C12M 1/34](#) - [C12M 41/46](#) : [C12M 1/34](#)
 - [C12M 41/48](#) : [C12M 1/36](#) - [C12M 43/00](#) : [C12M 1/00](#)

- [C12M 43/02](#) : [C12M 1/00](#) - [C12M 43/04](#) : [C12M 1/00](#)
 - [C12M 43/06](#) : [C12M 1/00](#) - [C12M 43/08](#) : [C12M 1/00](#)
 - [C12M 45/00](#) : [C12M 1/00](#) - [C12M 45/02](#) : [C12M 1/33](#)
 - [C12M 45/04](#) : [C12M 1/00](#) - [C12M 45/06](#) : [C12M 1/00](#)
 - [C12M 45/06](#) : [C12M 3/08](#) - [C12M 45/09](#) : [C12M 3/08](#)
 - [C12M 45/20](#) : [C12M 3/08](#) - [C12M 45/06](#) : [C12M 3/08](#)
 - [C12M 45/09](#) : [C12M 3/08](#) - [C12M 45/20](#) : [C12M 1/00](#)
 - [C12M 45/20](#) : [C12M 1/00](#) - [C12M 45/22](#) : [C12M 1/00](#)
 - [C12M 47/00](#) : [C12M 1/00](#) - [C12M 47/00](#) : [C12M 1/00](#)
 - [C12M 47/02](#) : [C12M 1/00](#) - [C12M 47/04](#) : [C12M 1/00](#)
 - [C12M 47/06](#) : [C12M 1/00](#) - [C12M 47/08](#) : [C12M 1/00](#)
 - [C12M 47/10](#) : [C12M 1/00](#) - [C12M 47/12](#) : [C12M 1/00](#)
 - [C12M 47/14](#) : [C12M 1/00](#) - [C12M 47/16](#) : [C12M 1/00](#) -
[C12M 47/18](#) : [C12M 1/00](#) - [C12M 47/20](#) : [C12M 1/00](#)

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](#))

NOTE

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.

Attention is drawn to Notes (1) to (3) following the title of Class [C12](#) .

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 9/70](#) 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](#)

C12P

FERMENTATION OR ENZYME-USING PROCESSES TO SYNTHESISE A DESIRED CHEMICAL COMPOUND OR COMPOSITION OR TO SEPARATE OPTICAL ISOMERS FROM A RACEMIC MIXTURE(

brewing of beer [C12C](#) ; producing vinegar [C12J](#) ; producing specific peptides or proteins [C07K](#) ; producing enzymes [C12N 9/00](#) ; DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification [C12N 15/00](#) ; measuring or testing processes involving enzymes or micro-organisms [C12Q](#) ; measuring or testing processes involving nucleic acid amplification reactions [C12Q 1/6844](#) ; fermentation processes to form a food composition, [A21](#) or [A23](#) ; compounds in general, see the relevant compound class, e.g. [C01](#) , [C07](#))]

NOTE

This subclass covers the production of compounds or compositions by biochemical transformation of matter performed by using enzymes or micro-organisms, wherein micro-organisms are defined as any single-celled organisms, including bacteria, fungi, yeast or microalgae, or plant or mammalian cells in the form of cell cultures.

In this subclass, documents are primarily classified according to the compounds produced. In addition, if appropriate, classification according to the method or biocatalyst used to produce the compound is made.

Classification in groups [C12P 19/14](#) - [C12P 19/24](#) , [C12P 39/00](#) , [C12P 41/00](#) - [C12P 41/009](#) should only be made together with the corresponding product groups

WARNING

The following IPC groups are not used in the CPC scheme. Subject-matter covered by these groups is classified in the following CPC groups: - [C12P 21/04](#) covered by [C07K 7/50](#) - [C12P 21/08](#) covered by [C07K 16/00](#)

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****NOTE**

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](#).

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.

Attention is drawn to Notes (1) to (3) following the title of class [C12](#).

In this subclass, test media are classified in the appropriate group for the relevant test process.

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

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](#)

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](#)** , relating to relevant technical features of the invention, using Combination Sets.

In groups [C12Q 1/68](#) M- [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.

C12R**PROCESSES USING MICRO-ORGANISMS****NOTE**

The basis for the bacteria terminology is "Bergey`s Manual of Determinative Bacteriology", Eighth Edition, 1975.

C12Y**ENZYMES****C13****SUGAR INDUSTRY** (polysaccharides, e.g. starch, derivatives thereof [C08B](#); malt [C12C](#))**NOTE**

1. In class [C13](#), the following terms or expressions are used with the meanings indicated: • "sugars" are a class of edible, water-soluble crystalline carbohydrates, having a characteristic sweet taste, including mono-, di- and oligosaccharides, e.g. sucrose, lactose and fructose. A more specific meaning of the term "sugar" is defined in the note of subclass [C13B](#). 2. Processes using enzymes or micro-organisms in order to : i. to liberate, separate or purify a pre-existing compound or composition, or to ii. to treat textiles or clean solid surfaces of materials are further classified in subclass **C12S** .

C13B**PRODUCTION OF SUCROSE; APPARATUS SPECIALLY ADAPTED THEREFOR** (chemically synthesised sugars or sugar derivatives [C07H](#) ; fermentation or enzyme-using processes for preparing compounds containing saccharide radicals [C12P 19/00](#))**NOTE**

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

"sugar" is used in its non-scientific meaning and refers to sucrose, also called "table sugar" or saccharose", a white crystalline disaccharide;

"sugar juices" are solutions of sugar, essentially comprising sucrose, which are derived from different plants, e.g. beet, cane or maple;

"syrups" are highly concentrated sugar juices.

C13K**SACCHARIDES, OTHER THAN SUCROSE, OBTAINED FROM NATURAL SOURCES OR BY HYDROLYSIS OF NATURALLY OCCURRING DI-, OLIGO- OR POLYSACCHARIDES** (chemically synthesised sugars or sugar derivatives [C07H](#) ; polysaccharides, e.g. starch, derivatives thereof [C08B](#) ; malt [C12C](#) ; fermentation or enzyme-using processes for preparing compounds containing saccharide radicals [C12P 19/00](#))**C14****SKINS; HIDES; PELTS; LEATHER**

C14B **MECHANICAL TREATMENT OR PROCESSING OF SKINS, HIDES OR LEATHER IN GENERAL; PELT-SHEARING MACHINES; INTESTINE-SPLITTING MACHINES** (making leather substitutes [B29](#), [D06N](#); making articles from leather [B68F](#); mechanical cleaning of hides or the like [D06G](#); artificial leather [D06N](#))

C14C **CHEMICAL TREATMENT OF HIDES, SKINS OR LEATHER, e.g. TANNING, IMPREGNATING, FINISHING; APPARATUS THEREFOR; COMPOSITIONS FOR TANNING** (bleaching of leather or furs [D06L](#); dyeing of leather or furs [D06P](#))

SUBSECTION: Metallurgy

C21 **METALLURGY OF IRON**

C21B **MANUFACTURE OF IRON OR STEEL** (preliminary treatment of ferrous ores or scrap [C22B 1/00](#); electric heating [H05B](#))

NOTE

This subclass covers the production of iron or steel from source materials, e.g. the production of pig-iron, and apparatus specially adapted therefor, e.g. blast furnaces, air heaters (furnaces in general [F27](#)).

C21C **PROCESSING OF PIG-IRON, e.g. REFINING, MANUFACTURE OF WROUGHT-IRON OR STEEL; TREATMENT IN MOLTEN STATE OF FERROUS ALLOYS** (refining metals in general [C22B 9/00](#))

C21D **MODIFYING THE PHYSICAL STRUCTURE OF FERROUS METALS; GENERAL DEVICES FOR HEAT TREATMENT OF FERROUS OR NON-FERROUS METALS OR ALLOYS; MAKING METAL MALLEABLE BY DECARBURISATION, TEMPERING OR OTHER TREATMENTS**(
cementation by diffusion processes [C23C](#); surface treatment of metallic material involving at least one process provided for in class [C23](#) and at least one process covered by this subclass, [C23F 17/00](#) ; unidirectional solidification of eutectic materials or unidirectional demixing of eutectoid materials [C30B](#))

C22 **METALLURGY** (of iron [C21](#)); **FERROUS OR NON-FERROUS ALLOYS; TREATMENT OF ALLOYS OR NON-FERROUS METALS** (production of metals by electrolysis or electrophoresis [C25](#))

C22B**PRODUCTION AND REFINING OF METALS**(electrolytic [C25](#));
PRETREATMENT OF RAW MATERIALS**NOTE**

In this subclass, groups for obtaining metals include obtaining the metals by non-metallurgical processes, and obtaining metal compounds by metallurgical processes, {as far as specifically indicated in the relevant groups} . Thus, for example, group [C22B 11/00](#) covers the production of silver by reduction of ammoniacal silver oxide in solution, and group [C22B 17/00](#) includes the production of cadmium oxide by a metallurgical process. Furthermore, although compounds of arsenic and antimony are classified in [C01G](#), production of the elements themselves is included in [C22B](#), as well as the production of their compounds by metallurgical processes.

WARNING

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

[C22B 3/26](#) to [C22B 3/40](#) covered by [C22B 3/0005](#)

C22C**ALLOYS** (flints [C06C 15/00](#); treatment of alloys [C21D](#), [C22F](#))**NOTE**

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

"alloys" includes also:

- a) metallic composite materials containing a substantial proportion of fibres or other somewhat larger particles;
- b) ceramic compositions containing free metal bonded to carbides, diamond, oxides, borides, nitrides or silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides, other than as macroscopic reinforcing agents;

"based on" requires at least 50% by weight of the specified constituent or of the specified group of constituents.

In the absence of an indication to the contrary, in groups [C22C 5/00](#) to [C22C 32/00](#) an alloy is classified in the last appropriate place.

In this subclass it is desirable to classify the individual aspects of combinations of processes or materials for powder metallurgy using Combination Sets with symbols chosen from groups [C22C 1/00](#) to [C22C 43/00](#) or from groups [B22F 1/00](#) to [B22F 9/00](#).

In this subclass the special database "ALLOYS" is used. This system includes patent documents classified in groups [C22C 1/04](#) and [C22C 5/00](#) to [C22C 49/14](#) and provides information on the composition of the alloys, their uses and characteristics.

C22F

CHANGING THE PHYSICAL STRUCTURE OF NON-FERROUS METALS AND NON-FERROUS ALLOYS (surface treatment of metallic material involving at least one process provided for in class [C23](#) and at least one process covered by this subclass, [C23F 17/00](#))

C23

COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL (by metallising textiles [D06M 11/83](#); decorating textiles by locally metallising [D06Q 1/04](#)); **CHEMICAL SURFACE TREATMENT; DIFFUSION TREATMENT OF METALLIC MATERIAL; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL** (for specific applications, see the relevant places, e.g. for manufacturing resistors [H01C 17/06](#)); **INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL** (treating metal surfaces or coating of metals by electrolysis or electrophoresis [C25D](#), [C25F](#))

NOTE

In this class, the following expression is used with the meaning indicated:

- "metallic material" covers:

metals;

alloys (attention is drawn to the Note following the title of subclass [C22C](#)):

alloys containing at least 50 % by weight of one or more of borides, carbides, nitrides, oxides or silicides and binding metal;

non-ferrous alloys containing at least 5 % by weight but less than 50 % by weight of borides, carbides, nitrides, oxides or silicides of refractory metals, whether added as such or formed in situ.

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 [C23E](#); single-crystal film growth [C30B](#); manufacture of semiconductor devices [H01L](#); manufacture of printed circuits [H05K](#))

NOTE

In this subclass, an operation is considered as pre-treatment or after-treatment when it is specially adapted for, but quite distinct from, the coating process concerned and constitutes an independent operation. If an operation results in the formation of a permanent sub- or upper layer, it is not considered as pre-treatment or after-treatment and is classified as a multi-coating process.

WARNING

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](#)

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 18/20](#) B-
[C23C 18/2093](#)

C23D

ENAMELLING OF, OR APPLYING A VITREOUS LAYER TO, METALS([chemical composition of the enamels C03C](#))

C23F

NON-MECHANICAL REMOVAL OF METALLIC MATERIAL FROM SURFACE (working metal by laser beams [B23K 26/00](#); desurfacing by applying flames [B23K 7/00](#); working of metal by electro-erosion [B23H](#); producing decorative effects by removing surface material, e.g. by engraving, by etching, [B44C 1/22](#); electrolytic etching or polishing [C25F](#)); **INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL; MULTI-STEP PROCESSES FOR SURFACE TREATMENT OF METALLIC MATERIAL INVOLVING AT LEAST ONE PROCESS PROVIDED FOR IN CLASS [C23](#) AND AT LEAST ONE PROCESS COVERED BY SUBCLASS [C21D](#) OR [C22F](#) OR CLASS [C25](#).**

NOTE

protective layers or coating compositions or methods of applying them; these are classified in the appropriate places, e.g. [B05](#), [B44](#), [C09D](#), [C23C](#).

mechanical devices or constructional features of particular articles for inhibiting incrustation; these are classified in the appropriate places, e.g. in pipes or pipe fittings [F16L 58/00](#).

articles characterised by being made of materials selected for their properties of resistance to corrosion or incrustation; these are classified in the appropriate places, e.g. turbine blades [F01D 5/28](#).

C23G

CLEANING OR DEGREASING OF METALLIC MATERIAL BY CHEMICAL METHODS OTHER THAN ELECTROLYSIS (polishing compositions [C09G](#); detergents in general [C11D](#))

C25

ELECTROLYTIC OR ELECTROPHORETIC PROCESSES; APPARATUS THEREFOR (electrodialysis, electro-osmosis, separation of liquids by electricity [B01D](#); {separation of isotopes by electrochemical methods [B01D 59/38](#)}; working of metal by the action of a high concentration of electric current [B23H](#); treatment of water, waste water or sewage by electrochemical methods [C02F 1/46](#); surface treatment of metallic material or coating involving at least one process provided for in class [C23](#) and at least one process covered by this class [C23C 28/00](#), [C23F 17/00](#); anodic or cathodic protection [C23F](#); single-crystal growth [C30B](#); metallising textiles [D06M 11/83](#); decorating textiles by locally metallising [D06Q 1/04](#); electrochemical methods of analysis [G01N](#); electrochemical measuring, indicating or recording devices [G01R](#); electrolytic circuit elements, e.g. capacitors, [H01G](#); electrochemical current or voltage generators [H01M](#))

NOTE

Electrolytic or electrophoretic processes or apparatus or operational features are classified:

in the groups for the compounds or articles produced, and
in the groups which cover the apparatus or operational features.

The electrolytic or electrophoretic purification of materials is classified according to the nature of the liquid in the relevant places, e.g. [A01K 63/00](#), [C02F 1/46](#), [C25B 15/08](#), [C25D 21/16](#), [C25F 7/02](#).

C25B

ELECTROLYTIC OR ELECTROPHORETIC PROCESSES FOR THE PRODUCTION OF COMPOUNDS OR NON-METALS; APPARATUS THEREFOR

NOTE

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

Compounds of particular interest are also classified in the relevant classes, e.g. [C01](#), [C07](#).

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:

[C25B 11/06](#) covered by [B01J](#), [C25B 11/0442](#)

[C25B 11/08](#) covered by [B01J](#), [C25B 11/0442](#)

[C25B 11/10](#) covered by [C25B 11/0442](#)

C25C

PROCESSES FOR THE ELECTROLYTIC PRODUCTION, RECOVERY OR REFINING OF METALS; APPARATUS THEREFOR

C25D

PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING (decorating textiles by metallising [D06Q 1/04](#); manufacturing printed circuits by metal deposition [H05K 3/18](#)); APPARATUS THEREFOR

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups : [C25D 5/24](#) covered by [C25D 5/34](#)[C25D 5/26](#) covered by [C25D 5/36](#)[C25D 5/28](#) covered by [C25D 5/38](#)[C25D 5/30](#) covered by [C25D 5/42](#), [C25D 5/44](#)[C25D 5/32](#) covered by [C25D 5/46](#)[C25D 13/06](#) covered by [C09D 5/44](#)[C25D 13/08](#) covered by [C09D 5/4476](#)[C25D 13/10](#) covered by [C09D 5/448](#)[C25D 19/00](#) covered by [C25D 17/00](#)

C25F**PROCESSES FOR THE ELECTROLYTIC REMOVAL OF MATERIALS FROM OBJECTS; APPARATUS THEREFOR****NOTE**

In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

C30**CRYSTAL GROWTH** (separation by crystallisation in general [B01D 9/00](#))**C30B**

SINGLE-CRYSTAL-GROWTH (by using ultra-high pressure, e.g. for the formation of diamonds [B01J 3/06](#)); **UNIDIRECTIONAL SOLIDIFICATION OF EUTECTIC MATERIAL OR UNIDIRECTIONAL DEMIXING OF EUTECTOID MATERIAL; REFINING BY ZONE-MELTING OF MATERIAL** (zone-refining of metals or alloys [C22B](#)); **PRODUCTION OF A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (casting of metals, casting of other substances by the same processes or devices [B22D](#); working of plastics [B29](#); modifying the physical structure of metals or alloys [C21D](#), [C22F](#)); **SINGLE CRYSTALS OR HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE; AFTER-TREATMENT OF SINGLE CRYSTALS OR A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (for producing semiconductor devices or parts thereof [H01L](#)); **APPARATUS THEREFOR**

NOTE

In this subclass, the following expressions are used with the meaning indicated:

- "single-crystal" includes also twin crystals and a predominantly single crystal product;
- "homogeneous polycrystalline material" means a material with crystal particles, all of which have the same chemical composition;
- "defined structure" means the structure of a material with grains which are oriented in a preferential way or have larger dimensions than normally obtained.

In this subclass:

- the preparation of single crystals or a homogeneous polycrystalline material with defined structure of particular materials or shapes is classified in the group for the process as well as in group [C30B 29/00](#);
- an apparatus specially adapted for a specific process is classified in the appropriate group for the process. Apparatus to be used in more than one kind of process is

classified in group [C30B 35/00](#).

After the notation of [C30B](#) and separated therefrom by a + sign, notations concerning the particular composition or shape of the material may be added. These notations are selected from [C30B 29/00](#).

Example: A crystal-growth process by zone-melting directly related to Al₂O₃ crystal material is classified in [C30B 13/00](#) + [C30B 29/20](#)

WARNING

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

[C30B 29/64](#), [C30B 29/66](#) covered by [C30B 29/60](#)

C40

COMBINATORIAL CHEMISTRY

C40B

COMBINATORIAL CHEMISTRY; LIBRARIES, e.g. CHEMICAL LIBRARIES, IN SILICO LIBRARIES

NOTE

In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.

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](#) 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