

CPC COOPERATIVE PATENT CLASSIFICATION

C CHEMISTRY; METALLURGY

NOTES

- 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
- 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 all sections of the CPC, in the absence of an indication to the contrary, the Periodic Table of chemical elements referred to is the one with 18 groups as represented in the table below.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
	IA	IIA	IIIB	IVB	VB	VIB	VII	-----VIII-----	IB	IIB	IIIA	IVA	VA	VIA	VIIA	VIIIA			
Period/ Période																			
1	H																	He	
2	Li	Be											B	C	N	O	F	Ne	
3	Na	Mg											Al	Si	P	S	Cl	Ar	
4	K	Ca	Sc		Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
5	Rb	Sr	Y		Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
6	Cs	Ba	Lanthanides		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
7	Fr	Ra	Actinides		Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og
			Lanthanides																
			Actinides																
					La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
					Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

- In the case of operations, treatments, products or articles having both a chemical and a 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 thereof. 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 (2) 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](#).

C

(continued)

- 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](#) or [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](#);
 - ammunition or explosives, covered by class [F42](#).
 - e. When the chemical and mechanical aspects are so closely interlocked that a neat and simple division is not possible, or when certain mechanical processes follow as a natural or logical continuation of a chemical treatment, section [C](#) may cover, in addition to the chemical aspect, a part only of the mechanical aspect, e.g., after-treatment 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.
5. 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 thereof. 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 Note (2) bullets 2, 3, 4 and 5. For example, furnaces peculiar to the manufacture of glass are covered by class [C03](#) and not by class [F27](#).
 6. 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](#).
 7. 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](#) or [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](#);
 - ammunition or explosives, covered by class [F42](#).
 8. 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-treatment 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.

CHEMISTRY**C01 INORGANIC CHEMISTRY****NOTES**

1. In this class, in the absence of an indication to the contrary, a compound is classified in the last appropriate place; { **except compounds of group [C01B 6/00](#) which takes precedence over the other groups of class [C01](#)** }.
2. The name of compounds is to be taken in a strictly limitative sense. With the exception of hydrogen and oxygen, in order to include water of hydration and acid salts, compounds may not contain other parts than its name suggests. In some cases however subgroups are provided for compounds containing more parts than their name suggests, e.g. group [C01F 7/76](#), providing for alum, is a subgroup of group [C01F 7/74](#) covering aluminium sulfates. In such a case, this note is applicable to the particular subgroup
3. In class [C01](#) it is desirable to add the indexing codes relating to structural and physical aspects of solid inorganic compounds. The indexing codes are chosen from the groups of [C01P](#)

C01B NON-METALLIC ELEMENTS; COMPOUNDS THEREOF; {METALLOIDS OR COMPOUNDS THEREOF NOT COVERED BY SUBCLASS [C01C](#)}**NOTES**

1. In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups.
2. Attention is drawn to the definitions of groups of chemical elements following the title of section [C](#).

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C01B 35/16 , C01B 35/18	covered by	C01B 35/00
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C01B

(continued)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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 32/90](#); 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 32/90](#); 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 32/90](#); 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](#))

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

NOTES

1. This subclass constitutes an internal scheme for indexing only.
2. 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

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

{In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

C03 GLASS; MINERAL OR SLAG WOOL

C03B MANUFACTURE, SHAPING, OR SUPPLEMENTARY PROCESSES

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C03B 8/00	covered by	C03B 19/00 , C03B 37/00
C03B 8/02	covered by	C03B 19/1065 , C03B 19/12 , C03B 37/011 , C03B 37/016
C03B 8/04	covered by	C03B 19/106 , C03B 19/14 , C03B 37/014
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C03C CHEMICAL COMPOSITION OF GLASSES, GLAZES OR VITREOUS ENAMELS; SURFACE TREATMENT OF GLASS; SURFACE TREATMENT OF FIBRES OR FILAMENTS MADE FROM GLASS, MINERALS OR SLAGS; JOINING GLASS TO GLASS OR OTHER MATERIALS

NOTES

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

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C03C 6/00 - C03C 6/10	covered by	C03C 1/00 - C03C 1/105
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
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C04 CEMENTS; CONCRETE; ARTIFICIAL STONE; CERAMICS; REFRACTORIES

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

NOTES

1. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "fillers" includes pigments, aggregates and fibrous reinforcing materials;
 - "active ingredients" includes processing aids or property improvers, e.g. grinding aids used after the burning process or used in the absence of a burning process;
 - "mortars", "concrete" and "artificial stone" are to be considered as a single group of materials, and therefore, in the absence of an indication to the contrary, they include mortar, concrete and other cementitious compositions.
2. In groups [C04B 7/00](#) - [C04B 32/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.
3. A composition classified in groups [C04B 26/00](#) or [C04B 28/00](#) is also classified in groups [C04B 14/00](#) - [C04B 24/00](#) if a filler or active ingredient is of interest.
4. In groups [C04B 2/00](#) - [C04B 32/00](#) and [C04B 38/00](#) - [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](#) - [C04B 41/00](#).
5. In groups [C04B 2/00](#) - [C04B 32/00](#) and [C04B 38/00](#) - [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](#) - [C04B 2111/00](#).
6. Groups [C04B 20/123](#) and [C04B 20/126](#) are used for indexing purposes only of documents classified in [C04B 20/12](#)

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C04B 5/02	covered by	B01J 2/00 , C21B 3/06
C04B 28/20 , C04B 28/22	covered by	C04B 28/18 , C04B 28/182 , C04B 28/184 , C04B 28/186 , C04B 28/188
C04B 35/035	covered by	C04B 35/26 , C04B 35/2608 , C04B 35/2616 , C04B 35/2625 , C04B 35/2633 , C04B 35/2641 , C04B 35/265 , C04B 35/2658 , C04B 35/2666 , C04B 35/2675 , C04B 35/2683 , C04B 35/2691
C04B 35/28	covered by	C04B 35/26
C04B 35/30	covered by	C04B 35/26
C04B 35/32	covered by	C04B 35/26

C04B (continued)	C04B 35/34	covered by	C04B 35/26
	C04B 35/36	covered by	C04B 35/26
	C04B 35/38	covered by	C04B 35/26
	C04B 35/40	covered by	C04B 35/2608 , C04B 35/2641 , C04B 35/2675
	C04B 35/567 , C04B 35/569 , C04B 35/576 ,	covered by	C04B 35/565 , C04B 35/571 , C04B 35/5755
	C04B 35/577		
	C04B 35/582	covered by	C04B 35/581
	C04B 35/5833 , C04B 35/5835	covered by	C04B 35/583
	C04B 35/586 , C04B 35/594 , C04B 35/596	covered by	C04B 35/584 , C04B 35/589 , C04B 35/591 , C04B 35/593 , C04B 35/5935
	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
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.			

C05 FERTILISERS; MANUFACTURE THEREOF

NOTES

1. An ingredient in a mixture of fertilisers, or a single fertiliser which contains more than one of the chemical elements on which the subdivision into subclasses is based, is classified only in the first of the appropriate subclasses. Thus, a nitrophosphate or an ammoniated superphosphate is classified in [C05B](#) but not in [C05C](#), magnesium phosphate is classified in [C05B](#) but not in [C05D](#), and calcium cyanamide in [C05C](#) but not in [C05D](#).
2. In this class, mixtures of fertilizers are classified in the first appropriate place. After the notation of the appropriate classification symbol and separated therefrom by a + sign, notations concerning the ingredients of the mixture, not covered by the chosen classification symbol, may be added. These notations are selected from class [C05](#) and are presented in the following way, e.g. [C05B 1/02](#) + [C05D 1/02](#) + [C05D 9/02](#)

C05B PHOSPHATIC FERTILISERS

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[C05B 21/00](#) covered by [C05B 1/00](#) - [C05B 19/00](#)
(see internal note after the title of class [C05](#))
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C05C NITROGENOUS FERTILISERS

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[C05C 13/00](#) covered by [C05C 1/00](#) - [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

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[C05D 11/00](#) covered by [C05D 1/00](#) - [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

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 in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C05F

(continued)

[C05F 15/00](#)

covered by

[C05F 1/00-C05F 11/00](#)(see also internal note after the title of class [C05](#))

C05G MIXTURES OF FERTILISERS COVERED INDIVIDUALLY BY DIFFERENT SUBCLASSES OF CLASS [C05](#); MIXTURES OF ONE OR MORE FERTILISERS WITH MATERIALS NOT HAVING A SPECIFIC FERTILISING ACTIVITY, e.g. PESTICIDES, SOIL-CONDITIONERS, WETTING AGENTS (organic fertilisers containing added bacterial cultures, mycelia, or the like [C05F 11/08](#); organic fertilisers containing plant vitamins or hormones [C05F 11/10](#)); FERTILISERS CHARACTERISED BY THEIR FORM

NOTES

1. This subclass covers mixtures of fertilisers with soil-conditioning or soil-stabilising materials characterised by their fertilizing activity.
2. 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 in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[C05G 1/02 - C05G 1/10](#)

covered by

[C05](#) (see internal note after the title of class [C05](#))**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](#)})

NOTES

1. 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.
2. In this subclass, the following term is used with the meaning indicated:
 - "nitrated" covers compounds having a nitro group or a nitrate ester group.
3. Methods or apparatus for preparing or treating such compositions are classified according to the particular components of the compositions.
4. In this subclass, the words "based on", with reference to explosive compositions, refer to the explosive ingredient present in the largest proportion by weight
5. In the absence of an indication to the contrary a composition is classified in the last place that provides for an ingredient

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C06F MATCHES; MANUFACTURE OF MATCHES**WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C07 ORGANIC CHEMISTRY**NOTES**

1. In this class, the following term is used with the meaning indicated:
 - "preparation" covers purification, separation, stabilisation or use of additives, unless a separate place is provided therefor.
2. Biocidal, pest repellant, pest attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass [A01P](#).
3. In subclasses [C07C-C07K](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, and with the exception referred to below, a compound is classified in the last appropriate place. For example, 2-butyl- pyridine, which contains an acyclic chain and a heterocyclic ring, is classified only as a heterocyclic compound, in subclass [C07D](#). In general, and in the absence of an indication to the contrary, such as mentioned in 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.
4. Chemical compounds and their preparation are classified in the groups for the type of compound prepared. The processes of preparation are also classified in places for the types of reaction employed, if of interest. Examples of such places outside this class are:
 - [C12P](#) Fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture
 - [C25B 3/00](#) Electrolytic production of organic compounds
 - [C25B 7/00](#) Electrophoretic production of compounds
5. 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.
6. In this class, in the absence of an indication to the contrary, the compounds containing carboxyl or thiocarboxyl groups are classified as the relevant carboxylic or thiocarboxylic acids, unless the "last place rule" (see Note (3), 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.
7. 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 group [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 [C07E](#), the alcoholates for instance in groups [C07C 31/28-C07C 31/32](#) and the phenates 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](#))**NOTES**

1. 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.
2. In this subclass, the following term is used with the meaning indicated:
 - "separation" means separation only for the purposes of recovering organic compounds.
3. 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
4. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place 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.
5. {[C07B 59/00](#) and subgroups thereof are used for the classification of individual labelled compounds as well as for general methods.}
6. {[C07B 61/02](#) is used for the classification of individual free radicals as well as for general methods.}

WARNING

The following IPC group is not in the CPC scheme. The subject matter for this IPC group is classified in the following CPC group:

[C07B 60/00](#)

covered by

[C07B 61/02](#)

C07C ACYCLIC OR CARBOCYCLIC COMPOUNDS**NOTES**

1. In this subclass, the following terms or expressions are used with meanings indicated:
 - "bridged" means the presence of at least one fusion other than ortho, peri or spiro;
 - two rings are "condensed" if they share at least one ring member, i.e. "spiro" and "bridged" are considered as condensed;
 - "condensed ring system" is a ring system in which all rings are condensed among themselves;
 - "number of rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
 - "quinones" are compounds derived from compounds containing a six-membered aromatic ring or a system comprising six-membered aromatic rings (which system may be condensed or not condensed) by replacing two or four CH groups of the six-membered aromatic rings by C=O groups, and by removing one or two carbon-to-carbon double bonds, respectively, and rearranging the remaining carbon-to-carbon double bonds to give a ring or ring system with alternating double bonds, including the carbon-to-oxygen bonds; this means that acenaphthenequinone or camphorquinone are not considered as quinones.
2. In this subclass, in the absence of an indication to the contrary, a process is classified in the last appropriate place.
3. In this subclass, in the absence of an indication to the contrary, "quaternary ammonium compounds" are classified with the corresponding "non-quaternised nitrogen compounds".
4. For the classification of compounds in groups [C07C 1/00](#) - [C07C 71/00](#) and [C07C 401/00](#) - [C07C 409/00](#) :
 - a compound is classified considering the molecule as a whole (rule of the "whole molecule approach");
 - a compound is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;
 - a compound is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes six-membered aromatic ring, unless otherwise specified or implicitly derivable from the subdivision.
5. For the classification of compounds in groups [C07C 201/00](#) - [C07C 395/00](#), i.e. after the functional group has been determined according to the "last place rule", a compound is classified according to the following principles:
 - compounds are classified in accordance with the nature of the carbon atom to which the functional group is attached;
 - a carbon skeleton is a carbon atom, other than a carbon atom of a carboxyl group, or a chain of carbon atoms bound to each other, a carbon skeleton is considered to be terminated by every bond to an element other than carbon or to a carbon atom of a carboxyl group;
 - when the molecule contains several functional groups, only functional groups linked to the same carbon skeleton as the one first determined are considered;
 - a carbon skeleton is considered to be saturated if it does not contain carbon atoms bound to each other by multiple bonds;
 - a carbon skeleton is considered to be unsaturated if it contains carbon atoms bound to each other by multiple bonds, which includes a six-membered aromatic ring.
6. When classifying in this subclass, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.
7. When a process is classified in a process group, combination sets are used to indicate the product of the process. A combination set consists of a process group, followed by and linked to the group of the product. The products are selected from the corresponding product groups.

C07C

(continued)

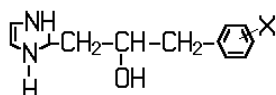
WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC 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 - C07C 69/017 and C07C 69/02
C07C 69/347, C07C 69/353	covered by	C07C 69/003 - C07C 69/017 and C07C 69/34
C07C 69/527	covered by	C07C 69/003 - C07C 69/017 and C07C 69/52
C07C 69/767, C07C 69/773	covered by	C07C 69/003 - C07C 69/017 and C07C 69/76
C07C 69/83	covered by	C07C 69/003 - C07C 69/017 and C07C 69/82
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

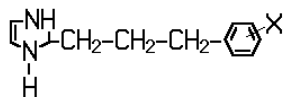
C07D**HETEROCYCLIC COMPOUNDS (macromolecular compounds [C08](#))****NOTES**

- This subclass does not cover compounds containing saccharide radicals as defined in Note (3) following the title of subclass [C07H](#), which are covered by subclass [C07H](#).
- In this subclass, in compounds containing a hetero ring covered by group [C07D 295/00](#) and at least one other hetero ring, the hetero ring covered by group [C07D 295/00](#) is considered as an acyclic chain containing nitrogen atoms.
- In this subclass, the following terms or expressions are used with the meaning indicated:
 - "hetero ring" is a ring having at least one halogen, nitrogen, oxygen, sulfur, selenium or tellurium atom as a ring member;
 - "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 relevant rings" in a condensed ring system equals the number of scissions necessary to convert the ring system into one acyclic chain;
 - "relevant rings" in a condensed ring system, i.e. the rings which taken together describe all the links between every atom of the ring 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.
- Attention is drawn to Note (3) after class [C07](#), which defines the last place priority rule applied in the range of subclasses [C07C](#) - [C07K](#) and within these subclasses.
- Therapeutic activity of compounds is further classified in subclass [A61P](#).
- In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary:
 - compounds having only one hetero ring are classified in the last appropriate place in one of the groups [C07D 203/00](#) - [C07D 347/00](#). The same applies for compounds having more hetero rings covered by the same main group, neither condensed among themselves nor condensed with a common carbocyclic ring system;
 - compounds having two or more hetero rings covered by different main groups neither condensed among themselves nor condensed with a common carbocyclic ring system are classified in the last appropriate place in one of the groups [C07D 401/00](#) - [C07D 421/00](#);
 - compounds having two or more relevant hetero rings, covered by the same or by different main groups, which are condensed among themselves or condensed with a common carbocyclic ring system, are classified in the last appropriate place in one of the groups [C07D 451/00](#) - [C07D 519/00](#).
- In this subclass:
 - where a compound may exist in tautomeric forms, it is classified as though existing in the form which is classified last in the system. Therefore, double bonds between ring members and non-ring members and double bonds between ring members themselves are considered equivalent in determining the degree of hydrogenation of the ring. Formulae are considered to be written in Kekule form;
 - hydrocarbon radicals containing a carbocyclic ring and an acyclic chain by which it is linked to the hetero ring and being substituted on both the carbocyclic ring and the acyclic chain by hetero atoms or by carbon atoms having three bonds to hetero atoms with at the most one bond to halogen, are classified according to the substituents on the acyclic chain. For example, the compound



C07D
(continued)

is classified in group [C07D 233/22](#),
and the compound



is classified in groups [C07D 233/24](#) and [C07D 233/26](#), where X —NH₂, —NHCOCH₃, or —COOCH₃.

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

NOTES

1. Attention is drawn to Note (3) after class [C07](#), which defines the last place priority rule applied in the range of subclasses [C07C-C07K](#) and within these subclasses.
2. Attention is drawn to Note (6) following the title of class [C07](#).
3. Therapeutic activity of compounds is further classified in subclass [A61P](#).
4. In this subclass, organic acid salts, alcoholates, phenates, chelates or mercaptides are classified as the parent compounds.
5. {Compounds containing Se or Te are classified with their sulfur homologues.}
6. {A hydrocarbon chain is considered to be terminated by a heteroatom or by a carbon atom having three bonds to heteroatoms with at the most one to halogen.}
7. {When groups, e.g. aromatic or aliphatic groups, are mentioned without further indications, it means that the group concerned can be further substituted. Otherwise it will be indicated, e.g. [C07F 9/11](#) with hydroxyalkyl compounds without further substituents on alkyl.}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[C07F 9/6593](#) covered by [C07F 9/65815](#)
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C07G COMPOUNDS OF UNKNOWN CONSTITUTION

NOTE

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

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C07H SUGARS; DERIVATIVES THEREOF; NUCLEOSIDES; NUCLEOTIDES; NUCLEIC ACIDS (derivatives of aldonic or saccharic acids [C07C](#), [C07D](#); aldonic acids, saccharic acids [C07C 59/105](#), [C07C 59/285](#); cyanohydrins [C07C 255/16](#); glycals [C07D](#); compounds of unknown constitution [C07G](#); polysaccharides, derivatives thereof [C08B](#); DNA or RNA concerning genetic engineering, vectors, e.g. plasmids, or their isolation, preparation or purification [C12N 15/00](#); sugar industry [C13](#))

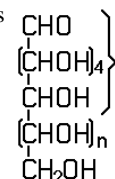
NOTES

1. This subclass covers compounds containing saccharide radicals (see the definitions in Note (3) below).
2. This subclass does not cover polysaccharides which for the purpose of this subclass are defined as having more than five saccharide radicals attached to each other by glycosidic linkages.
3. In this subclass, the following expressions are used with the meanings indicated:
 - "saccharide radical" which is derived from acyclic polyhydroxy-aldehydes or acyclic polyhydroxy-ketones, or from their cyclic tautomers, by removing hydrogen atoms or by replacing hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium, in accordance with either of the following definitions:
 - a. It
 - i. consists of an uninterrupted carbon skeleton and oxygen atoms directly attached thereto, and
 - ii. is considered to be terminated by every bond to a carbon atom of a cyclic structure and by every bond to a carbon atom having three bonds to hetero atoms, e.g. ester or nitrile radicals, and

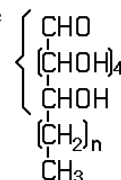
C07H

(continued)

- iii. contains within the carbon skeleton an unbranched sequence of at the most six carbon atoms in which at least three carbon atoms — at least two in the case of a skeleton having only four carbon atoms — have one single bond to an oxygen atom as the only hetero bond, and
- A. in a cyclic or acyclic sequence, at least one other carbon atom has two single bonds to oxygen atoms as the only hetero bonds, or
- B. in an acyclic sequence, at least one other carbon atom has one double bond to an oxygen atom as the only hetero bond, the said sequence containing at the most one double bond, i.e. C=C or possibly ketalised C=O), in addition to the hetero bonds mentioned above under (A) or (B), e.g. the compounds



of at the most six carbon atoms, having bonds to oxygen as defined in this Note



n being an integer, are classified in group [C07H 3/02](#);

- b. It is also a radical derived from a radical as defined in (a) above by replacing at the most four of the specified hetero bonds to oxygen by the same number of hetero bonds to halogen, nitrogen, sulfur, selenium, or tellurium;
- "heterocyclic radical" or "hetero ring" is considered to exclude saccharide radicals as defined above
4. Attention is drawn to Note (3) after class [C07](#), which defines the last place priority rule applied in the range of subclasses [C07C-C07K](#) and within these subclasses.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C07J

STERIODS (*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.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C07K

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

NOTES

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

C07K

(continued)

- "amino acids" are compounds in which at least one amino group and at least one carboxyl group are bound to the same carbon skeleton and the nitrogen atom of the amino group may form part of a ring;
- "normal peptide link" is one between an alpha-amino group of an amino acid and the carboxyl group - in position 1 - of another alpha-amino acid;
- "abnormal peptide link" is a link where at least one of the linked amino acids is not an alpha-amino acid or a link formed by at least one carboxyl or amino group being part of the side chain of an alpha-amino acid;
- "peptides" are compounds containing at least two amino acid units, which are bound through at least one normal peptide link, including oligopeptides, polypeptides and proteins, where:
 - i. "linear peptides" may comprise rings formed through S-S bridges, or through a hydroxy or a mercapto group of an hydroxy- or mercapto-amino acid and the carboxyl group of another amino acid, (e.g. peptide lactones) but do not comprise rings which are formed only through peptide links;
 - ii. "cyclic peptides" are peptides comprising at least one ring formed only through peptide links; the cyclisation may occur only through normal peptide links or through abnormal peptide links, e.g. through the 4-amino group of 2,4-diaminobutanoic acid. Thus, cyclic compounds in which at least one link in the ring is a non-peptide link are considered as "linear peptides";
 - iii. "depsipeptides" are compounds containing a sequence of at least two alpha-amino acids and at least one alpha-hydroxy carboxylic acid, which are bound through at least one normal peptide link and ester links, derived from the hydroxy carboxylic acids, where:
 - a. "linear depsipeptides" may comprise rings formed through S-S bridges, or through an hydroxy or a mercapto group of an hydroxy- or mercapto-amino acid and the carboxyl group of another amino- of hydroxy-acid but do not comprise rings formed only through peptide or ester links derived from hydroxy carboxylic acids, e.g. Gly-Ala-Gly-OCH₂CO₂H and Gly-OCH₂CO-Ala-Gly are considered as "linear depsipeptides", but HOCH₂CO-Gly-Ala-Gly does not contain an ester link, and is thus a derivative of Gly-Ala-Gly which is covered by [C07K 5/08](#);
 - b. "cyclic depsipeptides" are peptides containing at least one ring formed only through peptide or ester links - derived from hydroxy carboxylic acids -, e.g. Gly-Ala-Gly-OCH₂CO.
- 2. Fragments of peptides or peptides modified by removal or addition of amino acids, by substitution of amino acids by others, or by combination of these modifications, are classified as the parent peptides. However, fragments of peptides having only four or less amino acids are also classified in group [C07K 5/00](#).
- 3. Peptides prepared by chemical processes and having an amino acid sequence derived from naturally occurring peptides are classified with the natural one.
- 4. Peptides prepared by recombinant DNA technology are not classified according to the host, but according to the original peptide expressed, e.g. HIV peptide expressed in E. coli is classified with HIV peptides.
- 5. When classifying in this subclass, classification is also made in group [B01D 15/08](#) insofar as subject matter of general interest relating to chromatography is concerned.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

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

C07K

(continued)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C08 ORGANIC MACROMOLECULAR COMPOUNDS; THEIR PREPARATION OR CHEMICAL WORKING-UP; COMPOSITIONS BASED THEREON

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](#))

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C08B 37/02	covered by	C08B 37/0021
C08B 37/04	covered by	C08B 37/0084
C08B 37/06	covered by	C08B 37/0045
C08B 37/08	covered by	C08B 37/003 (chitin), C08B 37/0072 (hyaluronic acid) and C08B 37/0069 (chondroitin sulfate)
C08B 37/10	covered by	C08B 37/0075
C08B 37/16	covered by	C08B 37/0012

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C08C TREATMENT OR CHEMICAL MODIFICATION OF RUBBERS

NOTE

This subclass covers:

- processes directed to natural rubber or to conjugated diene rubbers
- processes directed to rubbers in general.

C08F MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS

NOTES

- In this subclass, boron or silicon are considered as metals.
- In this subclass, the following expression is used with the meaning indicated:
 - "aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to:
 - an element other than carbon;
 - a carbon atom having a double bond to one atom other than carbon;
 - an aromatic carbocyclic ring or a heterocyclic ring.

Examples: Polymers of

 - $\text{CH}_2=\text{CH}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_2-\text{OH}$ are classified in group [C08F 16/28](#);
 - $\text{CH}_2=\text{CH}-\text{C}(=\text{O})-\text{CH}=\text{CH}_2$ are classified in group [C08F 16/36](#)
 - para- $\text{C}_6\text{H}_4\text{Cl}(\text{CH}=\text{CH}_2)$ are classified in group [C08F 12/18](#).
- Therapeutic activity of compounds is further classified in subclass [A61P](#).
- In this subclass, in the absence of an indication to the contrary in the scheme or definitions, classification is made in the last appropriate place.
- In this subclass:
 - macromolecular compounds and their preparation are classified in the groups for the type of compound prepared. General processes for the preparation of macromolecular compounds according to more than one main group are classified in groups [C08F 2/00-C08F 8/00](#) for the processes employed. Processes for the preparation of macromolecular compounds are also classified in the groups for the types of reactions employed, if of interest;
 - subject matter relating to both homopolymers and copolymers is classified in groups [C08F 10/00-C08F 38/00](#);
 - subject matter limited to homopolymers is classified only in groups [C08F 110/00-C08F 138/00](#);
 - subject matter limited to copolymers is classified only in groups [C08F 210/00-C08F 246/00](#);
 - in groups [C08F 210/00-C08F 238/00](#), in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.
- This subclass covers also compositions based on monomers which form macromolecular compounds classifiable in this subclass. In this subclass:

- C08F
(continued)
- if the monomers are defined, classification is made according to the polymer to be formed:
 - in groups [C08F 10/00-C08F 246/00](#) if no preformed polymer is present;
 - in groups [C08F 251/00 - C08F 291/00](#) if a preformed polymer is present, considering {or not} the reaction to take place as a graft or cross-linking reaction;
 - if the presence of compounding ingredients is of interest, classification is made in group [C08F 2/44](#)
 - if the compounding ingredients are of interest *per se*, classification is also made in subclass [C08K](#).
7. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions}

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C08G **MACROMOLECULAR COMPOUNDS OBTAINED OTHERWISE THAN BY REACTIONS ONLY INVOLVING UNSATURATED CARBON-TO-CARBON BONDS**

NOTES

- Therapeutic activity of compounds is further classified in subclass [A61P](#).
- 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, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
- This subclass *covers* also compositions based on monomers which form macromolecular compounds classifiable in this subclass. In this subclass:
 - if the monomers are defined, classification is made in groups [C08G 2/00 - C08G 79/00](#), [C08G 83/00](#) according to the polymer to be formed;
 - 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](#).
- {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions}

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC 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
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C08H **DERIVATIVES OF NATURAL MACROMOLECULAR COMPOUNDS** ([polysaccharides C08B](#); [natural rubber C08C](#); [natural resins or their derivatives C09F](#); [bituminous materials C10](#))

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C08H 7/00	covered by	C08H 6/00
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C08J **WORKING-UP; GENERAL PROCESSES OF COMPOUNDING; AFTER-TREATMENT NOT COVERED BY SUBCLASSES [C08B](#), [C08C](#), [C08F](#), [C08G](#) or [C08H](#)** (working, e.g. shaping, of plastics [B29](#))

NOTES

- This subclass *covers* processes, not covered by subclasses [C08B](#) - [C08H](#), for treating polymers.
In this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.
- When classifying in subclass [C08J](#), the treatment of specific polymers is indicated using indexing codes chosen from [C08J 2300/00](#) or subgroups thereof.
Example:
 - Preparation of particles of polystyrene by impregnation of the particles with the blowing agent: [C08J 9/18](#) and [C08J 2325/06](#).

C08J

(continued)

- The use of a polymeric component in minority, e.g. masterbatch, coating, impregnating agent or thin binder is indicated using indexing codes chosen from [C08J 2400/00](#) or subgroups thereof.

Examples:

- Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/10](#)
- Bonding of polystyrene by heating: [C08J 5/121](#) and [C08J 2325/06](#)
- Coating of a polyethylene substrate with a polyurethane coating: [C08J 7/0427](#) and [C08J 2323/06](#) and [C08J 2475/04](#)
- Use of ABS as an additive for foamed polyacrylamide : [C08J 9/0061](#) and [C08J 2333/26](#) and [C08J 2455/02](#)

- In the following subgroups, the codes of [C08J 2300/00](#) - [C08J 2399/00](#) are used to specify:

- [C08J 3/226](#): the polymeric material to which the masterbatch carrier is added.
- [C08J 7/0427](#): the polymeric substrate to be coated.
- [C08J 9/0061](#): the polymeric component in majority in a multicomponents foamable blend.

- Group [C08J 2400/00](#) was introduced on January 1st, 2012. Patent documents are continuously being reclassified. As a consequence, documents published before 01/01/2012, and to which [C08J 2400/00](#) indexing codes were allocated, are indexed in the corresponding head group.

Example:

- Use of PMMA as masterbatch in a polystyrene composition: [C08J 3/226](#) and [C08J 2325/06](#) and [C08J 2433/00](#), instead of [C08J 2433/10](#).

- In the following subgroups, the codes of [C08J 2400/00](#) - [C08J 2499/00](#) are used to specify:

- [C08J 3/226](#): the polymeric carrier in a masterbatch.
- [C08J 5/12](#): the chemical nature of the adhesive
- [C08J 7/0427](#): 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.

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[C08J 5/14](#)

covered by

[B24D 3/22](#), [B24D 3/28](#), [F16D 69/02](#)[C08J 5/16](#)

covered by

[C10N 2050/14](#)

- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C08K**Use of inorganic or non-macromolecular organic substances as compounding ingredients (paints, inks, varnishes, dyes, polishes, adhesives [C09](#))****NOTES**

- 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, any ingredient of a mixture which is not identified by the classification according to Note (2) above, and the use of which is determined to be novel and non-obvious, must also be classified in this subclass according to Note (1). The ingredient can be either a single compound or a composition in itself. ". { This IPC Note does not apply in CPC }
- Any ingredient of a mixture which is not identified by the classification according to Notes (2) or (3) above, and which is considered to represent information of interest for search, may also be classified in this subclass according to Note (1). This can, for example, be the case when it is considered of interest to enable searching of mixtures using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". { This IPC Note does not apply in CPC }
- { In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules is present in the definitions of [C08K](#) }

C08K

(continued)

6. {In this subclass, organic acid salts, alcoholates, phenolates or mercaptides are classified in the groups or subgroups of the parent compounds}

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C08L

COMPOSITIONS OF MACROMOLECULAR COMPOUNDS (compositions based on polymerisable monomers [C08F](#), [C08G](#); artificial filaments or fibres [D01F](#); textile treating compositions [D06](#))

NOTES

- In this subclass, the following term is used with the meaning indicated:
 - 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.
- Any macromolecular constituent of a composition which is not identified by the classification according to Note (2) above, and the use of which is determined to be novel and non-obvious, must also be classified in this subclass. For example, a composition containing 80 parts polyethene and 20 parts polyvinyl chloride is classified in both groups [C08L 23/06](#) and [C08L 27/06](#), if the use of polyvinyl chloride is determined to be novel and non-obvious. {This IPC Note does not apply in CPC}
- Any macromolecular constituent of a composition which is not identified by the classification according to Notes (2) or (3) above, and which is considered to represent information of interest for search, may also be classified in this subclass. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". {This IPC Note does not apply in CPC}
- In groups [C08L 65/00](#) - [C08L 85/00](#), in the absence of an indication to the contrary, compositions of macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess. {This Note corresponds to IPC Note (1) relating to [C08L 65/00](#) - [C08L 85/00](#).}
- {Compositions classified in [C08K](#) according to note 3 of [C08K](#), are not classified in [C08L](#).}
- {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules is present in the definitions of [C08L](#)}
- {[C08L 2666/00](#) indexing codes were used for C-Sets classification of documents before April 2012. In addition to note (6), for searching documents classified before April 2012, see also [C08L 2666/00](#) in the definitions of [C08L](#).}

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C08L 61/08-C08L 61/10	covered by	C08L 61/06
C08L 63/02	covered by	C08L 63/00
C08L 83/05	covered by	C08L 83/04
C08L 83/07	covered by	C08L 83/04
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C09

DYES; PAINTS; POLISHES; NATURAL RESINS; ADHESIVES; COMPOSITIONS NOT OTHERWISE PROVIDED FOR; APPLICATIONS OF MATERIALS NOT OTHERWISE PROVIDED FOR

C09B

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

NOTE

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

C09B

(continued)

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C09B 23/01	covered by	C09B 23/0008 - C09B 23/0091
C09B 29/01	covered by	C09B 29/0003 - C09B 29/0022
C09B 29/03	covered by	C09B 29/0007
C09B 29/033	covered by	C09B 29/0025
C09B 29/036	covered by	C09B 29/0029
C09B 29/039	covered by	C09B 29/0074 - C09B 29/0081
C09B 29/042	covered by	C09B 29/0085
C09B 29/045	covered by	C09B 29/0088
C09B 29/048	covered by	C09B 29/0092
C09B 29/085	covered by	C09B 29/0003 , C09B 29/0801 - C09B 29/0848
C09B 29/09	covered by	C09B 29/0025 , C09B 29/0801 - C09B 29/0848
C09B 29/15	covered by	C09B 29/103
C09B 29/40	covered by	C09B 29/3608 - C09B 29/3613
C09B 29/42	covered by	C09B 29/3617 - C09B 29/3639
C09B 29/44	covered by	C09B 29/3643
C09B 29/46	covered by	C09B 29/3652
C09B 29/48	covered by	C09B 29/3656
C09B 29/50	covered by	C09B 29/366
C09B 29/52	covered by	C09B 29/3665
C09B 33/13	covered by	C09B 33/12
C09B 67/02	covered by	C09B 67/0097
C09B 67/04	covered by	C09B 67/0001
C09B 67/06	covered by	C09B 67/0003
C09B 67/08	covered by	C09B 67/0004
C09B 67/10	covered by	C09B 67/0014
C09B 67/12	covered by	C09B 67/0016
C09B 67/14	covered by	C09B 67/0017
C09B 67/16	covered by	C09B 67/0019
C09B 67/18	covered by	C09B 67/002
C09B 67/20	covered by	C09B 67/006
C09B 67/22	covered by	C09B 67/0033
C09B 67/24	covered by	C09B 67/0072
C09B 67/26	covered by	C09B 67/0073
C09B 67/28	covered by	C09B 67/0077
C09B 67/30	covered by	C09B 67/0078
C09B 67/32	covered by	C09B 67/0075
C09B 67/34	covered by	C09B 67/0076
C09B 67/36	covered by	C09B 67/0079
C09B 67/38	covered by	C09B 67/008
C09B 67/40	covered by	C09B 67/0082
C09B 67/42	covered by	C09B 67/0071
C09B 67/44	covered by	C09B 67/0083
C09B 67/46	covered by	C09B 67/0084
C09B 67/48	covered by	C09B 67/0025
C09B 67/50	covered by	C09B 67/0026
C09B 67/52	covered by	C09B 67/0027
C09B 67/54	covered by	C09B 67/0096

C09C

TREATMENT OF INORGANIC MATERIALS, OTHER THAN FIBROUS FILLERS, TO ENHANCE THEIR PIGMENTING OR FILLING PROPERTIES (treatment of materials specially adapted to enhance their filling properties in mortars, concrete or artificial stone [C04B 14/00](#), [C04B 18/00](#), [C04B 20/00](#)); **PREPARATION OF CARBON BLACK** {; **PREPARATION OF INORGANIC MATERIALS WHICH ARE NO SINGLE CHEMICAL COMPOUNDS AND WHICH ARE MAINLY USED AS PIGMENTS OR FILLERS**}

NOTES

1. In this subclass, in the absence of an indication to the contrary, a compound is classified in the last appropriate place
2. Treatment by polymerisation onto particle is classified in [C08F 292/00](#). Only treatment by already polymerised agents is classified in [C09C](#)

C09C

(continued)

- Whenever in groups [C09C 1/00](#) - [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 [C01P](#) are used to identify structural or physical aspects of solid inorganic compounds

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C09C 1/68	covered by	C09K 3/14
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- {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

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](#); natural resins, French polish, drying-oils, driers, turpentine, per se, [C09F](#); polishing compositions other than French polish, ski waxes [C09G](#); 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](#))

NOTES

- 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:
 - 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 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 organic macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.
 Example: a coating composition containing polyethene and amino-propyltrimethoxysilane is classified in group [C09D 123/06](#).
 However, coating compositions containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09D 159/00](#) - [C09D 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09D 4/00](#).
 Example: a coating composition containing polyethene and styrene monomer is classified in group [C09D 4/00](#).
 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.
 Example: 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](#).
- In groups [C09D 101/00](#) - [C09D 201/00](#), any macromolecular constituent of a coating composition which is not identified by the classification according to Note (3) after the title of subclass [C09D](#), and the use of which is determined to be novel and non-obvious, must also be classified in a group chosen from groups [C09D 101/00](#) - [C09D 201/00](#).

C09D

(continued)

{This Note corresponds to IPC Note (1) relating to [C09D 101/00](#) - [C09D 201/00](#).}

5. Any macromolecular constituent of a coating composition which is not identified by the classification according to Note (3) after the title of subclass [C09D](#) or Note (1) above, and which is considered to represent information of interest for search, may also be classified in a group chosen from groups [C09D 101/00](#) - [C09D 201/00](#). This can for example be the case when it is considered of interest to enable searching of coating compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information." {This Note corresponds to IPC Note (2) relating to [C09D 101/00](#) - [C09D 201/00](#).}
6. In groups [C09D 165/00](#) - [C09D 185/00](#), in the absence of an indication to the contrary, coating compositions based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.
{This Note corresponds to IPC Note (1) relating to [C09D 165/00](#) - [C09D 185/00](#).}
7. {In this subclass, combination sets [C-Sets] are used. Detailed information about the C-Sets construction and the associated syntax rules is found in the definitions for [C09D](#).}
8. {In addition to Note (4) above [C08L 2666/00](#) indexing codes were used for C-Sets classification of documents before April 2012. See C-Sets Search Rules in [C08L](#), in [C09D](#), or in [C09J](#) Definitions.}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C09D 4/02	covered by	C09D 4/00
C09D 4/04	covered by	C09D 4/00
C09D 5/25	covered by	H01B 3/30
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 183/05	covered by	C09D 183/04
C09D 183/07	covered by	C09D 183/04 , C09D 183/06
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C09F NATURAL RESINS; FRENCH POLISH; DRYING-OILS; OIL DRYING AGENTS, i.e. SICCATIVES; TURPENTINE

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C09G POLISHING COMPOSITIONS ([French polish C09F 11/00](#)); SKI WAXES

C09H PREPARATION OF GLUE OR GELATINE

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C09J ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES ([preparation of glue or gelatine C09H](#))

NOTES

1. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "use of materials as adhesives" means the use of known or new polymers or products;
 - "rubber" includes:
 - a. natural or conjugated diene rubbers;
 - b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for adhesives based on such macromolecular compounds);
 - "based on" is defined by means of Note (3), below.
2. In this subclass, adhesives containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.
 - Example: an adhesive containing polyethene and amino-propyltrimethoxysilane is classified in group [C09J 123/06](#).
 - However, adhesives containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of

C09J

(continued)

groups [C09J 159/00](#) - [C09J 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09J 4/06](#).

- Example: an adhesive containing polyethylene and styrene monomer is classified in group [C09J 4/06](#).
 - Aspects relating to the physical nature of the adhesives or to the effects produced, as defined in group [C09J 9/00](#), if clearly and explicitly stated, are also classified in this subclass.
 - Adhesives characterised by other features, e.g. additives, are classified in group [C09J 11/00](#), unless the macromolecular constituent is specified.
3. In this subclass, adhesives comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the adhesive is based. If the adhesive is based on two or more constituents, present in equal proportions, the adhesive is classified according to each of these constituents.
 - Example: An adhesive containing 80 parts of polyethylene and 20 parts of polyvinylchloride is classified in group [C09J 123/06](#). An adhesive containing 40 parts of polyethylene and 40 parts of polyvinylchloride is classified in groups [C09J 123/06](#) and [C09J 127/06](#).
 4. {In groups [C09J 101/00](#) - [C09J 201/00](#), any macromolecular constituent of an adhesive composition which is not identified by the classification according to Note (3) after the title of subclass [C09J](#), and the use of which is determined to be novel and non-obvious, must also be classified in a group chosen from groups [C09J 101/00](#) - [C09J 201/00](#). This Note corresponds to IPC Note (1) relating to [C09J 101/00](#) - [C09J 201/00](#).}
 5. {Any macromolecular constituent of an adhesive composition which is not identified by the classification according to Note (3) after the title of subclass [C09J](#) or Note (4) above, and which is considered to represent information of interest for search, may also be classified in a group chosen from groups [C09J 101/00](#) - [C09J 201/00](#). This can, for example, be the case when it is considered of interest to enable searching of adhesive compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". This Note corresponds to IPC Note (2) relating to [C09J 101/00](#) - [C09J 201/00](#).}
 6. {In groups [C09J 165/00](#) - [C09J 185/00](#), in the absence of an indication to the contrary, adhesives based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.
This Note corresponds to IPC Note (1) relating to [C09J 165/00](#) - [C09J 185/00](#).}
 7. {An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#).}
 8. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions of [C09J](#).}
 9. {In addition to Note (8), [C08L 2666/00](#) indexing codes were used for C-Sets classification of documents before April 2012 (see also C-Sets search rules in [C08L](#), [C09D](#) and in the [C09J](#) definition).}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C09J 4/02	covered by	C09J 4/00
C09J 4/04	covered by	C09J 4/00
C09J 161/08 - C09J 161/10	covered by	C09J 161/06
C09J 163/02	covered by	C09J 163/00
C09J 183/05	covered by	C09J 183/04
C09J 183/07	covered by	C09J 183/04
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C09K MATERIALS FOR MISCELLANEOUS APPLICATIONS, NOT PROVIDED FOR ELSEWHERE

NOTES

1. This subclass covers also the use of specified materials in general or their use for the applications not specially provided for elsewhere.
2. In this subclass, the following term is used with the meaning indicated:
 - "materials" includes compositions.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C09K 11/78 - C09K 11/86	covered by	C09K 11/77 - C09K 11/7798 , C09K 11/87 , C09K 11/88 , C09K 11/89
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2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C10 PETROLEUM, GAS OR COKE INDUSTRIES; TECHNICAL GASES CONTAINING CARBON MONOXIDE; FUELS; LUBRICANTS; PEAT

C10B DESTRUCTIVE DISTILLATION OF CARBONACEOUS MATERIALS FOR PRODUCTION OF GAS, COKE, TAR, OR SIMILAR MATERIALS ([cracking oils C10G](#); [underground gasification of minerals E21B 43/295](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C10F DRYING OR WORKING-UP OF PEAT

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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 specified 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**

NOTES

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

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C10G 73/23	covered by	C10G 73/06
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- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C10H PRODUCTION OF ACETYLENE BY WET METHODS {([purification of acetylene C07C 7/00](#))}

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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**

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C10K PURIFYING OR MODIFYING THE CHEMICAL COMPOSITION OF COMBUSTIBLE GASES CONTAINING CARBON MONOXIDE

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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](#) - [C10L 2290/60](#).}

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C10M LUBRICATING COMPOSITIONS (well drilling compositions [C09K 8/02](#)); **USE OF CHEMICAL SUBSTANCES EITHER ALONE OR AS LUBRICATING INGREDIENTS IN A LUBRICATING COMPOSITION** (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](#); textile lubricating compositions [D06M 11/00](#), [D06M 13/00](#), [D06M 15/00](#); immersion oils for microscopy [G02B 21/33](#))

NOTES

- In this subclass, the following terms are used with the meanings indicated:
 - "lubricant" or "lubricating composition" includes cutting oils, hydraulic fluids, metal drawing compositions, flushing oils, slushing oils, or the like;
 - "aliphatic" includes "cycloaliphatic".
- In 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 ingredients (base-material, thickener

C10M

(continued)

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;
 - a 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.
4. Any part of a composition which is not identified by the classification according to Notes (2) or (3) above, and which itself is determined to be novel and non-obvious, must also be classified in the last appropriate place. The part can be either a single ingredient or a composition in itself.
 5. Any part of a composition which is not identified by the classification according to Notes (2) to (4) above, and which is considered to represent information of interest for search, may also be classified in the last appropriate place. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".
 6. In this subclass, it is desirable to add the indexing codes of subclass [C10N](#).
 7. {In respect of the classification of mixtures, attention is drawn to Note (3) (e) above.}
 8. {In this subclass, it is desirable to add the indexing codes of subclass [C10M](#), relating to the chemical constitution of individual compounds of the lubricating compositions.}
 9. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions for [C10M](#).}

WARNING

{In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

C10N

INDEXING SCHEME ASSOCIATED WITH SUBCLASS [C10M](#) RELATING TO LUBRICATING COMPOSITIONS

NOTES

1. This subclass constitutes an indexing scheme associated with subclass [C10M](#), relating to:
 - metals and the metal of a compound in group [C10N 2010/00](#);
 - the properties of the lubricant composition or constituents thereof in groups [C10N 2020/00](#), [C10N 2030/00](#);
 - the use or application of the lubricant composition in group [C10N 2040/00](#);
 - the form in which the lubricant composition is applied in group [C10N 2050/00](#);
 - chemical modification by after-treatment of lubricant constituents in group [C10N 2060/00](#);
 - special methods of preparation in group [C10N 2070/00](#);
 - special pretreatment of the material to be lubricated in group [C10N 2080/00](#).
2. In this subclass, the following terms or expressions 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".

C11

ANIMAL OR VEGETABLE OILS, FATS, FATTY SUBSTANCES OR WAXES; FATTY ACIDS THEREFROM; DETERGENTS; CANDLES

C11B

PRODUCING, e.g. BY PRESSING RAW MATERIALS OR BY EXTRACTION FROM WASTE MATERIALS, REFINING OR PRESERVING FATS, FATTY SUBSTANCES, e.g. LANOLIN, FATTY OILS OR WAXES; 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

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C11D DETERGENT COMPOSITIONS; USE OF SINGLE SUBSTANCES AS DETERGENTS; SOAP OR SOAP-MAKING; RESIN SOAPS; RECOVERY OF GLYCEROL

NOTES

1. When classifying in the mixture groups of this subclass, any individual ingredient of a composition which is not identified by such classification, and which itself is determined to be novel and non-obvious, must also be classified in groups [C11D 1/00](#) - [C11D 9/00](#). The individual ingredient can be either a single substance or a composition in itself.
2. Any ingredient of a composition which is not identified by the classification according to Note (1) above, and which is considered to represent information of interest for search, may also be classified in groups [C11D 1/00](#) - [C11D 9/00](#). This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information".
3. {Documents classified in groups [C11D 1/37](#), [C11D 1/645](#) - [C11D 1/655](#), [C11D 1/825](#) - [C11D 1/86](#), [C11D 1/94](#) - [C11D 1/945](#) and [C11D 10/00](#) - [C11D 10/047](#), are indexed using codes chosen from [C11D 1/00](#) - [C11D 1/92](#) to provide information on the individual ingredients on the compositions.}

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC 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 9/50	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

NOTES

1. In subclasses [C12M](#) - [C12Q](#) and within each of these subclasses, in the absence of an indication to the contrary, classification is made in the last appropriate place.
2. In this class, viruses, undifferentiated human, animal or plant cells, protozoa, tissues, and unicellular algae are considered as microorganisms.
3. In this class, unless specifically provided for, undifferentiated human, animal or plant cells, protozoa, tissues and unicellular algae are classified together with microorganisms. Sub-cellular parts, unless specifically provided for, are classified with the whole cell.

C12C BEER; PREPARATION OF BEER BY FERMENTATION (ageing or ripening by storing [C12H 1/22](#); methods for reducing the alcohol content after fermentation [C12H 3/00](#); methods for increasing the alcohol content after fermentation [C12H 6/00](#); venting devices for casks, barrels or the like [C12L 9/00](#)); PREPARATION OF MALT FOR MAKING BEER; PREPARATION OF HOPS FOR MAKING BEER

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C12F RECOVERY OF BY-PRODUCTS OF FERMENTED SOLUTIONS (removal of yeast from wine or sparkling wine [C12G 1/08](#)); **DENATURED ALCOHOL; PREPARATION THEREOF**

C12G WINE; PREPARATION THEREOF; ALCOHOLIC BEVERAGES (beer [C12C](#)); **PREPARATION OF ALCOHOLIC BEVERAGES NOT PROVIDED FOR IN SUBCLASSES [C12C](#) OR [C12H](#)**

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C12G 1/022	covered by	C12G 1/0203
C12G 1/024	covered by	C12G 1/0209
C12G 1/026	covered by	C12G 1/02
C12G 1/028	covered by	C12G 1/0213
C12G 1/032	covered by	C12G 1/0216
C12G 1/036	covered by	C12G 1/0206
C12G 1/067	covered by	C12G 1/06
C12G 1/073	covered by	C12G 1/06 , C12G 1/064
C12G 1/09	covered by	C12G 1/08
C12G 1/10	covered by	C12G 1/00 , C12H 1/10 , C12H 1/18
C12G 1/12	covered by	C12G 1/00

C12H PASTEURISATION, STERILISATION, PRESERVATION, PURIFICATION, CLARIFICATION OR AGEING OF ALCOHOLIC BEVERAGES; METHODS FOR ALTERING THE ALCOHOL CONTENT OF FERMENTED SOLUTIONS OR ALCOHOLIC BEVERAGES (simulation ageing by flavouring [C12G 3/06](#))

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 in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C12H 1/044 - C12H 1/048	covered by	C12H 1/0408
C12H 1/052	covered by	C12H 1/0416
C12H 1/056	covered by	C12H 1/0424
C12H 1/065	covered by	C12H 1/061
C12H 1/07 - C12H 1/075	covered by	C12H 1/063
C12H 1/15	covered by	C12H 1/003

C12J VINEGAR; PREPARATION OR PURIFICATION THEREOF

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}

NOTES

1. 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.
2. 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](#).
3. 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.
4. 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.

C12M

(continued)

5. 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.
6. This subclass does not cover:
 - apparatus for culturing plant tissue, which are covered by [A01H 4/001](#);
 - apparatus for preservation of excised living parts of bodies of humans or animals, which are covered by [A01N 1/142](#);
 - apparatus or devices for testing sterility conditions not linked to a bioreactor or fermenter growing biomass, which are covered by [A61L 2/00](#), [G01N 31/226](#);
 - 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 19/0046](#), [C12N 15/1003](#);
 - 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 33/5005](#);
 - apparatus for immunological test processes, which are covered by [G01N 33/5302](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C12N

MICROORGANISMS OR ENZYMES; COMPOSITIONS THEREOF; PROPAGATING, PRESERVING, OR MAINTAINING MICROORGANISMS; MUTATION OR GENETIC ENGINEERING; CULTURE MEDIA ([microbiological testing media C12Q 1/00](#))

NOTES

1. Attention is drawn to Notes (1) to (3) following the title of class [C12](#).
2. Biocidal, pest repellent, pest attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass [A01P](#).
3. Therapeutic activity of single-cell proteins or enzymes is further classified in subclass [A61P](#).
4. 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.
5. In this subclass, it is desirable to add the indexing codes of subclass [C12R](#).
6. {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.}
7. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules is present in the definitions of [C12N](#).}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC 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 5/0006 , C12N 5/04 - C12N 5/166
C12N 5/07 - C12N 5/095	covered by	C12N 5/06
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 15/53	covered by	C12N 9/0004
C12N 7/01	covered by	C12N 7/00
C12N 9/02 - C12N 9/08	covered by	C12N 9/0004
C12N 9/26	covered by	C12N 9/2408
C12N 9/28 - C12N 9/30	covered by	C12N 9/2414 - C12N 9/242
C12N 9/32	covered by	C12N 9/2422

C12N

(continued)

C12N 9/34	covered by	C12N 9/2428
C12N 9/36	covered by	C12N 9/2462
C12N 9/38	covered by	C12N 9/2468
C12N 9/40	covered by	C12N 9/2465
C12N 9/42	covered by	C12N 9/2434
C12N 9/44	covered by	C12N 9/2451
C12N 9/46	covered by	C12N 9/2454
C12N 9/56	covered by	C12N 9/54
C12N 9/66	covered by	C12N 9/6448
C12N 9/68	covered by	C12N 9/6435
C12N 9/70	covered by	C07K 14/3153
C12N 9/72	covered by	C12N 9/6462
C12N 9/74	covered by	C12N 9/6429
C12N 9/76	covered by	C12N 9/6427
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 9/0004
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

(continued)

[C12N 15/83](#)[C12N 15/84](#)

covered by

[C12N 15/82](#)

covered by

[C12N 15/82](#)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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 microorganisms [C12Q](#); measuring or testing processes involving nucleic acid amplification reactions [C12Q 1/6844](#); fermentation processes to form a food composition, [A21](#) or [A23](#); compounds in general, see the relevant compound class, e.g. [C01](#), [C07](#)}

NOTES

1. This subclass covers the production of compounds or compositions by biochemical transformation of matter performed by using enzymes or microorganisms, wherein microorganisms are defined as any single-celled organisms, including bacteria, fungi, yeast or microalgae, or plant or mammalian cells in the form of cell cultures.
2. In this subclass, documents are primarily classified according to the compounds produced. In addition, if appropriate, classification according to the method or biocatalyst used to produce the compound is made.
3. Classification in groups [C12P 19/14](#) - [C12P 19/24](#), [C12P 39/00](#), [C12P 41/00](#) - [C12P 41/009](#) should only be made together with the corresponding product groups

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
 - [C12P 21/04](#) covered by [C07K 7/50](#)
 - [C12P 21/08](#) covered by [C07K 16/00](#)
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C12Q

MEASURING OR TESTING PROCESSES INVOLVING ENZYMES, NUCLEIC ACIDS OR MICROORGANISMS (immunoassay [G01N 33/53](#)); **COMPOSITIONS OR TEST PAPERS THEREFOR; PROCESSES OF PREPARING SUCH COMPOSITIONS; CONDITION-RESPONSIVE CONTROL IN MICROBIOLOGICAL OR ENZYMOLOGICAL PROCESSES**

NOTES

1. This subclass does not cover the observation of the progress or of the result of processes specified in this subclass by any of the methods specified in groups [G01N 3/00](#) - [G01N 29/00](#), which is covered by subclass [G01N](#).
2. In this subclass, the following expression is used with the meaning indicated:
"involving", when used in relation to a substance, includes the testing for the substance as well as employing the substance as a determinant or reactant in a test for a different substance.
3. Attention is drawn to Notes (1) to (3) following the title of class [C12](#).
4. In this subclass, test media are classified in the appropriate group for the relevant test process.
5. In this subclass, it is desirable to add the indexing codes of subclass [C12R](#).
6. {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.}
7. {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](#).}
8. {In groups [C12Q 1/6876](#) - [C12Q 1/6895](#) and [C12Q 1/701](#) - [C12Q 1/708](#) it is compulsory to add the indexing codes [C12Q 2600/00](#) - [C12Q 2600/178](#) which reflect the use of the product in combination with the virus groups only if the document relates to products.}
9. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules is present in the definitions of [C12Q](#).}

C12Q

(continued)

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C12R INDEXING SCHEME ASSOCIATED WITH SUBCLASSES [C12C](#) - [C12Q](#), RELATING TO MICROORGANISMS

NOTE

The basis for the bacteria terminology is "Bergey's Manual of Determinative Bacteriology", Eighth Edition, 19/75.

WARNING

The following IPC indexing groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[C12R 1/92](#) - [C12R 1/94](#)

covered by

[C12N 2710/00](#) - [C12N 2795/18188](#)

C12Y ENZYMES

NOTES

1. This subclass covers all enzymes.
2. In this subclass, each enzyme is classified according to their EC number of the "Enzyme Nomenclature" (as valid on 1 January 2012) recommended by the Nomenclature Committee of the International Union of Biochemistry and Molecular Biology. The EC number appears in the subgroups in parenthesis and is reflected in the classification symbol: the EC number with the notation a.bb.cc.ddd is rendered into a CPC symbol [C12Y](#) ABB/CCDDD (with no trailing zeroes at the end) where:
 - EC a.bb.cc.ddd: a ranges from 1 – 6; CPC symbol: A = 1 – 6
 - EC a.bb.cc.ddd: b ranges from 1 – 99 (*); CPC symbol: B = 01 – 99
 - EC a.bb.cc.ddd: c ranges from 1 – 99 (*); CPC symbol: C = 01 – 99
 - EC a.bb.cc.ddd: d ranges from 1 – 400 (*); CPC symbol: D = 001 – 400
 - (*) not all numbers are used

Examples:

 - Alcohol dehydrogenase: EC 1.1.1.1. is classified in [C12Y 101/01001](#)
 - Togavirin: EC 3.4.21.90 is classified in [C12Y 304/2109](#)
 - Hepsin: EC 3.4.21.106 is classified in [C12Y 304/21106](#)
 - Cobaltochelatase: EC 6.6.1.2 is classified in [C12Y 606/01002](#)
3. This subclass is for discretionary supplementary classification of subject matter already classified as such in other classification places, e.g.:
 - [A01N 1/00](#): Compositions containing enzymes and use of the compositions and compounds for preservation of bodies of humans or animals or parts thereof
 - [A01N 3/00](#): Compositions containing enzymes and use of the compositions and compounds for preservation of plants or parts thereof
 - [A01N 63/00](#): Biocides, pest repellents or attractants or plant growth regulators containing enzymes
 - [A21D 10/00](#), [A21D 13/00](#): Bakery products which may contain enzymes
 - [A23](#): Foods or foodstuffs containing enzymes
 - [A61K](#): Preparations for medical dental or toilet purposes containing enzymes
 - [A61K 31/7088](#): Medical preparations containing nucleic acids encoding enzymes
 - [A61K 48/00](#): Medical preparations containing genetic material encoding enzymes which is inserted into cells of the living body to treat genetic diseases; Gene therapy
 - [A61L 12/082](#): Methods or apparatus for disinfecting or sterilising contact lenses in combination with enzymes
 - [A61L 15/38](#): Bandages, dressings or absorbent pads for physiological fluids containing enzymes
 - [A61L 27/3683](#): Material for prostheses subjected to enzyme treatment prior to implantation
 - [C07K 14/81](#): Protease inhibitors
 - [C07K 16/40](#): Antibodies against enzymes
 - [C11D 3/386](#): Detergent compositions containing enzymes
 - [C12C 1/00](#): Preparation of malt
 - [C12M](#): Apparatus for enzymology
 - [C12N 9/00](#): Enzymes
 - [C12N 11/00](#): Carrier-bound or immobilised enzymes
 - [C12N 13/00](#): Treatment of enzymes with electrical or wave energy
 - [C12N 15/00](#): Nucleic acids encoding (part of) enzymes
 - [C12N 15/113](#), [C12N 15/8281](#): Non-encoding nucleic acids modulating the expression of genes for enzymes
 - [C12P](#): Preparation of compounds using enzymes
 - [C12Q 1/00](#): Measuring or testing processes involving enzymes; Compositions therefor; Processes of preparing such compositions
 - [G01N 33/573](#): Immunoassays for enzymes
4. Specific classification rules for the allocation of [C12Y](#) symbols together with any of the groups listed above, are specified within the relevant group, if available.

C12Y

(continued)

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

C13 SUGAR INDUSTRY**NOTE**

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](#).

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 OBTAINED FROM NATURAL SOURCES OR BY HYDROLYSIS OF NATURALLY OCCURRING DISACCHARIDES, OLIGOSACCHARIDES 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](#); production of sucrose [C13B](#))

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](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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;

C21B

(continued)

- apparatus specially adapted therefor, e.g. blast furnaces or air heaters.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C21D

MODIFYING THE PHYSICAL STRUCTURE OF FERROUS METALS; GENERAL DEVICES FOR HEAT TREATMENT OF FERROUS OR NON-FERROUS METALS OR ALLOYS; MAKING METAL MALLEABLE, e.g. BY DECARBURISATION OR TEMPERING (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](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C22

METALLURGY; FERROUS OR NON-FERROUS ALLOYS; TREATMENT OF ALLOYS OR NON-FERROUS METALS

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.

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C22B 9/187 - C22B 9/193	covered by	C22B 9/18
C22B 9/21	covered by	C22B 9/20
C22B 15/02	covered by	C22B 15/0032
C22B 15/04	covered by	C22B 15/0036
C22B 15/06	covered by	C22B 15/0041 , C22B 15/0043
C22B 15/14	covered by	C22B 15/006

- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C22C

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

NOTES

- In this subclass, the following terms or expressions are used with the meanings indicated:
 - "alloys" includes also:
 - metallic composite materials containing a substantial proportion of fibres or other somewhat larger particles;
 - 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.
- Groups [C22C 43/00](#) - [C22C 49/00](#) take precedence over groups [C22C 1/00](#) - [C22C 38/00](#).

C22C

(continued)

{This Note corresponds to IPC Note (1) relating to [C22C 1/00](#) - [C22C 38/00](#).}

3. In groups [C22C 37/00](#) and [C22C 38/00](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, an alloy is classified in the last appropriate place that provides for one of the alloying components. {This Note corresponds to IPC Note (1) relating to [C22C 37/00](#) - [C22C 38/00](#).}
4. {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](#) - [C22C 43/00](#) or from groups [B22F 1/00](#) - [B22F 9/00](#).}
5. {In this subclass the special database "ALLOYS" is used. This system includes patent documents classified in groups [C22C 1/04](#) and [C22C 5/00](#) - [C22C 49/14](#) and provides information on the composition of the alloys, their uses and characteristics.}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C22C 101/00 , C22C 101/20	covered by	C04B 35/62227
C22C 101/02	covered by	C04B 35/62231
C22C 101/04	covered by	C04B 35/62236
C22C 101/06	covered by	C04B 35/62245
C22C 101/08	covered by	C04B 35/62272
C22C 101/10	covered by	D01F 9/12
C22C 101/12	covered by	C04B 35/62277
C22C 101/14	covered by	C04B 35/62281
C22C 101/16	covered by	C04B 35/62286
C22C 101/18	covered by	C04B 35/62295
C22C 101/22	covered by	C04B 35/6229
C22C 111/00 - C22C 111/02	covered by	C22C 47/00 , C22C 49/00
C22C 121/00 - C22C 121/02	covered by	C22C 47/02 - C22C 47/068 , C22C 49/00

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C23

COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; CHEMICAL SURFACE TREATMENT; DIFFUSION TREATMENT OF METALLIC MATERIAL; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL; INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL

NOTES

1. In this class, the following expression is used with the meaning indicated:
 - "metallic material" covers:
 - a. metals;
 - b. alloys
2. Attention is drawn to the Note following the title of subclass [C22C](#). {
 - [C22C 29/00](#) concerns alloys containing at least 50 % by weight of one or more of borides, carbides, nitrides, oxides or silicides and binding metal;
 - [C22C 32/00](#) concerns 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 (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](#); metallising of glass [C03C](#); metallising mortars, concrete, artificial stone, ceramics or natural stone [C04B 41/00](#); enamelling of, or applying a vitreous layer to, metals [C23D](#); treating metal surfaces or coating of metals by electrolysis or electrophoresis [C25D](#); single-crystal film growth [C30B](#); by metallising textiles [D06M 11/83](#); decorating textiles by locally metallising [D06Q 1/04](#))

NOTE

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

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[C23C 14/36](#) - [C23C 14/44](#)

covered by

[C23C 14/34](#) - [C23C 14/358](#)

C23D ENAMELLING OF, OR APPLYING A VITREOUS LAYER TO, METALS

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](#)**

NOTES

1. protective layers or coating compositions or methods of applying them; these are classified in the appropriate places, e.g. [B05](#), [B44](#), [C09D](#), [C23C](#).
2. 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](#).
3. 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](#).

WARNINGS

1. The following IPC group is not in the CPC scheme. The subject matter for this IPC group is classified in the following CPC groups:
[C23F 1/24](#) covered by [C09K 13/00](#), [H01L 21/00](#)
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C23G CLEANING OR DE-GREASING OF METALLIC MATERIAL BY CHEMICAL METHODS OTHER THAN ELECTROLYSIS

C25 ELECTROLYTIC OR ELECTROPHORETIC PROCESSES; APPARATUS THEREFOR

NOTES

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

C25

(continued)

- i. in the groups for the compounds or articles produced, and
 - ii. in the groups which cover the apparatus or operational features.
2. 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 (anodic or cathodic protection [C23F 13/00](#); single-crystal growth [C30B](#))

NOTE

Compounds of particular interest are also classified in the relevant classes, e.g. in [C01](#), [C07](#), [C08](#).

C25C PROCESSES FOR THE ELECTROLYTIC PRODUCTION, RECOVERY OR REFINING OF METALS; APPARATUS THEREFOR

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

C25D PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING; APPARATUS THEREFOR

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C25D 2/00	covered by	B23K 28/006
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 19/00	covered by	C25D 17/00
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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

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](#), [H10](#)); APPARATUS THEREFOR

NOTES

1. In this subclass, the following expressions are used with the meaning indicated:
 - "single-crystal" includes also twin crystals and a predominantly single crystal product;

- C30B
(continued)
- "homogeneous polycrystalline material" means a material with crystal particles, all of which have the same chemical composition;
 - "defined structure" means the structure of a material with grains which are oriented in a preferential way or have larger dimensions than normally obtained.
2. In this subclass:
- the preparation of 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](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

COMBINATORIAL TECHNOLOGY**C40 COMBINATORIAL TECHNOLOGY**

C40B COMBINATORIAL CHEMISTRY; LIBRARIES, e.g. CHEMICAL LIBRARIES ([in silico combinatorial libraries of nucleic acids, proteins or peptides G16B 35/00](#); [in silico combinatorial chemistry G16C 20/60](#))

NOTES

1. In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.
2. When classifying in this subclass{, **subject matter of interest is also classified in other appropriate places:**}
 - library members are also classified in the appropriate places elsewhere in the IPC, (e.g. in section [C](#)) according to established procedure relating to "Markush"-type formulae (see paragraph 100 and 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	Specific therapeutic activity of chemical compounds or medicinal preparations
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 microorganisms or enzymes, preparing them, using them to synthesise compounds or compositions; Measuring or testing processes involving microorganisms or enzymes; Mutation or genetic engineering
C22	Metal alloys
G01N	Chemical or physical analysis
G01R , G01T	Physical measurements methods; Apparatus therefor
G03F	Photomechanical methods
G06F	Electrical digital data processing
G06K	Data processing
G06T	Image data processing
G09F	Displaying; Advertising.
3. {[C12N 15/1034](#) - [C12N 15/1093](#) always take precedence over [C40B](#).}

C99 SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION

C99Z SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION

NOTE

This subclass covers subject matter that:

C

C99Z

(continued)

- a. Is not provided for, but is most closely related to, the subject matter covered by the subclasses of this section, and
- b. Is not explicitly covered by any subclass of another section.