

CPC COOPERATIVE PATENT CLASSIFICATION

C CHEMISTRY; METALLURGY

(NOTES omitted)

CHEMISTRY

C01 INORGANIC CHEMISTRY (processing powders of inorganic compounds preparatory to the manufacturing of ceramic products [C04B 35/00](#); fermentation or enzyme-using processes for the preparation of elements or inorganic compounds except carbon dioxide [C12P 3/00](#); obtaining metal compounds from mixtures, e.g. ores, which are intermediate compounds in a metallurgical process for obtaining a free metal [C21B](#), [C22B](#); production of non-metallic elements or inorganic compounds by electrolysis or electrophoresis [C25B](#))

(NOTES omitted)

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](#))

1/00	Methods of preparing compounds of metals not covered by subclasses C01B, C01C, C01D, or C01F, in general (electrolytic production of inorganic compounds C25B 1/00)	5/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
1/02	. Oxides	5/006	. {Compounds containing, besides silver, two or more other elements, with the exception of oxygen or hydrogen}
1/04	. Carbonyls	5/02	. Halides
1/06	. Halides	7/00	Compounds of gold
1/08	. Nitrates	7/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
1/10	. Sulfates	7/006	. {Compounds containing, besides gold, two or more other elements, with the exception of oxygen or hydrogen}
1/12	. Sulfides	9/00	Compounds of zinc
1/14	. Sulfites	9/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
3/00	Compounds of copper	9/006	. {Compounds containing, besides zinc, two or more other elements, with the exception of oxygen or hydrogen}
3/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}	9/02	. Oxides; Hydroxides
3/006	. {Compounds containing, besides copper, two or more other elements, with the exception of oxygen or hydrogen}	9/03	. . Processes of production using dry methods, e.g. vapour phase processes
3/02	. Oxides; Hydroxides	9/04	. Halides
3/04	. Halides	9/06	. Sulfates
3/05	. . Chlorides	9/08	. Sulfides
3/06	. . Oxychlorides	11/00	Compounds of cadmium
3/08	. Nitrates		
3/10	. Sulfates		
3/12	. Sulfides		
3/14	. Complexes with ammonia		
5/00	Compounds of silver		

- 11/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 11/006 . {Compounds containing, besides cadmium, two or more other elements, with the exception of oxygen or hydrogen}
- 11/02 . Sulfides
- 13/00 Compounds of mercury**
- 13/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 13/006 . {Compounds containing, besides mercury, two or more other elements, with the exception of oxygen or hydrogen}
- 13/02 . Oxides
- 13/04 . Halides
- 15/00 Compounds of gallium, indium or thallium**
- 15/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 15/006 . {Compounds containing, besides gallium, indium, or thallium, two or more other elements, with the exception of oxygen or hydrogen}
- 17/00 Compounds of germanium**
- 17/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 17/006 . {Compounds containing, besides germanium, two or more other elements, with the exception of oxygen or hydrogen}
- 17/02 . Germanium dioxide
- 17/04 . Halides of germanium
- 19/00 Compounds of tin**
- 19/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 19/006 . {Compounds containing, besides tin, two or more other elements, with the exception of oxygen or hydrogen}
- 19/02 . Oxides
- 19/04 . Halides
- 19/06 . . Stannous chloride
- 19/08 . . Stannic chloride
- 21/00 Compounds of lead**
- 21/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 21/006 . {Compounds containing, besides lead, two or more other elements, with the exception of oxygen or hydrogen}
- 21/02 . Oxides
- 21/04 . . Lead suboxide (Pb₂O)
- 21/06 . . Lead monoxide (PbO)
- 21/08 . . Lead dioxide (PbO₂)
- 21/10 . . Red lead (Pb₃O₄)
- 21/12 . Hydroxides
- 21/14 . Carbonates
- 21/16 . Halides
- 21/18 . Nitrates
- 21/20 . Sulfates
- 21/21 . Sulfides
- 21/22 . Plumbates; Plumbites
- 23/00 Compounds of titanium** {(preparation of Ti-compounds from ores or scraps C22B 34/12)}
- 23/001 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 23/002 . {Compounds containing, besides titanium, two or more other elements, with the exception of oxygen or hydrogen (C01G 23/001 takes precedence)}
- 23/003 . {Titanates, e.g. titanates of two or more metals other than titanium (C01G 23/001 takes precedence)}
- 23/005 . . {Alkali titanates}
- 23/006 . . {Alkaline earth titanates}
- 23/007 . {Titanium sulfides (C01G 23/001 takes precedence)}
- 23/008 . {Titanium- and titanyl sulfate (C01G 23/001 takes precedence)}
- 23/02 . Halides of titanium
- 23/022 . . {Titanium tetrachloride}
- 23/024 . . . {Purification of tetrachloride}
- 23/026 . . {Titanium trichloride}
- 23/028 . . {Titanium fluoride}
- 23/04 . Oxides; Hydroxides
- 23/043 . . {Titanium sub-oxides}
- 23/047 . . Titanium dioxide
- 23/0475 . . . {Purification}
- 23/053 . . . Producing by wet processes, e.g. hydrolysing titanium salts
- 23/0532 {by hydrolysing sulfate-containing salts}
- 23/0534 {in the presence of seeds}
- 23/0536 {by hydrolysing chloride-containing salts}
- 23/0538 {in the presence of seeds}
- 23/07 . . . Producing by vapour phase processes, e.g. halide oxidation
- 23/075 {Evacuation and cooling of the gaseous suspension containing the oxide; Desacidification and elimination of gases occluded in the separated oxide}
- 23/08 . . . Drying; Calcining (; After treatment of titanium oxide)
- 25/00 Compounds of zirconium**
- 25/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 25/006 . {Compounds containing, besides zirconium, two or more other elements, with the exception of oxygen or hydrogen}
- 25/02 . Oxides
- 25/04 . Halides
- 25/06 . Sulfates
- 27/00 Compounds of hafnium**
- 27/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 27/006 . {Compounds containing, besides hafnium, two or more other elements, with the exception of oxygen or hydrogen}
- 27/02 . Oxides
- 27/04 . Halides
- 27/06 . Sulfates
- 28/00 Compounds of arsenic**
- 28/001 . {Preparation involving a solvent-solvent extraction, an adsorption or an ion-exchange}
- 28/002 . {Compounds containing, besides arsenic, two or more other elements, with the exception of oxygen or hydrogen (C01G 28/001 takes precedence)}
- 28/004 . . {containing halogen}
- 28/005 . {Oxides; Hydroxides; Oxyacids (C01G 28/001 takes precedence)}

- 28/007 . {Halides ([C01G 28/001](#) takes precedence)}
- 28/008 . {Sulfides ([C01G 28/001](#) takes precedence)}
- 28/02 . Arsenates; Arsenites {([C01G 28/001](#) takes precedence)}
- 28/023 . . {of ammonium, alkali or alkaline-earth metals or magnesium}
- 28/026 . . {containing at least two metals}
- 29/00 Compounds of bismuth**
- 29/003 . {Preparations involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 29/006 . {Compounds containing, besides bismuth, two or more other elements, with the exception of oxygen or hydrogen}
- 30/00 Compounds of antimony**
- 30/001 . {Preparation involving a solvent-solvent extraction, an adsorption or an ion-exchange}
- 30/002 . {Compounds containing, besides antimony, two or more other elements, with the exception of oxygen or hydrogen ([C01G 30/001](#) takes precedence)}
- 30/003 . . {containing halogen}
- 30/004 . {Oxides; Hydroxides; Oxyacids ([C01G 30/001](#) takes precedence)}
- 30/005 . . {Oxides}
- 30/006 . {Halides ([C01G 30/001](#) takes precedence)}
- 30/007 . . {of binary type SbX₃ or SbX₅ with X representing a halogen, or mixed of the type SbX₃X'₂ with X,X' representing different halogens}
- 30/008 . {Sulfides ([C01G 30/001](#) takes precedence)}
- 30/02 . Antimonates; Antimonites {([C01G 30/001](#) takes precedence)}
- 30/023 . . {of ammonium, alkali or alkaline-earth metals or magnesium}
- 30/026 . . {containing at least two metals}
- 31/00 Compounds of vanadium**
- 31/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 31/006 . {Compounds containing, besides vanadium, two or more other elements, with the exception of oxygen or hydrogen}
- 31/02 . Oxides
- 31/04 . Halides
- 33/00 Compounds of niobium**
- 33/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 33/006 . {Compounds containing, besides niobium, two or more other elements, with the exception of oxygen or hydrogen}
- 35/00 Compounds of tantalum**
- 35/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 35/006 . {Compounds containing, besides tantalum, two or more other elements, with the exception of oxygen or hydrogen}
- 35/02 . Halides
- 37/00 Compounds of chromium**
- 37/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 37/006 . {Compounds containing, besides chromium, two or more other elements, with the exception of oxygen or hydrogen}
- 37/02 . Oxides or hydrates thereof
- 37/027 . . Chromium dioxide
- 37/033 . . Chromium trioxide; Chromic acid
- 37/04 . Chromium halides
- 37/06 . . Chromylhalides
- 37/08 . Chromium sulfates
- 37/10 . . Chrome alum
- 37/14 . Chromates; Bichromates
- 39/00 Compounds of molybdenum**
- 39/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 39/006 . {Compounds containing, besides molybdenum, two or more other elements, with the exception of oxygen or hydrogen}
- 39/02 . Oxides; Hydroxides
- 39/04 . Halides
- 39/06 . Sulfides
- 41/00 Compounds of tungsten**
- 41/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 41/006 . {Compounds containing, besides tungsten, two or more other elements, with the exception of oxygen or hydrogen}
- 41/02 . Oxides; Hydroxides
- 41/04 . Halides
- 43/00 Compounds of uranium**
- 43/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 43/006 . {Compounds containing, besides uranium, two or more other elements, with the exception of oxygen or hydrogen}
- 43/01 . Oxides; Hydroxides
- 43/025 . . Uranium dioxide
- 43/04 . Halides of uranium
- 43/06 . . Fluorides
- 43/063 . . . {Hexafluoride (UF₆)}
- 43/066 {Preparation}
- 43/08 . . Chlorides
- 43/10 . . Bromides
- 43/12 . . Iodides
- 45/00 Compounds of manganese**
- 45/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 45/006 . {Compounds containing, besides manganese, two or more other elements, with the exception of oxygen or hydrogen ([manganates, manganites or permanganates C01G 45/12](#))}
- 45/02 . Oxides; Hydroxides
- 45/04 . Carbonyls
- 45/06 . Halides
- 45/08 . Nitrates
- 45/10 . Sulfates
- 45/12 . Manganates {manganites or} permanganates
- 45/1207 . . {Permanganates ([MnO]₄-) or manganates ([MnO₄]²⁻)}
- 45/1214 . . . {containing alkali metals}

- 45/1221 . . {Manganates or manganites with a manganese oxidation state of Mn(III), Mn(IV) or mixtures thereof}
- 45/1228 . . . {of the type $[MnO_2]_n^-$, e.g. $LiMnO_2$, $Li[MxMn_{1-x}O_2]$ }
- 45/1235 . . . {of the type $[Mn_2O_4]^{2-}$, e.g. $Li_2Mn_2O_4$, $Li_2[MxMn_{2-x}O_4]$ }
- 45/1242 . . . {of the type $[Mn_2O_4]^-$, e.g. $LiMn_2O_4$, $Li[MxMn_{2-x}O_4]$ }
- 45/125 . . . {of the type $[MnO_3]_n^-$, e.g. Li_2MnO_3 , $Li_2[MxMn_{1-x}O_3]$, $(La,Sr)MnO_3$ }
- 45/1257 {containing lithium, e.g. Li_2MnO_3 , $Li_2[MxMn_{1-x}O_3]$ }
- 45/1264 {containing rare earth, e.g. $La_{1-x}Ca_xMnO_3$, $LaMnO_3$ }
- 45/1271 . . . {of the type $[Mn_2O_8]_n^-$, e.g. $(LaSr_3)Mn_2O_8$ }
- 45/1278 . . . {of the type $[Mn_2O_7]_n^-$, e.g. $(Sr_{2-x}Nd_x)Mn_2O_7$, $Tl_2Mn_2O_7$ }
- 45/1285 . . . {of the type $[Mn_2O_5]_n^-$ }
- 45/1292 . . . {of the type $[Mn_5O_{12}]_n^-$ }
- 47/00 Compounds of rhenium**
- 47/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 47/006 . {Compounds containing, besides rhenium, two or more other elements, with the exception of oxygen or hydrogen}
- 49/00 Compounds of iron**
- 49/0009 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 49/0018 . {Mixed oxides or hydroxides, e.g. ferrites ([C01G 49/0009](#) takes precedence)}
- 49/0027 . . {containing one alkali metal}
- 49/0036 . . {containing one alkaline earth metal, magnesium or lead}
- 49/0045 . . {containing aluminium}
- 49/0054 . . {containing one rare earth metal, yttrium or scandium}
- 49/0063 . . {containing zinc}
- 49/0072 . . {containing manganese}
- 49/0081 . . {containing iron in unusual valence state (IV, V, VI), e.g. ferrates}
- 49/009 . {Compounds containing, besides iron, two or more other elements, with the exception of oxygen or hydrogen}
- 49/02 . Oxides; Hydroxides {([C01G 49/0018](#) takes precedence)}
- 49/04 . . Ferrous oxide (FeO)
- 49/06 . . Ferric oxide (Fe_2O_3)
- 49/08 . . Ferroso-ferric oxide (Fe_3O_4)
- 49/10 . Halides {([C01G 49/0018](#) takes precedence)}
- 49/12 . Sulfides {([C01G 49/0018](#) takes precedence)}
- 49/14 . Sulfates {([C01G 49/0018](#) takes precedence)}
- 49/16 . Carbonyls {([C01G 49/0018](#) takes precedence)}
- 51/00 Compounds of cobalt**
- 51/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 51/006 . {Compounds containing, besides cobalt, two or more other elements, with the exception of oxygen or hydrogen ([cobaltates C01G 51/40](#))}
- 51/02 . Carbonyls
- 51/04 . Oxides; Hydroxides
- 51/06 . Carbonates
- 51/08 . Halides
- 51/085 . . {Chlorides}
- 51/10 . Sulfates
- 51/12 . Complexes with ammonia
- 51/30 . {Sulfides}
- 51/40 . {Cobaltates}
- 51/42 . . {containing alkali metals, e.g. $LiCoO_2$ }
- 51/44 . . . {containing manganese}
- 51/50 {of the type $[MnO_2]_n^-$, e.g. $Li(CoxMn_{1-x})O_2$, $Li(MyCoxMn_{1-x-y})O_2$ }
- 51/52 {of the type $[Mn_2O_4]^{2-}$, e.g. $Li_2(CoxMn_{2-x})O_4$, $Li_2(MyCoxMn_{2-x-y})O_4$ }
- 51/54 {of the type $[Mn_2O_4]^-$, e.g. $Li(CoxMn_{2-x})O_4$, $Li(MyCoxMn_{2-x-y})O_4$ }
- 51/56 {of the type $[MnO_3]_n^-$, e.g. $Li_2[CoxMn_{1-x}O_3]$, $Li_2[MyCoxMn_{1-x-y}O_3]$ }
- 51/58 {of the type $[Mn_2O_8]_n^-$ }
- 51/60 {of the type $[Mn_2O_7]_n^-$ }
- 51/62 {of the type $[Mn_2O_5]_n^-$ }
- 51/64 {of the type $[Mn_5O_{12}]_n^-$ }
- 51/66 . . {containing alkaline earth metals, e.g. $SrCoO_3$ }
- 51/68 . . . {containing rare earth, e.g. $La_{0.3}Sr_{0.7}CoO_3$ }
- 51/70 . . {containing rare earth, e.g. $LaCoO_3$ ([C01G 51/68](#) takes precedence)}
- 53/00 Compounds of nickel**
- 53/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 53/006 . {Compounds containing, besides nickel, two or more other elements, with the exception of oxygen or hydrogen ([nickelates C01G 53/40](#))}
- 53/02 . Carbonyls
- 53/04 . Oxides; Hydroxides
- 53/06 . Carbonates
- 53/08 . Halides
- 53/09 . . Chlorides
- 53/10 . Sulfates
- 53/11 . Sulfides
- 53/12 . Complexes with ammonia
- 53/40 . {Nickelates}
- WARNING**
- Groups [C01G 53/40](#) - [C01G 53/70](#) are not complete pending a reorganisation, see also [C01G 53/006](#) and [C01G 53/00](#)
- 53/42 . . {containing alkali metals, e.g. $LiNiO_2$ }
- 53/44 . . . {containing manganese}
- 53/50 {of the type $[MnO_2]_n^-$, e.g. $Li(NixMn_{1-x})O_2$, $Li(MyNixMn_{1-x-y})O_2$ }
- 53/52 {of the type $[Mn_2O_4]^{2-}$, e.g. $Li_2(NixMn_{2-x})O_4$, $Li_2(MyNixMn_{2-x-y})O_4$ }
- 53/54 {of the type $[Mn_2O_4]^-$, e.g. $Li(NixMn_{2-x})O_4$, $Li(MyNixMn_{2-x-y})O_4$ }
- 53/56 {of the type $[MnO_3]_n^-$, e.g. $Li_2[NixMn_{1-x}O_3]$, $Li_2[MyNixMn_{1-x-y}O_3]$ }
- 53/58 {of the type $[Mn_2O_8]_n^-$ }
- 53/60 {of the type $[Mn_2O_7]_n^-$ }
- 53/62 {of the type $[Mn_2O_5]_n^-$ }
- 53/64 {of the type $[Mn_5O_{12}]_n^-$ }
- 53/66 . . {containing alkaline earth metals, e.g. $SrNiO_3$, $SrNiO_2$ }

C01G

- 53/68 . . . {containing rare earth, e.g. La_{1.62}Sr_{0.38}NiO₄}
- 53/70 . . {containing rare earth, e.g. LaNiO₃ ([C01G 53/68](#) takes precedence)}
- 55/00 Compounds of ruthenium, rhodium, palladium, osmium, iridium, or platinum**
- 55/001 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 55/002 . {Compounds containing, besides ruthenium, rhodium, palladium, osmium, iridium, or platinum, two or more other elements, with the exception of oxygen or hydrogen ([C01G 55/007](#) takes precedence)}
- 55/004 . {Oxides; Hydroxides}
- 55/005 . {Halides}
- 55/007 . {Compounds containing at least one carbonyl group}
- 55/008 . . {Carbonyls}
- 56/00 Compounds of transuranic elements**
- 56/001 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 56/002 . . {by adsorption or by ion-exchange on a solid support}
- 56/003 . {Compounds comprising, besides transuranic elements, two or more other elements, with the exception of oxygen or hydrogen ([C01G 56/001](#) takes precedence)}
- 56/004 . {Compounds of plutonium ([C01G 56/001](#) takes precedence)}
- 56/005 . . {Oxides; Hydroxides}
- 56/006 . . {Halides}
- 56/007 . {Compounds of transuranic elements ([C01G 56/001](#) and [C01G 56/004](#) take precedence)}
- 56/008 . . {Compounds of neptunium}
- 56/009 . . {Compounds of americium}
- 99/00 Subject matter not provided for in other groups of this subclass**
- 99/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 99/006 . {Compounds containing, besides a metal not provided for elsewhere in this subclass, two or more other elements other than oxygen or hydrogen ([C01G 99/003](#) takes precedence)}