

CPC COOPERATIVE PATENT CLASSIFICATION

C CHEMISTRY; METALLURGY

(NOTES omitted)

CHEMISTRY

C01 INORGANIC CHEMISTRY

(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](#))

- 1/02 . Oxides
- 1/04 . Carbonyls
- 1/06 . Halides
- 1/08 . Nitrates
- 1/10 . Sulfates
- 1/12 . Sulfides
- 1/14 . Sulfitess

3/00 **Compounds of copper**

- 3/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 3/006 . {Compounds containing, besides copper, two or more other elements, with the exception of oxygen or hydrogen}
- 3/02 . Oxides; Hydroxides
- 3/04 . Halides
- 3/05 . . Chlorides
- 3/06 . . Oxychlorides
- 3/08 . Nitrates
- 3/10 . Sulfates
- 3/12 . Sulfides
- 3/14 . Complexes with ammonia

5/00 **Compounds of silver**

- 5/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 5/006 . {Compounds containing, besides silver, two or more other elements, with the exception of oxygen or hydrogen}
- 5/02 . Halides

7/00 **Compounds of gold**

- 7/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 7/006 . {Compounds containing, besides gold, two or more other elements, with the exception of oxygen or hydrogen}

9/00 **Compounds of zinc**

- 9/003 . {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
- 9/006 . {Compounds containing, besides zinc, two or more other elements, with the exception of oxygen or hydrogen}
- 9/02 . Oxides; Hydroxides
- 9/03 . . Processes of production using dry methods, e.g. vapour phase processes
- 9/04 . Halides
- 9/06 . Sulfates
- 9/08 . Sulfides

11/00 **Compounds of cadmium**

- 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	23/003	. {Titanates (C01G 23/001 takes precedence)}
15/00	Compounds of gallium, indium or thallium	WARNING	
15/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}		Group C01G 23/003 is incomplete pending reclassification from group C01G 23/002 .
15/006	. {Compounds containing, besides gallium, indium, or thallium, two or more other elements, with the exception of oxygen or hydrogen}		Groups C01G 23/002 and C01G 23/003 should be considered in order to perform a complete search .
17/00	Compounds of germanium	23/005	. . {Alkali titanates}
17/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}	23/006	. . {Alkaline earth titanates}
17/006	. {Compounds containing, besides germanium, two or more other elements, with the exception of oxygen or hydrogen}	23/007	. {Titanium sulfides (C01G 23/001 takes precedence)}
17/02	. Germanium dioxide	23/008	. {Titanium- and titanyl sulfate (C01G 23/001 takes precedence)}
17/04	. Halides of germanium	23/02	. Halides of titanium
19/00	Compounds of tin	23/022	. . {Titanium tetrachloride}
19/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}	23/024	. . . {Purification of tetrachloride}
19/006	. {Compounds containing, besides tin, two or more other elements, with the exception of oxygen or hydrogen}	23/026	. . {Titanium trichloride}
19/02	. Oxides	23/028	. . {Titanium fluoride}
19/04	. Halides	23/04	. Oxides; Hydroxides
19/06	. . Stannous chloride	23/043	. . {Titanium sub-oxides}
19/08	. . Stannic chloride	23/047	. . Titanium dioxide
21/00	Compounds of lead	23/0475	. . . {Purification}
21/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}	23/053	. . . Producing by wet processes, e.g. hydrolysing titanium salts
21/006	. {Compounds containing, besides lead, two or more other elements, with the exception of oxygen or hydrogen}	23/0532 {by hydrolysing sulfate-containing salts}
21/02	. Oxides	23/0534 {in the presence of seeds}
21/04	. . Lead suboxide (Pb ₂ O)	23/0536 {by hydrolysing chloride-containing salts}
21/06	. . Lead monoxide (PbO)	23/0538 {in the presence of seeds}
21/08	. . Lead dioxide (PbO ₂)	23/07	. . . Producing by vapour phase processes, e.g. halide oxidation
21/10	. . Red lead (Pb ₃ O ₄)	23/075 {Evacuation and cooling of the gaseous suspension containing the oxide; Desacidification and elimination of gases occluded in the separated oxide}
21/12	. Hydroxides	23/08	. . . Drying; Calcining {; After treatment of titanium oxide}
21/14	. Carbonates	25/00	Compounds of zirconium
21/16	. Halides	25/003	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}
21/18	. Nitrates	25/006	. {Compounds containing, besides zirconium, two or more other elements, with the exception of oxygen or hydrogen}
21/20	. Sulfates	25/02	. Oxides
21/21	. Sulfides	25/04	. Halides
21/22	. Plumbates; Plumbites	25/06	. Sulfates
23/00	Compounds of titanium {(preparation of Ti-compounds from ores or scraps C22B 34/12)}	27/00	Compounds of hafnium
23/001	. {Preparation involving a liquid-liquid extraction, an adsorption or an ion-exchange}	27/003	. {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 , C01G 23/003 take precedence)}	27/006	. {Compounds containing, besides hafnium, two or more other elements, with the exception of oxygen or hydrogen}
	WARNING	27/02	. Oxides
	Group C01G 23/002 is impacted by reclassification into group C01G 23/003 .	27/04	. Halides
	Groups C01G 23/002 and C01G 23/003 should be considered in order to perform a complete search .	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 $[\text{MnO}_2]_n^-$, e.g. LiMnO_2 , $\text{Li}[\text{MxMn}_{1-x}\text{O}_2]$ }
- 45/1235 . . . {of the type $[\text{Mn}_2\text{O}_4]^{2-}$, e.g. $\text{Li}_2\text{Mn}_2\text{O}_4$, $\text{Li}_2[\text{MxMn}_{2-x}\text{O}_4]$ }
- 45/1242 . . . {of the type $[\text{Mn}_2\text{O}_4]^-$, e.g. LiMn_2O_4 , $\text{Li}[\text{MxMn}_{2-x}\text{O}_4]$ }
- 45/125 . . . {of the type $[\text{MnO}_3]_n^-$, e.g. Li_2MnO_3 , $\text{Li}_2[\text{MxMn}_{1-x}\text{O}_3]$, $(\text{La},\text{Sr})\text{MnO}_3$ }
- 45/1257 {containing lithium, e.g. Li_2MnO_3 , $\text{Li}_2[\text{MxMn}_{1-x}\text{O}_3]$ }
- 45/1264 {containing rare earth, e.g. $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$, LaMnO_3 }
- 45/1271 . . . {of the type $[\text{Mn}_2\text{O}_8]_n^-$, e.g. $(\text{LaSr}_3)\text{Mn}_2\text{O}_8$ }
- 45/1278 . . . {of the type $[\text{Mn}_2\text{O}_7]_n^-$, e.g. $(\text{Sr}_{2-x}\text{Nd}_x)\text{Mn}_2\text{O}_7$, $\text{Ti}_2\text{Mn}_2\text{O}_7$ }
- 45/1285 . . . {of the type $[\text{Mn}_2\text{O}_5]_n^-$ }
- 45/1292 . . . {of the type $[\text{Mn}_5\text{O}_{12}]_n^-$ }
- 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, ([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]}
- 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 $[\text{MnO}_2]_n^-$, e.g. $\text{Li}(\text{CoxMn}_{1-x})\text{O}_2$, $\text{Li}(\text{MyCoxMn}_{1-x-y})\text{O}_2$ }
- 51/52 {of the type $[\text{Mn}_2\text{O}_4]^{2-}$, e.g. $\text{Li}_2(\text{CoxMn}_{2-x})\text{O}_4$, $\text{Li}_2(\text{MyCoxMn}_{2-x-y})\text{O}_4$ }
- 51/54 {of the type $[\text{Mn}_2\text{O}_4]^-$, e.g. $\text{Li}(\text{CoxMn}_{2-x})\text{O}_4$, $\text{Li}(\text{MyCoxMn}_{2-x-y})\text{O}_4$ }
- 51/56 {of the type $[\text{MnO}_3]_n^-$, e.g. $\text{Li}_2[\text{CoxMn}_{1-x}\text{O}_3]$, $\text{Li}_2[\text{MyCoxMn}_{1-x-y}\text{O}_3]$ }
- 51/58 {of the type $[\text{Mn}_2\text{O}_8]_n^-$ }
- 51/60 {of the type $[\text{Mn}_2\text{O}_7]_n^-$ }
- 51/62 {of the type $[\text{Mn}_2\text{O}_5]_n^-$ }
- 51/64 {of the type $[\text{Mn}_5\text{O}_{12}]_n^-$ }
- 51/66 . . {containing alkaline earth metals, e.g. SrCoO_3 }
- 51/68 . . . {containing rare earth, e.g. $\text{La}_{0.3}\text{Sr}_{0.7}\text{CoO}_3$ }
- 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 $[\text{MnO}_2]_n^-$, e.g. $\text{Li}(\text{NixMn}_{1-x})\text{O}_2$, $\text{Li}(\text{MyNixMn}_{1-x-y})\text{O}_2$ }
- 53/52 {of the type $[\text{Mn}_2\text{O}_4]^{2-}$, e.g. $\text{Li}_2(\text{NixMn}_{2-x})\text{O}_4$, $\text{Li}_2(\text{MyNixMn}_{2-x-y})\text{O}_4$ }
- 53/54 {of the type $[\text{Mn}_2\text{O}_4]^-$, e.g. $\text{Li}(\text{NixMn}_{2-x})\text{O}_4$, $\text{Li}(\text{MyNixMn}_{2-x-y})\text{O}_4$ }
- 53/56 {of the type $[\text{MnO}_3]_n^-$, e.g. $\text{Li}_2[\text{NixMn}_{1-x}\text{O}_3]$, $\text{Li}_2[\text{MyNixMn}_{1-x-y}\text{O}_3]$ }
- 53/58 {of the type $[\text{Mn}_2\text{O}_8]_n^-$ }
- 53/60 {of the type $[\text{Mn}_2\text{O}_7]_n^-$ }
- 53/62 {of the type $[\text{Mn}_2\text{O}_5]_n^-$ }
- 53/64 {of the type $[\text{Mn}_5\text{O}_{12}]_n^-$ }
- 53/66 . . {containing alkaline earth metals, e.g. SrNiO_3 , SrNiO_2 }

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- 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](#))}