

# 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)

**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](#))

<b>1/00</b>	<b>Ammonia; Compounds thereof</b> ({ <a href="#">C01C 3/08</a> , <a href="#">C01C 3/14</a> , <a href="#">C01C 3/16</a> , <a href="#">C01C 3/20</a> take precedence})	1/0441	. . . . . {Reactors with the catalyst arranged in tubes}
	<b>NOTE</b>	1/0447	. . . . . {Apparatus other than synthesis reactors}
	Complex ammine salts, e.g. [Pd(NH <sub>3</sub> ) <sub>4</sub> ]Cl <sub>2</sub> , are {also} classified in the relevant groups of subclasses <a href="#">C01D</a> - <a href="#">C01G</a> , according to the metal	1/0452	. . . . . {Heat exchangers}
1/003	. {Storage or handling of ammonia}	1/0458	. . . . . {Separation of NH <sub>3</sub> (during purge gas treatment <a href="#">C01C 1/0476</a> )}
1/006	. . {making use of solid ammonia storage materials, e.g. complex ammine salts}	1/0464	. . . . . {by absorption in liquids, e.g. water}
1/02	. Preparation, {purification} or separation of ammonia	1/047	. . . . . {by condensation}
1/022	. . {Preparation of aqueous ammonia solutions, i.e. ammonia water}	1/0476	. . . . . {Purge gas treatment, e.g. for removal of inert gases or recovery of H <sub>2</sub> }
1/024	. . {Purification}	1/0482	. . . . . {Process control; Start-up or cooling-down procedures}
1/026	. . {Preparation of ammonia from inorganic compounds}	1/0488	. . . . . {Processes integrated with preparations of other compounds, e.g. methanol, urea or with processes for power generation}
1/028	. . . {from ammonium sulfate or sulfite}	1/0494	. . . {using plasma or electric discharge}
1/04	. . Preparation of ammonia by synthesis {in the gas phase} (preparation or purification of gas mixtures for ammonia synthesis { <a href="#">C01B 3/025</a> })	1/08	. . Preparation of ammonia from nitrogenous organic substances
1/0405	. . . {from N <sub>2</sub> and H <sub>2</sub> in presence of a catalyst}	1/083	. . . {from molasses (treatment of molasses in general <a href="#">C13B 50/006</a> )}
1/0411	. . . . {characterised by the catalyst}	1/086	. . . {from urea}
1/0417	. . . . {characterised by the synthesis reactor, e.g. arrangement of catalyst beds and heat exchangers in the reactor (arrangement of several reactors <a href="#">C01C 1/0405</a> ; fixed-bed reactors in general <a href="#">B01J 8/02</a> )}	1/10	. . Separation of ammonia from ammonia liquors, e.g. gas liquors {(as part of the ammonia synthesis process <a href="#">C01C 1/04</a> )}
1/0423	. . . . . {Cold wall reactors}	1/12	. . Separation of ammonia from gases and vapours {(as part of the ammonia synthesis process <a href="#">C01C 1/04</a> )}
1/0429	. . . . . {Fluidized or moving bed reactors}	1/14	. . . Saturators
1/0435	. . . . . {Horizontal reactors}	1/16	. Halides of ammonium
		1/162	. . {Ammonium fluoride}
		1/164	. . {Ammonium chloride}
		1/166	. . {Ammonium bromide}

- 1/168 . . {Ammonium iodide}
  - 1/18 . Nitrates of ammonium
  - 1/185 . . {Preparation}
  - 1/20 . Sulfides; Polysulfides
  - 1/22 . Sulfites of ammonium
  - 1/24 . Sulfates of ammonium ([C01C 1/14 takes precedence](#))
  - 1/242 . . Preparation from ammonia and sulfuric acid or sulfur trioxide
  - 1/244 . . Preparation by double decomposition of ammonium salts with sulfates
  - 1/245 . . Preparation from compounds containing nitrogen and sulfur
  - 1/246 . . . from sulfur-containing ammonium compounds
  - 1/247 . . . . by oxidation with free oxygen
  - 1/248 . . Preventing coalescing or controlling form or size of the crystals
  - 1/249 . . Deacidifying {or drying} the crystals
  - 1/26 . Carbonates or bicarbonates of ammonium
  - 1/28 . Methods of preparing ammonium salts in general
- NOTES**
1. This group does not cover ammonium salts of complex acids (other than complex cyanides) containing a metal in the anion, which are covered by the relevant groups of subclasses [C01D](#) - [C01G](#), according to the metal.
  2. Salts of polybasic acids with ammonium and a metal as cations are classified as though the ammonium were hydrogen.
- 3/00 Cyanogen; Compounds thereof**
- 3/001 . {Preparation by decomposing nitrogen-containing organic compounds, e.g. molasse waste or urea (by distillation of carbamates [C01C 3/02](#), [C01C 3/08](#), [C01C 3/14](#), [C01C 3/16](#); by decomposing formamide or ammonium formate [C01C 3/0204](#))}
  - 3/002 . {Synthesis of metal cyanides or metal cyanamides from elementary nitrogen and carbides}
  - 3/003 . {Cyanogen}
  - 3/004 . {Halogenides of cyanogen}
  - 3/005 . {Thiocyanogen}
  - 3/006 . {Sulfurdicyanide}
  - 3/007 . {Ammonium cyanide}
  - 3/008 . {Cyanazide}
  - 3/02 . Preparation, {separation or purification} of hydrogen cyanide ([C01C 3/001 takes precedence](#))
  - 3/0204 . . {from formamide or from ammonium formate}
  - 3/0208 . . {Preparation in gaseous phase}
  - 3/0212 . . . {from hydrocarbons and ammonia in the presence of oxygen, e.g. the Andrussov-process}
  - 3/0216 . . . . {characterised by the catalyst used}
  - 3/022 . . . . {Apparatus therefor}
  - 3/0225 . . . . . {characterised by the synthesis reactor}
  - 3/0229 . . . {from hydrocarbons and ammonia in the absence of oxygen, e.g. HMA-process}
  - 3/0233 . . . . {making use of fluidised beds, e.g. the Shawinigan-process}
  - 3/0237 . . . {from carbon monoxide and ammonia}
  - 3/0241 . . . {from alcohols or aldehydes}
  - 3/0245 . . . {from organic nitriles, e.g. acetonitrile}
  - 3/025 . . . {by using a plasma}
  - 3/0254 . . {from cyanates or from thiocyanates}
  - 3/0258 . . {from cyanamides or derivatives thereof}
  - 3/0262 . . {from cyanides}
  - 3/0266 . . . {from simple alkali or alkaline earth metal cyanides}
  - 3/027 . . . . {Alkali metal cyanides}
  - 3/0275 . . . . {Alkaline earth metal cyanides}
  - 3/0279 . . . {from ammonium cyanide}
  - 3/0283 . . . {from simple or complex cyanides of the noble metals}
  - 3/0287 . . . {from simple or complex cyanides of other transition metals, e.g. from iron cyanides}
  - 3/0291 . . . {from simple or complex cyanides of other metals}
  - 3/0295 . . {Purification}
  - 3/04 . . Separation from gases
  - 3/06 . Stabilisation of hydrogen cyanide
  - 3/08 . Simple or complex cyanides of metals ([C01C 3/001](#), [C01C 3/002 take precedence](#))
  - 3/10 . . Simple alkali metal cyanides
  - 3/11 . . Complex cyanides
  - 3/12 . . Simple or complex iron cyanides
  - 3/14 . Cyanic {or isocyanic} acid; Salts thereof ([C01C 3/001 takes precedence](#))
  - 3/145 . . {Isocyanic acid; Salts thereof}
  - 3/16 . Cyanamide; Salts thereof ([C01C 3/001](#), [C01C 3/002 takes precedence](#)); dicyandiamide [C07C 279/28](#))
  - 3/18 . . Calcium cyanamide
  - 3/20 . Thiocyanic acid; Salts thereof ([C01C 3/001 takes precedence](#))