

# CPC COOPERATIVE PATENT CLASSIFICATION

## C CHEMISTRY; METALLURGY

(NOTES omitted)

### CHEMISTRY

#### C01 INORGANIC CHEMISTRY

(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](#))

#### 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.

|        |   |        |  |
|--------|---|--------|--|
| 1/00   | <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})  | 1/0458 | . . . . {Separation of NH <sub>3</sub> (during purge gas treatment <a href="#">C01C 1/0476</a> )}  |
|        | <b>NOTE</b>   | 1/0464 | . . . . {by absorption in liquids, e.g. water}   |
|        | 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                              | 1/047  | . . . . {by condensation}  |
|        |   | 1/0476 | . . . . {Purge gas treatment, e.g. for removal of inert gases or recovery of H <sub>2</sub> }  |
| 1/003  | . {Storage or handling of ammonia}  | 1/0482 | . . . . {Process control; Start-up or cooling-down procedures}   |
| 1/006  | . . {making use of solid ammonia storage materials, e.g. complex ammine salts}  | 1/0488 | . . . . {Processes integrated with preparations of other compounds, e.g. methanol, urea or with processes for power generation}          |
| 1/02   | . Preparation, {purification} or separation of ammonia  | 1/0494 | . . . {using plasma or electric discharge}   |
| 1/022  | . . {Preparation of aqueous ammonia solutions, i.e. ammonia water}  | 1/08   | . . Preparation of ammonia from nitrogenous organic substances   |
| 1/024  | . . {Purification}  | 1/083  | . . . {from molasses (treatment of molasses in general <a href="#">C13B 50/006</a> )}  |
| 1/026  | . . {Preparation of ammonia from inorganic compounds}   | 1/086  | . . . {from urea}  |
| 1/028  | . . . {from ammonium sulfate or sulfite}  | 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> )} |
| 1/04   | . . Preparation of ammonia by synthesis {in the gas phase}(preparation or purification of gas mixtures for ammonia synthesis { <a href="#">C01B 3/025</a> })  | 1/12   | . . Separation of ammonia from gases and vapours {(as part of the ammonia synthesis process <a href="#">C01C 1/04</a> )}                 |
| 1/0405 | . . . {from N <sub>2</sub> and H <sub>2</sub> in presence of a catalyst}  | 1/14   | . . . Saturators   |
| 1/0411 | . . . . {characterised by the catalyst}   | 1/16   | . Halides of ammonium  |
| 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> )} | 1/162  | . . {Ammonium fluoride}  |
| 1/0423 | . . . . {Cold wall reactors}  | 1/164  | . . {Ammonium chloride}  |
| 1/0429 | . . . . {Fluidized or moving bed reactors}  | 1/166  | . . {Ammonium bromide}   |
| 1/0435 | . . . . {Horizontal reactors}   | 1/168  | . . {Ammonium iodide}  |
| 1/0441 | . . . . {Reactors with the catalyst arranged in tubes}  | 1/18   | . Nitrates of ammonium   |
| 1/0447 | . . . . {Apparatus other than synthesis reactors}   | 1/185  | . . {Preparation}  |
| 1/0452 | . . . . {Heat exchangers}   | 1/20   | . Sulfides; Polysulfides   |
|        |   | 1/22   | . Sulfites of ammonium   |
|        |   | 1/24   | . Sulfates of ammonium ( <a href="#">C01C 1/14</a> 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)}