

**CLASS 23, CHEMISTRY: PHYSICAL PROCESSES****SECTION I - CLASS DEFINITION**

Processes for preparation or treatment of inorganic compounds and nonmetallic elements which involve only physical treatments not specifically provided for in some other class. See subclass 293.

**SUBCLASSES**

**293** This subclass is indented under the class definition. Physical processes not more specifically provided for in other classes.

- (1) Note. Patents containing both a claim to an inorganic compound or non-metallic element, and a claim to a physical process for this class, are classified in Class 423, Chemistry of Inorganic Compounds, and cross-referenced here.
- (2) Note. The removal or addition of water of hydration or crystallization is considered a chemical reaction and not a physical process for this class. For such processes see the appropriate chemical class, e.g., 423, Chemistry of Inorganic Compounds, 260, Chemistry of Carbon Compounds, 585, Chemistry of Hydrocarbon Compounds, etc.
- (3) Note. Processes for preserving chemicals and compositions are classified with the chemical or composition preserved and processes of packaging chemicals are classified in Class 53, Package Making, except when chemicals classifiable in Classes 260, Chemistry of Carbon Compounds, and 423, Chemistry of Inorganic Compounds, 585, Chemistry of Hydrocarbon Compounds, are stored by means of a chemical combination from which the chemicals may be subsequently released, when they are classified on the basis of the chemical combination so formed.

**SEE OR SEARCH CLASS:**

- 34, Drying and Gas or Vapor Contact With Solids, for drying processes.

- 53, Package Making, appropriate subclasses for methods of and apparatus for encompassing or encasing goods or materials with a separate cover or band which serves as means for identifying, protecting or unit handling the goods or materials. See (3) Note.
- 62, Refrigeration, subclasses 600+ for processes and apparatus specialized to the manufacture of a solidified or liquefied product from a gas by physical treatment only.
- 75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, for processes provided for in that class which may include a physical process.
- 95, Gas Separation: Processes, for physical processes of gas separation and purification.
- 100, Presses, subclasses 35+ for processes for compacting material, not elsewhere provided for.
- 127, Sugar, Starch, and Carbohydrates, for processes of extracting and crystallizing sugar.
- 159, Concentrating Evaporators, for processes of concentrating solutions or suspensions of solids in liquids.
- 201, Distillation: Processes, Thermolytic, appropriate subclasses for a destructive distillation process.
- 203, Distillation: Processes, Separatory, appropriate subclasses for a separatory distillation process.
- 209, Classifying, Separating, and Assorting Solids, for processes of separating solids from solids.
- 210, Liquid Purification or Separation, subclasses 634+, especially 643+ for processes of liquid purification including dialysis, and subclasses 800+ for processes for liquid separation by gravitational force.
- 241, Solid Material Comminution or Disintegration, appropriate subclass, for processes and apparatus involving comminution and see section 2 of the class definition of that class (241) for the line.

- 261, Gas and Liquid Contact Apparatus, for processes for contacting gases and liquids when for a purpose other than that of gas separation or purification.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, appropriate subclasses for processes involving shaping or molding of plastic materials, noting, for example, subclass 4, pertaining to encapsulating of normally liquid material.
- 366, Agitating, for mixing or agitating processes.
- 422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 243+ for physical type apparatus including apparatus used in carrying out some processes of this class (23).
- 426, Food or Edible Material: Processes, Compositions, and Products, appropriate subclasses for physical processes involving foods.
- 432, Heating, subclasses 1+ for a material heating process of general utility.
- 494, Imperforate Bowl: Centrifugal Separators, appropriate subclasses for apparatus and process for breaking up a mixture of fluids or fluent substances into two or more components by centrifuging within a generally solid-walled, receptacle-like member.
- 294** This subclass is indented under subclass 293. Processes directed to or including sublimation as a significant step.
- SEE OR SEARCH CLASS:
- 266, Metallurgical Apparatus, subclasses 144+ for metallurgical furnaces with fume arresters.
- 295** This subclass is indented under subclass 293. Processes directed to or including crystallization as a significant step.
- SEE OR SEARCH CLASS:
- 29, Metal Working, subclass 25.35 for processes of manufacturing piezoelectric crystal devices which include crystallizing and additional manufacturing operations.
- 62, Refrigeration, for processes of crystallization including a step of refrigeration, especially see subclasses 66+ and subclasses 532+.
- 65, Glass Manufacturing, subclasses 33.1+ for a process of devitrifying of vitrifying glass combined with a glassworking operation.
- 117, Single-Crystal, Oriented-Crystal, and Epitaxy Growth Processes; Non-Coating Apparatus Therefor, for processes and non-coating apparatus for growing therein-defined single-crystal of all types of materials, including inorganic or organic.
- 127, Sugar, Starch, and Carbohydrates, subclasses 58+ for the crystallization of sugar.
- 159, Concentrating Evaporators, for processes for mere evaporation of a solution or suspension of a solid in a liquid whether or not the claims are directed to treatment of a definite chemical compound or element, unless such processes are provided for elsewhere. The combination of evaporation and significant crystallization is in this class (23).
- 203, Distillation: Processes, Separatory, subclass 48 for a distillation process including the step of crystallizing a material from a distillate or residue.
- 423, Chemistry of Inorganic Compounds, appropriate subclasses, for chemical processes of manufacturing inorganic compounds and nonmetallic elements which may involve crystallizing.
- 501, Compositions: Ceramic, subclasses 2+ for devitrified glass compositions, and subclass 86 for synthetic precious stone compositions.
- 296** This subclass is indented under subclass 295. Processes wherein preferential crystallization is carried out in a system containing two or more normally solid crystallizable constituents.
- 297** This subclass is indented under subclass 296. Processes carried out in solution, in combination with a step of physical extraction or dissolving.

- SEE OR SEARCH CLASS:  
423, Chemistry of Inorganic Compounds, appropriate subclasses, for extracting leaching or dissolving, per se.
- 298** This subclass is indented under subclass 296. Processes wherein the system being crystallized is found in nature, i.e., naturally occurring brines containing a number of salts.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
303, for processes of crystallizing Na Cl from brines containing this compound as the principal recoverable constituent.
- 299** This subclass is indented under subclass 295. Processes combined with a step of physical extraction or dissolving, before or after crystallization.
- SEE OR SEARCH CLASS:  
423, Chemistry of Inorganic Compounds, appropriate subclasses for extracting, leaching or dissolving, per se.
- 300** This subclass is indented under subclass 295. Processes wherein a substance is added to affect or cause crystallization.
- (1) Note. This subclass includes salting out or addition of substances to control the size or shape of the crystals formed.
- 301** This subclass is indented under subclass 300. Processes wherein the added material is seed crystals.
- SEE OR SEARCH CLASS:  
29, Metal Working, subclass 25.35 for processes of manufacturing piezoelectric crystal devices which include crystallizing and additional manufacturing operations.
- 302** This subclass is indented under subclass 295. Processes in which the substance being crystallized is a compound of an alkali metal or ammonium.
- 303** This subclass is indented under subclass 302. Processes in which the substance being crystallized is sodium chloride.
- SEE OR SEARCH CLASS:  
423, Chemistry of Inorganic Compounds, subclass 179 and 499.1 for processes of producing sodium chloride involving a chemical reaction.
- 304** This subclass is indented under subclass 295. Processes in which the substance being crystallized is a compound of an alkaline earth metal or magnesium.
- 305** This subclass is indented under subclass 295. Processes in which the substance being crystallized is a compound of a heavy metal or aluminum.
- 306** This subclass is indented under subclass 293. Processes involving concentration of solutions of liquids in liquids not otherwise provided for.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
274+, for apparatus for concentrating liquids in liquids.
- SEE OR SEARCH CLASS:  
159, Concentrating Evaporators, for processes for concentrating solutions or suspensions of solids in liquids not more specifically provided for in other classes.  
202, Distillation: Apparatus, subclasses 152+ and 232+ for separatory distillation apparatus.  
203, Distillation: Processes, Separatory, subclasses 12+ for processes of distilling a liquid to separate only water.
- 307** This subclass is indented under subclass 304. Processes in which the liquid being concentrated is directly contacted with the concentrating medium (e.g., hot gases).
- SEE OR SEARCH CLASS:  
203, Distillation: Processes, Separatory, subclass 49 for convective distillation.

**308** This subclass is indented under subclass 293. **END**  
Processes drawn to or including as a significant step the melting out of fusible substances by heat.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

280, for melting separators.

SEE OR SEARCH CLASS:

554, Organic Compounds, subclass 23 for processes of rendering fats, fatty oils or fatty oil acids. See also the notes thereto.

**313** This subclass is indented under subclass 293. Processes directed to the preparation of agglomerates from finely divided solid nonmetallic elements or inorganic compounds by treatments which cause coalescence of the particles.

(1) Note. The types of treatments usually employed are mechanical agitation and liquid treatment where the liquid is not a binder.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 62.2+ for processes of particle uniting combined with laminating.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 5 for particle formation by liquid comminuting, particularly subclass 6, with uniting of said particles, and subclasses 109+ for processes of forming articles by uniting of particulate material.

419, Powder Metallurgy Processes, appropriate subclasses for processes of forming articles by uniting particulate material containing metal particle.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 222 for tumbling type agglomerating apparatus for particulate material.

**314** This subclass is indented under subclass 313. Processes wherein the material undergoing agglomeration is carbon.