B03 SEPARATION OF SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS; MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS (separating isotopes B01D 59/00; crushing or disintegrating B02C; centrifuges or vortex apparatus for carrying out physical processes B04) **[5]**

B03B SEPARATING SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS (removing fluids from solids B01D; magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields B03C; flotation, differential sedimentation B03D; separating by dry methods B07; screening or sifting B07B; by picking B07C; separating peculiar to particular materials and provided for in other single classes, see the relevant classes)

Subclass Index

1/00 Conditioning for facilitating separation by altering physical properties of the matter to be treated (pretreatment of ores in general C22B)

1/02 . Preparatory heating

1/04 . by additives

1/06 . by varying ambient atmospheric pressure

4/00 Separating by pneumatic tables or by pneumatic jigs (sink-float separation using dry heavy media B03B 5/46) **[2]**

4/02 . using swinging or shaking tables **[6]**

4/04 . using rotary tables or tables formed by travelling belts (separating solids from solids using gas currents and revolving drums B07B 4/06) **[6]**

4/06 . using fixed and inclined tables **[6]**

5/00 Washing granular, powdered or lumpy materials; Wet separating (separating by pneumatic tables or by pneumatic jigs B03B 4/00) **[2]**

5/02 . using shaken, pulsated or stirred beds as the principal means of separation (B03B 5/28, B03B 5/48 take precedence) **[2]**

5/04 . . on shaking tables (on vanners B03B 5/08) **[2]**

5/06 . . . Constructional details of shaking tables, e.g. riffling **[2]**

5/08 . . on vanners **[2]**

5/10 . . on jigs **[2]**

5/12 . . . using pulses generated mechanically in fluid **[2]**

5/14 . . . . Plunger jigs **[2]**

5/16 . . . . Diaphragm jigs **[2]**

5/18 . . . . Moving-sieve jigs **[2]**

5/20 . . . using pulses generated by air injection **[2]**

5/22 . . . using pulses generated by liquid injection **[2]**

5/24 . . . Constructional details of jigs, e.g. pulse control devices **[2]**

5/26 . . in sluices **[2]**

5/28 . by sink-float separation **[2]**

5/30 . . using heavy liquids or suspensions **[2]**

5/32 . . . using centrifugal force (centrifuges B04B; cyclones B04C) **[2]**

5/34 . . . . Applications of hydrocyclones **[2]**

5/36 . . . Devices therefor, other than using centrifugal force (jigs B03B 5/10) **[2]**

5/38 . . . . of conical receptacle type **[2]**

5/40 . . . . of trough type **[2]**

5/42 . . . . of drum or lifting wheel type **[2]**

5/44 . . . Application of particular media therefor **[2]**

5/46 . . using dry heavy media; Devices therefor **[2]**

5/48 . by mechanical classifiers (sink-float separation aspects B03B 5/28) **[2]**

5/50 . . Rake classifiers **[2]**

5/52 . . Spiral classifiers **[2]**

5/54 . . Drag classifiers **[2]**

5/56 . . Drum classifiers **[2]**

5/58 . . Bowl classifiers **[2]**

5/60 . by non-mechanical classifiers, e.g. slime tanks (using shaken, pulsated or stirred beds as the principal means of separation B03B 5/02; hydraulic classifiers B03B 5/62; water impulse classifiers B03B 5/68) **[2]**

5/62 . by hydraulic classifiers, e.g. of launder, tank, spiral or helical chute concentrator type **[2]**

5/64 . . of the free settling type **[2]**

5/66 . . of the hindered settling type **[2]**

5/68 . by water impulse (shaking tables B03B 5/04; jigs B03B 5/10; hydraulic classifiers B03B 5/62) **[2]**

5/70 . . on tables or strakes **[2]**

5/72 . . . which are movable **[2]**

5/74 . . . . Revolving tables **[2]**

7/00 Combinations of wet processes or apparatus with other processes or apparatus, e.g. for dressing ores or garbage

9/00 General arrangement of separating plant, e.g. flow sheets

9/02 . specially adapted for oil-sand, oil-chalk, oil-shales, ozokerite, bitumen, or the like

9/04 . specially adapted for furnace residues, smeltings, or foundry slags

9/06 . specially adapted for refuse

11/00 Feed or discharge devices integral with washing or wet-separating equipment (filling or emptying devices per se B65G 65/30)

13/00 **Control arrangements specially adapted for wet-separating apparatus or for dressing plant, using physical effects** (detecting, measuring, or analysing devices G01)

13/02 . using optical effects

13/04 . using electrical or electromagnetic effects

13/06 . using absorption or reflection of radioactive emanation

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B03C **MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS**; **SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS** (filters making use of electricity or magnetism B01D 35/06; separating isotopes B01D 59/00; combinations of magnetic or electrostatic separation with separation of solids by other means B03B, B07B; separating sheets from piles B65H 3/00; magnets or magnet coils per se H01F) **[5]**

1/00 **Magnetic separation**

1/005 . Pretreatment specially adapted for magnetic separation **[6]**

1/01 . . by addition of magnetic adjuvants **[6]**

1/015 . . by chemical treatment imparting magnetic properties to the material to be separated, e.g. roasting, reduction, oxidation **[6]**

1/02 . acting directly on the substance being separated **[5]**

1/021 . . Separation using Meissner effect, i.e. deflection of superconductive particles in a magnetic field **[6]**

1/023 . . Separation using Lorentz force, i.e. deflection of electrically charged particles in a magnetic field **[6]**

1/025 . . High gradient magnetic separators **[5]**

1/027 . . . with reciprocating canisters **[6]**

1/029 . . . with circulating matrix or matrix elements (matrix elements B03C 1/034) **[6]**

1/03 . . . . rotating, e.g. of the carousel type **[5,6]**

1/031 . . . Component parts; Auxiliary operations **[6]**

1/032 . . . . Matrix cleaning systems **[6]**

1/033 . . . . characterised by the magnetic circuit **[6]**

1/034 . . . . . characterised by the matrix elements **[6]**

1/035 . . Open gradient magnetic separators, i.e. separators in which the gap is unobstructed, characterised by the configuration of the gap **[5]**

1/0355 . . . using superconductive coils **[6]**

1/04 . . with the material carriers in the form of trays or with tables

1/06 . . . with magnets moving during operation

1/08 . . . with non-movable magnets

1/10 . . with cylindrical material carriers (B03C 1/247 takes precedence) **[6]**

1/12 . . . with magnets moving during operation; with movable pole pieces

1/14 . . . with non-movable magnets

1/16 . . with material carriers in the form of belts

1/18 . . . with magnets moving during operation

1/20 . . . . in the form of belts, e.g. cross-belt type

1/22 . . . with non-movable magnets

1/23 . . with material carried by oscillating fields; with material carried by travelling fields, e.g. generated by stationary magnetic coils; Eddy-current separators, e.g. sliding ramp **[5]**

1/24 . . . with material carried by travelling fields **[5]**

1/247 . . . . obtained by a rotating magnetic drum **[6]**

1/253 . . . . obtained by a linear motor **[6]**

1/26 . . with free falling material (B03C 1/035 takes precedence) **[5]**

1/28 . . Magnetic plugs and dipsticks

1/30 . . Combinations with other devices, not otherwise provided for

1/32 . acting on the medium containing the substance being separated, e.g. magneto-gravimetric-, magnetohydrostatic-, or magnetohydrodynamic separation **[5]**

3/00 **Separating dispersed particles from gases or vapour, e.g. air, by electrostatic effect** (exhaust or silencing apparatus for machines or engines having means for removing solid constituents of exhaust, using electric or electrostatic separators F01N 3/01)

3/01 . Pretreatment of the gases prior to electrostatic precipitation

3/011 . . Prefiltering; Flow controlling **[6]**

3/013 . . Conditioning by chemical additives, e.g. with SO_3 **[6]**

3/014 . . Addition of water; Heat exchange, e.g. by condensation **[6]**

3/016 . . by acoustic or electromagnetic energy, e.g. ultra-violet light **[6]**

3/017 . Combinations of electrostatic separation with other processes, not otherwise provided for **[6]**

3/019 . Post-treatment of gases **[6]**

3/02 . Plant or installations having external electricity supply (electrode constructions B03C 3/40)

3/04 . . dry type

3/06 . . . characterised by presence of stationary tube electrodes

3/08 . . . characterised by presence of stationary flat electrodes arranged with their flat surfaces parallel to the gas stream

3/09 . . . characterised by presence of stationary flat electrodes arranged with their flat surfaces at right angles to the gas stream

3/10 . . . characterised by presence of electrodes moving during separating action

3/12 . . . characterised by separation of ionising and collecting stations

3/14 . . . characterised by the additional use of mechanical effects, e.g. gravity (B03C 3/32 takes precedence)

3/145 . . . . Inertia **[6]**

3/15 . . . . Centrifugal forces **[6]**

3/155 . . . . Filtration **[6]**

3/16 . . wet type

3/28 . Plant or installations without electricity supply, e.g. using electrets

3/30 . . in which electrostatic charge is generated by passage of the gases, i.e. tribo-electricity

3/32 . Transportable units, e.g. for cleaning room air (room air-conditioners having an electrostatic separating stage F24F)

3/34 . Constructional details or accessories or operation thereof
3/36 . . Controlling flow of gases or vapour
3/38 . . Particle charging or ionising stations, e.g. using electric discharge, radioactive radiation, flames (electrode constructions B03C 3/40; ionising gases H05H)
3/40 . . Electrode constructions
3/41 . . . Ionising-electrodes
3/43 . . . . radioactive
3/45 . . . Collecting-electrodes
3/47 . . . . flat, e.g. plates, discs, gratings
3/49 . . . . tubular
3/51 . . . . Catch-space electrodes, e.g. slotted-box form
3/53 . . . . Liquid, or liquid-film, electrodes
3/60 . . . Use of special materials other than liquids
3/62 . . . . ceramics
3/64 . . . . synthetic resins
3/66 . . Applications of electricity supply techniques
3/68 . . . Control systems therefor
3/70 . . . insulating in electric separators (B03C 3/53 takes precedence)
3/72 . . Emergency control systems
3/74 . . Cleaning the electrodes
3/76 . . . by using a mechanical vibrator, e.g. rapping gear
3/78 . . . by washing
3/80 . . . by gas or solid particle blasting
3/82 . . Housings
3/84 . . . Protective coatings
3/86 . . Electrode-carrying means (B03C 3/40 takes precedence)
3/88 . . Cleaning-out collected particles

5/00 **Separating dispersed particles from liquids by electrostatic effect** (combined with centrifuges B04B 5/10) **[2]**
5/02 . Separators

7/00 **Separating solids from solids by electrostatic effect**
7/02 . Separators
7/04 . . with material carriers in the form of trays, troughs, or tables
7/06 . . with cylindrical material carriers
7/08 . . with material carriers in the form of belts
7/10 . . with material falling in cascades
7/12 . . with material falling free

9/00 **Electrostatic separation not provided for in any single one of the other main groups of this subclass**

11/00 **Separation by high-voltage electrical fields, not provided for in other groups of this subclass [8]**

B03D **FLOTATION**; **DIFFERENTIAL SEDIMENTATION** (sedimentation in general B01D 21/00; in combination with other separation of solids B03B; sink-float separation B03B 5/28; detergents, soaps C11D)

1/00 **Flotation** (conditioning for flotation, general arrangement of plant B03B)
1/001 . Flotation agents (conditioners B03B 1/00) **[5]**

Note

In this group in the absence of an indication to the contrary, classification is made in the last appropriate place. **[5]**

Note

In this group, it is desirable to add the appropriate indexing code(s) from each of groups B03D 101/00 or B03D 103/00. **[5]**

1/002 . . Inorganic compounds **[5]**
1/004 . . Organic compounds **[5]**
1/006 . . . Hydrocarbons **[5]**
1/008 . . . containing oxygen **[5]**
1/01 . . . containing nitrogen **[5]**
1/012 . . . containing sulfur **[5]**
1/014 . . . containing phosphorus **[5]**
1/016 . . . Macromolecular compounds **[5]**
1/018 . . Mixtures of inorganic and organic compounds **[5]**
1/02 . Froth-flotation processes
1/04 . . by varying ambient atmospheric pressure
1/06 . . differential
1/08 . Subsequent treatment of concentrated product (froth dispersion B01D 19/02)
1/10 . . Removing adhering liquid from separated materials (processes or devices capable of general use B01D)
1/12 . Agent recovery
1/14 . Flotation machines (devices for feeding measured quantities of reagents B01J 4/02; flotation apparatus for enzymology or microbiology C12M 1/09)
1/16 . . with impellers; Subaeration machines
1/18 . . . without air supply
1/20 . . . with internal air pumps
1/22 . . . with external blowers
1/24 . . pneumatic
1/26 . . . Air lift machines

3/00 **Differential sedimentation**
3/02 . Coagulation
3/04 . . assisted by vibrations
3/06 . Flocculation

Indexing scheme associated with group B03D 1/001, relating to the effects produced and the materials treated. [5]

101/00 **Specified effects produced by the flotation agents [5]**
101/02 . Collectors **[5]**
101/04 . Frothers **[5]**
101/06 . Depressants **[5]**

103/00 **Specified materials treated by the flotation agents [5]**
103/02 . Ores **[5]**
103/04 . . Non-sulfide ores **[5]**
103/06 . . . Phosphate ores **[5]**
103/08 . . . Coal ores **[5]**
103/10 . . . Potassium ores **[5]**