

SECTION B — PERFORMING OPERATIONS; TRANSPORTING

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

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

PRETREATMENT.....	1/00
WASHING, WET SEPARATING, SEPARATING BY PNEUMATIC JIGS; FEEDING AND DISCHARGING PRODUCTS TREATED THEREBY.....	4/00, 5/00, 11/00
COMBINATIONS OF PROCESSES OR APPARATUS.....	7/00
ARRANGEMENTS OF PLANT.....	9/00
CONTROL BY PHYSICAL EFFECTS.....	13/00

1/00	Conditioning for facilitating separation by altering physical properties of the matter to be treated (pretreatment of ores in general C22B)	5/30	• • using heavy liquids or suspensions [2]
1/02	• Preparatory heating	5/32	• • • using centrifugal force (centrifuges B04B; cyclones B04C) [2]
1/04	• by additives	5/34	• • • • Applications of hydrocyclones [2]
1/06	• by varying ambient atmospheric pressure	5/36	• • • Devices therefor, other than using centrifugal force (jigs B03B 5/10) [2]
4/00	Separating by pneumatic tables or by pneumatic jigs (sink-float separation using dry heavy media B03B 5/46) [2]	5/38	• • • • of conical receptacle type [2]
4/02	• using swinging or shaking tables [6]	5/40	• • • • of trough type [2]
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]	5/42	• • • • of drum or lifting wheel type [2]
4/06	• using fixed and inclined tables [6]	5/44	• • • Application of particular media therefor [2]
5/00	Washing granular, powdered or lumpy materials; Wet separating (separating by pneumatic tables or by pneumatic jigs B03B 4/00) [2]	5/46	• • using dry heavy media; Devices therefor [2]
5/02	• using shaken, pulsated or stirred beds as the principal means of separation (B03B 5/28, B03B 5/48 take precedence) [2]	5/48	• by mechanical classifiers (sink-float separation aspects B03B 5/28) [2]
5/04	• • on shaking tables (on vanners B03B 5/08) [2]	5/50	• • Rake classifiers [2]
5/06	• • • Constructional details of shaking tables, e.g. riffling [2]	5/52	• • Spiral classifiers [2]
5/08	• • on vanners [2]	5/54	• • Drag classifiers [2]
5/10	• • on jigs [2]	5/56	• • Drum classifiers [2]
5/12	• • • using pulses generated mechanically in fluid [2]	5/58	• • Bowl classifiers [2]
5/14	• • • • Plunger jigs [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]
5/16	• • • • Diaphragm jigs [2]	5/62	• by hydraulic classifiers, e.g. of launder, tank, spiral or helical chute concentrator type [2]
5/18	• • • • Moving-sieve jigs [2]	5/64	• • of the free settling type [2]
5/20	• • • using pulses generated by air injection [2]	5/66	• • of the hindered settling type [2]
5/22	• • • using pulses generated by liquid injection [2]	5/68	• by water impulse (shaking tables B03B 5/04; jigs B03B 5/10; hydraulic classifiers B03B 5/62) [2]
5/24	• • • Constructional details of jigs, e.g. pulse control devices [2]	5/70	• • on tables or strakes [2]
5/26	• • in sluices [2]	5/72	• • • which are movable [2]
5/28	• by sink-float separation [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

B03B

- 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

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 SO₃ [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 [2006.01]**

B03D FLOTATION; DIFFERENTIAL SEDIMENTATION (in combination with other separation of solids B03B; sink-float separation B03B 5/28)

- 1/00 Flotation**
- 1/001 • Flotation agents [5]
- Note(s)**
- 1. In this group in the absence of an indication to the contrary, classification is made in the last appropriate place.
- 2. In this group, it is desirable to add the appropriate indexing code(s) from each of groups B03D 101/00 or B03D 103/00.
- 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
- 1/10 • • Removing adhering liquid from separated materials
- 1/12 • Agent recovery
- 1/14 • Flotation machines (devices for feeding measured quantities of reagents B01J 4/02)

- 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]