

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

PRETREATMENT.....	1/00	COMBINATIONS OF PROCESSES OR APPARATUS.....	7/00
WASHING, WET SEPARATING, SEPARATING BY PNEUMATIC JIGS; FEEDING AND DISCHARGING PRODUCTS TREATED THEREBY	4/00, 5/00; 11/00	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)	5/40	. . . . of trough type [2]
1/02 . Preparatory heating	5/42	. . . . of drum or lifting wheel type [2]
1/04 . by additives	5/44	. . . Application of particular media therefor [2]
1/06 . by varying ambient atmospheric pressure	5/46	. . using dry heavy media; Devices therefor [2]
	5/48	. by mechanical classifiers (sink-float separation aspects B03B 5/28) [2]
4/00 Separating by pneumatic tables or by pneumatic jigs (sink-float separation using dry heavy media B03B 5/46) [2]	5/50	. . Rake classifiers [2]
4/02 . using swinging or shaking tables [6]	5/52	. . Spiral classifiers [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]	5/54	. . Drag classifiers [2]
	5/56	. . Drum classifiers [2]
4/06 . using fixed and inclined tables [6]	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]
5/00 Washing granular, powdered or lumpy materials; Wet separating (separating by pneumatic tables or by pneumatic jigs B03B 4/00) [2]	5/62	. by hydraulic classifiers, e.g. of launder, tank, spiral or helical chute concentrator type [2]
5/02 . using shaken, pulsated or stirred beds as the principal means of separation (B03B 5/28, B03B 5/48 take precedence) [2]	5/64	. . of the free settling type [2]
5/04 . . on shaking tables (on vanners B03B 5/08) [2]	5/66	. . of the hindered settling type [2]
5/06 . . . Constructional details of shaking tables, e.g. riffling [2]	5/68	. by water impulse (shaking tables B03B 5/04; jigs B03B 5/10; hydraulic classifiers B03B 5/62) [2]
5/08 . . on vanners [2]	5/70	. . on tables or strakes [2]
5/10 . . on jigs [2]	5/72	. . . which are movable [2]
5/12 . . . using pulses generated mechanically in fluid [2]	5/74	. . . . Revolving tables [2]
5/14 Plunger jigs [2]	7/00	Combinations of wet processes or apparatus with other processes or apparatus, e.g. for dressing ores or garbage
5/16 Diaphragm jigs [2]	9/00	General arrangement of separating plant, e.g. flow sheets
5/18 Moving-sieve jigs [2]	9/02	. specially adapted for oil-sand, oil-chalk, oil-shales, ozokerite, bitumen, or the like
5/20 . . . using pulses generated by air injection [2]	9/04	. specially adapted for furnace residues, smeltings, or foundry slags
5/22 . . . using pulses generated by liquid injection [2]	9/06	. specially adapted for refuse
5/24 . . . Constructional details of jigs, e.g. pulse control devices [2]	11/00	Feed or discharge devices integral with washing or wet-separating equipment (filling or emptying devices <u>per se</u> B65G 65/30)
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]		

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	3/78	. . . by washing
3/36	. . . Controlling flow of gases or vapour	3/80	. . . by gas or solid particle blasting
3/38	. . . Particle charging or ionising stations, e.g. using electric discharge, radioactive radiation, flames (electrode constructions B03C 3/40; ionising gases H05H)	3/82	. . . Housings
3/40	. . . Electrode constructions	3/84	. . . Protective coatings
3/41	. . . . Ionising-electrodes	3/86	. . . Electrode-carrying means (B03C 3/40 takes precedence)
3/43	. . . . radioactive	3/88	. . . Cleaning-out collected particles
3/45	. . . . Collecting-electrodes	5/00	Separating dispersed particles from liquids by electrostatic effect (combined with centrifuges B04B 5/10) [2]
3/47	. . . . flat, e.g. plates, discs, gratings	5/02	. Separators
3/49	. . . . tubular	7/00	Separating solids from solids by electrostatic effect
3/51	. . . . Catch-space electrodes, e.g. slotted-box form	7/02	. Separators
3/53	. . . . Liquid, or liquid-film, electrodes	7/04	. . with material carriers in the form of trays, troughs, or tables
3/60	. . . . Use of special materials other than liquids	7/06	. . with cylindrical material carriers
3/62	. . . . ceramics	7/08	. . with material carriers in the form of belts
3/64	. . . . synthetic resins	7/10	. . with material falling in cascades
3/66	. . . Applications of electricity supply techniques	7/12	. . with material falling free
3/68	. . . Control systems therefor	9/00	Electrostatic separation not provided for in any single one of the other main groups of this subclass
3/70	. . . insulating in electric separators (B03C 3/53 takes precedence)	11/00	Separation by high-voltage electrical fields, not provided for in other groups of this subclass [8]
3/72	. . . Emergency control systems		
3/74	. . . Cleaning the electrodes		
3/76	. . . by using a mechanical vibrator, e.g. rapping gear		

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)	1/12	. Agent recovery
1/001	. Flotation agents (conditioners B03B 1/00) [5]	1/14	. Flotation machines (devices for feeding measured quantities of reagents B01J 4/02; flotation apparatus for enzymology or microbiology C12M 1/09)
Note	In this group in the absence of an indication to the contrary, classification is made in the last appropriate place. [5]	1/16	. . with impellers; Subaeration machines
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]	1/18	. . . without air supply
1/002	. . Inorganic compounds [5]	1/20	. . . with internal air pumps
1/004	. . Organic compounds [5]	1/22	. . . with external blowers
1/006	. . . Hydrocarbons [5]	1/24	. . pneumatic
1/008	. . . containing oxygen [5]	1/26	. . . Air lift machines
1/01	. . . containing nitrogen [5]	3/00	Differential sedimentation
1/012	. . . containing sulfur [5]	3/02	. Coagulation
1/014	. . . containing phosphorus [5]	3/04	. . assisted by vibrations
1/016	. . . Macromolecular compounds [5]	3/06	. Flocculation
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)		

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]