

CPC**COOPERATIVE PATENT CLASSIFICATION****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](#))

WARNING

The following groups are not complete: [B03D 1/02 C](#), see also [B03D 1/02 B03D 1/02 F](#), see also [B03D 1/02 B03D 1/02 L](#), see also [B03D 1/02 B03D 1/02 R](#), see also [B03D 1/02 B03D 1/08 D](#), see also [B03D 1/08 B03D 1/08 F](#), see also [B03D 1/08 B03D 1/08 T](#), see also [B03D 1/08 B03D 1/14 A](#), see also [B03D 1/14 B03D 1/14 F](#), see also [B03D 1/14 B03D 1/145](#), see also [B03D 1/14 B03D 1/1456](#), see also [B03D 1/14 B03D 1/1462](#), see also [B03D 1/14 B03D 1/1468](#), see also [B03D 1/14 B03D 1/1475](#), see also [B03D 1/14 B03D 1/14 M](#), see also [B03D 1/14 B03D 1/14 S](#), see also [B03D 1/14 B03D 1/24 N](#), see also [B03D 1/24 B03D 1/24 R](#), see also [B03D 1/24](#)]

Guidance heading:**B03D 1/00**

Flotation ([conditioning for flotation, general arrangement of plan B03B](#))

NOTE

In groups [B03D 1/001](#) to [B03D 1/018](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.

- [B03D 1/001](#) . Flotation agents ([conditioners B03B 1/00](#))
- [B03D 1/002](#) .. Inorganic compounds
- [B03D 1/004](#) .. Organic compounds
- [B03D 1/0043](#) ... { modified so as to contain a polyether group }
- [B03D 1/0046](#) ... { containing silicon }
- [B03D 1/006](#) ... Hydrocarbons
- [B03D 1/008](#) ... containing oxygen
- [B03D 1/01](#) ... containing nitrogen
- [B03D 1/011](#) { Quaternary ammonium compounds }
- [B03D 1/012](#) ... containing sulfur
- [B03D 1/014](#) ... containing phosphorus
- [B03D 1/016](#) ... Macromolecular compounds
- [B03D 1/018](#) .. Mixtures of inorganic and organic compounds
- [B03D 1/02](#) . Froth-flotation processes
- [B03D 1/021](#) .. { for treatment of phosphate ores }
- [B03D 1/023](#) .. { Carrier flotation; Flotation of a carrier material to which the target material attaches }
- [B03D 1/025](#) .. { adapted for the flotation of fines }

- B03D 1/026 .. { Using an immiscible liquid in place of a gas for flotation }
- B03D 1/028 .. { Control and monitoring of flotation processes; computer models therefor }
- B03D 1/04 .. by varying ambient atmospheric pressure
- B03D 1/06 .. differential

- B03D 1/08 . Subsequent treatment of concentrated product (froth dispersion [B01D 19/02](#))
- B03D 1/082 .. { of the froth product, e.g. washing }
- B03D 1/085 .. { of the feed, e.g. conditioning, de-sliming }
- B03D 1/087 .. { of the sediment, e.g. regrinding }
- B03D 1/10 .. Removing adhering liquid from separated materials (processes or devices capable of general use [B01D](#))

- B03D 1/12 . Agent recovery

- B03D 1/14 . Flotation machines (devices for feeding measured quantities of reagents [B01J 4/02](#) ; flotation apparatus for enzymology or microbiology [C12M 1/09](#))
- B03D 1/1406 .. { with special arrangement of a plurality of flotation cells, e.g. positioning a flotation cell inside another }
- B03D 1/1412 .. { with baffles, e.g. at the wall for redirecting settling solids }
- B03D 1/1418 .. { using centrifugal forces }
- B03D 1/1425 ... { air-sparged hydrocyclones }
- B03D 1/1431 .. { Dissolved air flotation machines }
- B03D 1/1437 .. { using electroflotation (waste water treatment using electroflotation [C02F 1/465](#)) }
- B03D 1/1443 .. { Feed or discharge mechanisms for flotation tanks }
- B03D 1/145 ... { Feed mechanisms for reagents (devices for feeding measured quantities of reagents [B01J 4/02](#)) }
- B03D 1/1456 ... { Feed mechanisms for the slurry }
- B03D 1/1462 ... { Discharge mechanisms for the froth }
- B03D 1/1468 ... { Discharge mechanisms for the sediments }
- B03D 1/1475 ... { Flotation tanks having means for discharging the pulp, e.g. as a bleed stream }
- B03D 1/1481 .. { with a plurality of parallel plates }
- B03D 1/1487 .. { Means for cleaning or maintenance }
- B03D 1/1493 .. { with means for establishing a specified flow pattern }
- B03D 1/16 .. with impellers ; Subaeration machines { (mixing gases or vapours with liquids [B01F 3/04](#)) }
- B03D 1/18 ... without air supply
- B03D 1/20 ... with internal air pumps
- B03D 1/22 ... with external blowers
- B03D 1/24 .. Pneumatic { (mixing gases or vapours with liquids [B01F 3/04](#)) }
- B03D 1/242 ... { Nozzles for injecting gas into the flotation tank }
- B03D 1/245 ... { Injecting gas through perforated or porous area }
- B03D 1/247 ... { Mixing gas and slurry in a device separate from the flotation tank, i.e. reactor-separator type }
- B03D 1/26 ... Air lift machines

B03D 3/00 Differential sedimentation

- B03D 3/02 . Coagulation
- B03D 3/04 . . assisted by vibrations
- B03D 3/06 . Flocculation

Guidance heading:

B03D 2201/00 **Specified effects produced by the flotation agents** (use of substances as emulsifying, wetting, dispersing or foam-producing agents [B01F 17/00](#))

- B03D 2201/002 . Coagulants and Flocculants
- B03D 2201/005 . Dispersants
- B03D 2201/007 . Modifying reagents for adjusting pH or conductivity
- B03D 2201/02 . Collectors
- B03D 2201/04 . Frothers
- B03D 2201/06 . Depressants

Guidance heading:

B03D 2203/00 **Specified materials treated by the flotation agents ; specified applications** (paper pulp processing [D21F 1/70](#) , de-inking of paper pulp [D21B 1/325](#))

- B03D 2203/001 . Agricultural products, food, biogas, algae
- B03D 2203/003 . Biotechnological applications, e.g. separation or purification of enzymes, hormones, vitamins, viruses
- B03D 2203/005 . Fine and commodity chemicals
- B03D 2203/006 . Oil well fluids, oil sands, bitumen
- B03D 2203/008 . Water purification, e.g. for process water recycling (waste water treatment [C02F 1/24](#))
- B03D 2203/02 . Ores
- B03D 2203/025 . . Precious metal ores
- B03D 2203/04 . . Non-sulfide ores
- B03D 2203/06 . . . Phosphate ores
- B03D 2203/08 . . . Coal ores, fly ash or soot
- B03D 2203/10 . . . Potassium ores