

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### SEPARATING; MIXING

## 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

## 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

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

<b>1/00</b>	<b>Flotation</b> (conditioning for flotation, general arrangement of plan <a href="#">B03B</a> )	1/082	. . {of the froth product, e.g. washing}
1/001	. Flotation agents (conditioners <a href="#">B03B 1/00</a> )	1/085	. . {of the feed, e.g. conditioning, de-sliming}
	<b>NOTES</b>	1/087	. . {of the sediment, e.g. regrinding}
	1. In this group, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.	1/10	. . Removing adhering liquid from separated materials (processes or devices capable of general use <a href="#">B01D</a> )
	2. In this group, it is desirable to add the appropriate indexing code(s) from each of groups <a href="#">B03D 2201/00</a> or <a href="#">B03D 2203/00</a> .	1/12	. Agent recovery
1/002	. . Inorganic compounds	1/14	. Flotation machines (devices for feeding measured quantities of reagents <a href="#">B01J 4/02</a> ; flotation apparatus for enzymology or microbiology <a href="#">C12M 1/09</a> )
1/004	. . Organic compounds	1/1406	. . {with special arrangement of a plurality of flotation cells, e.g. positioning a flotation cell inside another}
1/0043	. . . {modified so as to contain a polyether group}	1/1412	. . {with baffles, e.g. at the wall for redirecting settling solids}
1/0046	. . . {containing silicon}	1/1418	. . {using centrifugal forces}
1/006	. . . Hydrocarbons	1/1425	. . . {air-sparged hydrocyclones}
1/008	. . . containing oxygen	1/1431	. . {Dissolved air flotation machines}
1/01	. . . containing nitrogen	1/1437	. . {using electroflotation (waste water treatment using electroflotation <a href="#">C02F 1/465</a> )}
1/011	. . . . {Quaternary ammonium compounds}	1/1443	. . {Feed or discharge mechanisms for flotation tanks}
1/012	. . . containing sulfur	1/145	. . . {Feed mechanisms for reagents (devices for feeding measured quantities of reagents <a href="#">B01J 4/02</a> )}
1/014	. . . containing phosphorus	1/1456	. . . {Feed mechanisms for the slurry}
1/016	. . . Macromolecular compounds	1/1462	. . . {Discharge mechanisms for the froth}
1/018	. . Mixtures of inorganic and organic compounds	1/1468	. . . {Discharge mechanisms for the sediments}
1/02	. Froth-flotation processes	1/1475	. . . {Flotation tanks having means for discharging the pulp, e.g. as a bleed stream}
1/021	. . {for treatment of phosphate ores}	1/1481	. . {with a plurality of parallel plates}
1/023	. . {Carrier flotation; Flotation of a carrier material to which the target material attaches}	1/1487	. . {Means for cleaning or maintenance}
1/025	. . {adapted for the flotation of fines}	1/1493	. . {with means for establishing a specified flow pattern}
1/026	. . {Using an immiscible liquid in place of a gas for flotation}	1/16	. . with impellers; Subaeration machines {(mixing gases or vapours with liquids <a href="#">B01F 23/20</a> )}
1/028	. . {Control and monitoring of flotation processes; computer models therefor}	1/18	. . . without air supply
1/04	. . by varying ambient atmospheric pressure	1/20	. . . with internal air pumps
1/06	. . differential	1/22	. . . with external blowers
1/08	. Subsequent treatment of concentrated product (froth dispersion <a href="#">B01D 19/02</a> )		

- 1/24 . . Pneumatic {[\(mixing gases or vapours with liquids B01F 23/20\)](#)}
- 1/242 . . . {Nozzles for injecting gas into the flotation tank}
- 1/245 . . . {Injecting gas through perforated or porous area}
- 1/247 . . . {Mixing gas and slurry in a device separate from the flotation tank, i.e. reactor-separator type}
- 1/26 . . . Air lift machines

### **3/00 Differential sedimentation**

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

### **2201/00 Specified effects produced by the flotation agents** ([use of substances as emulsifying, wetting, dispersing or foam-producing agents C09K 23/00](#))

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

### **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](#))

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