

B03B

SEPARATING SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS

Definition statement

This place covers:

Apparatus for separating or classifying or washing granular powdered or lumpy solid materials of different physical properties such as size, shape or specific gravity.

Relationships with other classification places

Separation of isotopes of the same chemical element is covered by [B01D 59/00](#) regardless of the process or apparatus that is used.

Crushing or disintegrating is covered by [B02C](#).

Centrifuges or vortex apparatus for carrying out physical processes are covered by [B04B](#) and [B04C](#).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Separation in general | B01D |
| Separation of suspended solid particles from liquids by sedimentation | B01D 21/00 |
| Magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields | B03C |
| Flotation or differential sedimentation | B03D |
| Separating by dry methods | B07 |
| Screening or sifting | B07B |
| Selective separation of solid materials carried by or dispersed in gas currents, using centrifugal force | B07B 7/08 |
| Separating by picking | B07C |
| Recovery of plastics or other constituents of waste material containing plastics; Separating plastics from other materials | B29B 17/02 |

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

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|--------|---|
| Jig | An apparatus for cleaning or separating solid particles (ore, coal etc.) by agitation in a fluid, e.g. water, where the layer or bed of particles are supported on a perforated plate or screen is subjected to an alternating rising and falling (pulsating) flow of the fluid |
| Vanner | An apparatus for cleaning or separating solid particles (ore, coal etc.) by an inclined belt |
| Sluice | An apparatus for cleaning or separating solid particles (ore, coal etc.) by an inclined trough with riffles at the bottom to retain the heavy minerals |

| | |
|-------------|---|
| Strake | An apparatus for cleaning or separating solid particles (ore, coal etc.) by a finely riffled sluice in which fabrics or corrugated rubber forms pockets to trap heavy mineral |
| Heavy media | Liquids or suspensions of particles in water used for sink-float separation |

B03B 1/00

Conditioning for facilitating separation by altering physical properties of the matter to be treated

Definition statement

This place covers:

Pre-treatment, like heating, cooling, exposing to radiation, adding additives, varying physical properties, of the material prior to physical separation carried out by methods and devices of this subclass.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Pre-treatment prior to magnetic separation | B03C 1/00 |
| Pre-treatment prior to flotation | B03D |
| Pre-treatment of ores in general | C22B |

B03B 4/00

Separating by pneumatic tables or by pneumatic jigs

Definition statement

This place covers:

Separating or classifying materials on stationary, swinging, shaking, rotary or belt-like tables and using a continuous or pulsating gas current.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Sink-float separation using dry heavy media | B03B 5/46 |
| Separating solids from solids by subjecting their mixture to gas currents while the mixtures are supported by sieves, screens, or like mechanical elements and material is passing through the sieve, screen or the like | B07B 4/08 |

B03B 4/04

using rotary tables or tables formed by travelling belts

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Separating solids from solids using gas currents and revolving drums | B07B 4/06 |
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B03B 5/00

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

Definition statement

This place covers:

Washing in order to separate fine particles, especially organic particles from coarse particles. Apparatus for classifying solids by wet methods.

References**Limiting references**

This place does not cover:

| | |
|---|---------------------------|
| Separating by pneumatic tables or by pneumatic jigs | B03B 4/00 |
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Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|------------------------------|
| Separation of suspended solid particles from liquids by sedimentation | B01D 21/00 |
| Flotation | B03D |
| Dry helical separators | B07B 13/11 |
| Sewerage structures; Devices for separating liquid or solid substances from sewage, e.g. sand or sludge traps, rakes or grates | E03F 5/14 |
| Investigating or analysing materials by separation into components; Field flow fractionation | G01N 30/0005 |

B03B 5/32

using centrifugal force

Definition statement

This place covers:

Apparatus and methods using centrifugal force for separation, e.g. by utilizing centrifuges or hydrocyclones (cf. [B03B 5/34](#)), not necessarily using special heavy liquids or suspensions.

Relationships with other classification places

Documents with special technical features relating to a centrifuge are additionally classified in [B04B](#). Documents with special technical features relating to a hydrocyclone are additionally classified in [B04C](#).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Separation of suspended solid particles from liquids by sedimentation; Separation of sediment aided by centrifugal force | B01D 21/26 |
| Centrifuges | B04B |
| Cyclones | B04C |

Special rules of classification

In all subgroups below [B03B 5/30](#) (using heavy liquids or suspensions) the liquid for separation is not necessarily a heavy liquid or suspension, but a liquid with a specific gravity (maybe water), suitable to carry out the envisaged sink-float separation.

B03B 5/36

Devices therefor, other than using centrifugal force

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|------|---------------------------|
| Jigs | B03B 5/10 |
|------|---------------------------|

B03B 5/48

by mechanical classifiers

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|-------------------------------|---------------------------|
| Sink-float separation aspects | B03B 5/28 |
|-------------------------------|---------------------------|

B03B 5/60

by non-mechanical classifiers, e.g. slime tanks (hydraulic classifiers [B03B 5/62](#); water impulse classifiers [B03B 5/68](#))

References

Limiting references

This place does not cover:

| | |
|-----------------------|---------------------------|
| Hydraulic classifiers | B03B 5/62 |
|-----------------------|---------------------------|

| | |
|---------------------------|---------------------------|
| Water impulse classifiers | B03B 5/68 |
|---------------------------|---------------------------|

Informative references

Attention is drawn to the following places, which may be of interest for search:

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|---|---------------------------|
| Using shaken, pulsated or stirred beds as the principal means of separation | B03B 5/02 |
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B03B 5/623

{Upward current classifiers}

Definition statement

This place covers:

Hydraulic classifiers where the hindered settling is accomplished by an upwardly directed fluid flow.

B03B 5/68

by water impulse (hydraulic classifiers [B03B 5/62](#))

References

Limiting references

This place does not cover:

| | |
|-----------------------|---------------------------|
| Hydraulic classifiers | B03B 5/62 |
|-----------------------|---------------------------|

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|----------------|---------------------------|
| Shaking tables | B03B 5/04 |
| Jigs | B03B 5/10 |

B03B 7/00

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

Definition statement

This place covers:

Wet processes or apparatus in combination with other types of separating processes or apparatus, particularly for dressing/processing ores/minerals, mainly mechanical treatment of crude ores to separate and concentrate the valuable constituents.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|---|---|
| Combinations of wet solid separating processes comprising a specific separating process | B03B 9/005 - B03B 9/065 |
| Pre-treatment of ores in general | C22B |

B03B 9/00

General arrangement of separating plant, e.g. flow sheets

Definition statement

This place covers:

Plants with or without flow sheet involving different, more than one, apparatus for separating, screening, classifying, crushing, etc., not necessarily of the wet or pneumatic table type, specially adapted for the materials specified in the sub-groups. If there are multiple separation techniques involved, the classification occurs also in the subgroups for the specific separation technique (e.g. in [B03B 5/18](#) if a moving-sieve jig is involved and if special technical features of this device are claimed).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Destroying solid waste or transforming solid waste or contaminated solids into something useful or harmless | B09B 3/00 |
| Reclamation of contaminated soil | B09C 1/00 |
| Recovery of plastics or other constituents of waste material containing plastics; Separating plastics from other materials | B29B 17/02 |
| Fertilisers from household or town refuse | C05F 9/00 |
| Preparation of fertilisers characterised by the composting step | C05F 17/00 |
| Production of liquid hydrocarbon mixtures from oil-shale, oil-sand, or non-melting solid carbonaceous or similar materials, e.g. wood, coal by extraction | C10G 1/04 |
| Solid fuels | C10L 5/00 |
| Solid fuels essentially based on materials of non-mineral origin on sewage, house, or town refuse | C10L 5/46 |
| Working up raw materials other than ores, e.g. scrap, to produce non-ferrous metals and compounds thereof | C22B 7/00 |
| Incineration of waste | F23G 5/00 |
| Apparatus or processes specially adapted to the manufacture, installation, removal, maintenance of electric discharge tubes, discharge lamps, or parts thereof; Recovery of material from discharge tubes or lamps | H01J 9/52 |

B03B 11/00**Feed or discharge devices integral with washing or wet-separating equipment****Definition statement**

This place covers:

All kinds of feeding and discharging arrangements, like rotary feeder, scraper, screw or lifting wheel discharger for washing or wet separating apparatus.

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| | |
|------------------------------------|----------------------------|
| Filling or emptying devices per se | B65G 65/30 |
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B03B 13/00**Control arrangements specially adapted for wet-separating apparatus or for dressing plant, using physical effects****Definition statement**

This place covers:

Control arrangements adapted for flotation plants as classified in [B03D](#).

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Sorting according to a characteristic or feature of the articles of material being sorted, e.g. by control effected by devices which detect or measure such characteristic or feature; Sorting by manually actuated devices, e.g. switches | B07C 5/00 |
| Detecting, measuring, or analysing devices | G01 |
| Control devices in general | G05 |