

# 1 Dressing of ores, fuels and other minerals, refuse, slag and ash

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**1a Dressing, except magnetic, electric and flotation dressing**

**1b Magnetic and electric dressing**

**1c Dressing by flotation, differential sedimentation**

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**1a Dressing, except magnetic, electric (1b) and flotation dressing (1c)**  
(processing of peat 10c, 55a; crushing devices 50c; preparation of moulding sand 31c-6/01 – 31c-6/08; refining of clay 80a, 80b)

**Wet mechanical dressing**

1a-1 Piston settling jigs with fixed settling screens

1a-2 Percussion jigs

1a-3 Other settling jigs, also revolving and round settling jigs as well as settling jigs with motion of settling water checked by a controlled compressed-air or water jet

1a-4 Equipment on screen-settling jigs, also screen design, feeding and removal of settled concentrates, drive, and stroke control

1a-5 Water-jet apparatus with chutes and pipes for guiding the horizontal or inclined flushing jet which carries the material, as well as for separation currents directed upward and at an angle with the flushing jet

1a-6 Water jet apparatus with horizontal or inclined guidance of water current without additional separation jets, also jet flumes and similar progressive devices without ascending currents for classification and sorting

1a-7 Water-jet apparatus with ascending current only

1a-8 Centrifugal separator for sorting and classifying sludge and granular matter in water or other liquids

1a-9 Wet-working percussion and shaking tables, also stationary wet tables

1a-10 Wet-working plane tables with belt conveyor

1a-11 Wet-working rotary tables

1a-12/01 Washing drums

1a-12/10 Washing troughs

1a-13 Other installations for wet sorting, also gravity separation in calm water, equipment for centrifugal current and for wet classification, also screen installations and mechanical classifiers

1a-14 Clarification

**Dewatering of ore sludge, coal slime, and other minerals** (for peat 10c-6, 10c-7; in general 12d; water and waste water 85b, 85c; paper material 55d-32; froth-flotation concentrate dewatering [thickening] 1c-11; fuel drying 82a)

1a-15 Dewatering equipment with suction effect

1a-16/01 Settling and precipitation apparatus for dewatering, sludge concentrators, also processes for speeding up settling (1c-14)

1a-16/10 Dewatering towers [columns] for coal, ore and other minerals, and installations in connection with such containers (for silos 81e-133 – 81e-137)

1a-17 Dewatering screens, belts, bucket elevators, bucket wheels, also dewatering tables (improvement of electrical heating installations 21h; shaking chutes, conveyor belts, bucket elevators and conveyor wheels, in general 81e)

1a-18 Dewatering centrifuges and presses (for peat 10c-7; centrifuges, in general 82b; presses in general 58a, 58b)

1a-19 Wash-water clarification for returning the filtered water to the washing unit and for extracting the separated solids, also dewatering processes, in general

**Classification according to grain size, sorting by the dry process (45e-12 – 45e-20/04; 50d, 50e; 55d)**

- 1a-20/01 Screen equipment with fixed-bar grates (12d-13; 55d-10/01; 85d-1)
- 1a-20/10 Screen grates and other screen equipment in which the material being screened is loosened and transported with the aid of independently movable non-rotating separate elements of the screen area
- 1a-21 Roller screens, and other screen equipment in which the screening elements rotate about their axis (firing grates 24f)
- 1a-28/01 Dry dressing by means of air-current screening, air dressing, air separators for classification, sorting and dust removal (12e-2; 50d; 50e)
- 1a-28/10 Dry dressing by means of air settling jigs, and air tables for classification, sorting, and dust removal.
- 1a-28/20 Dry dressing by other processes and devices, rotary separators, bouncing and rolling-off separators, air-and sand processes
- 1a-29 Centrifuges for classification and sorting by the dry process, also centrifugal separators with circulating air current (50d; 50e)
- 1a-30 Dry sorting by virtue of surface shape, especially separation of coal from flat slates
- 1a-31 Picking tables and belts with accessories, sorting of separately fed pieces, based on their particular physical properties, by mechanical routing effected by the individual piece
- 1a-32 Other processes and devices for dry classification and sorting, also dressing by means of oil or fat, without water

**Special processes and installations for sorting ores, coals and other minerals, including preparation processes**

- 1a-33 Heating, roasting, burning to facilitate separation (1b-2; 1c-9; iron smelting 18a; nonferrous metal smelting 40a)
- 1a-34 Treatment with chemicals and other admixtures, pressure, vacuum, steam, etc. to cause loosening and separation according to the natural cleavage surfaces and interfaces of the individual minerals, also boiling for ash and sulphur removal
- 1a-35 Separation according to kind of components, based on direct, differentiating and mechanical comminution, not aiming at a final uniform grain size, differential comminution or petrographical separation (for clay 80a-2/01 – 80a-3; grinding, in general 50)
- 1a-36 Treatment by heat or cold with chemical or other additions for a transformation of physical properties of the individual constituents, general (1b; 1c)
- 1a-37 Dressing processes, general layout of ore- and coal-dressing plants
- 1a-38 Special dressing installations and processes for extraction of gold, precious metals and precious stones from raw ores and alluvial deposits, also dressing dredges (dredges, in general 84d-1/01 – 84d-4, 84d-3/00 – 84d-9/00)
- 1a-39 Mechanical dressing of bituminous sand, bituminous limestone, bituminous shales, ozocerite, asphalt (5a-40/30; 23b-1/01; 80b-25/01)
- 1a-40 Mechanical dressing of slags and ashes (ash screens for household use 34d-5), of smelting and foundry wastes (preparation of moulding sand 31c-6/01 – 31c-6/08), and of rubbish and refuse, for their sorting and the recovery of their usable contents (production of building material from refuse, ash, slag, 80b-20/01, 80b-22/01; incinerator of refuse 24d)
- 1a-41 Miscellaneous installations for dressing ores, fuels, and other minerals

**1b Magnetic and electric dressing (for moulding sand 31c-6/03; for lubricating oils and other liquids 23c-1/06; for lubricating oils used in internal-combustion engines 46c1-14; for grain before milling 50a-1)**

- 1b-1 Magnetic dressing in general, also magnetic separation of suspended matter from liquids

- 1b-2 Preparation processes for magnetic dressing, especially smelting processes for transformation or generation of magnetic properties in the components of the raw material (1a-33, 1a-36; iron smelting 18a; nonferrous metal smelting 40a)
- 1b-3 Magnetic separation by components of gravity-fed materials
- 1b-4/01 Magnetic separators with drums or rolls, with horizontal or inclined axis, for picking-up the magnetic materials
- 1b-4/10 Bell-like separators with vertical axis, especially ring separators
- 1b-5/01 Belt separators with endless belts between the conveyed material and the picking magnets, crossed-belt separators
- 1b-5/10 Other belt separators
- 1b-5/20 Table and trough separators
- 1b-6 Electric dressing of ores and other material, especially electrostatic dressing, electroosmosis (mechanical dressing 1a-31; separation, in general 12d-1/05; for peat 10c-6; for molasses 89c-15; drying by electroosmosis 82a-24)
- 1b-7 Magnetic separation with alternating or polyphase current, also with travelling electromagnetic field

### **1c Dressing by flotation, differential sedimentation**

- 1c-1/01 Dressing by means of heavy liquids and liquids other than water (42l)
- 1c-1/10 Dressing by means of liquids, into which finely dispersed air or gas is introduced, or in which gases are produced, without generation of froth or addition of oils or other reagents
- 1c-2 Dressing by the wettability principle by feeding the material in an oil flow or otherwise, but not in water, onto a liquid surface
- 1c-3 Dressing by treatment of the material by oil or fat, with no air or gas directed into the water bath, and also by magnetic materials
- 1c-4 Froth-flotation processes and installations, general
- 1c-5 Froth-flotation installations with mechanical stirring and shaking arrangements for agitation, ventilation and mixing (for fire extinguishing 61a-21/01 – 61a-21/02)
- 1c-6 Froth-flotation installations with centrifugal pumps, centrifugal or jet nozzles for transportation, ventilation, and mixing, also froth production by spraying against impact surfaces
- 1c-7/01 Froth-flotation installations with supply of compressed air, also installations with stirrers having porous air-inlet elements (6b-20; 30f-10/01 – 30f-10/04)
- 1c-7/10 Froth production by means of vacuum or positive pressure
- 1c-8/01 Additives for dressing by flotation, general; collectors, frothing agents, oils, and other organic or inorganic chemical reagents causing a change of the floatability properties or removing the effect of harmful materials, also insoluble solid materials or gases
- 1c-8/10 Sulphidising additives for dressing by flotation of oxide ores; sulphides, sulphites, sulphur and hydrogen sulphide
- 1c-9 Preparation of the material for froth flotation, also heating of ores, grinding, reaction vessels
- 1c-10/01 Process for straight or differential dressing by froth flotation of special varieties of ore or coal
- 1c-10/10 Process for straight or differential dressing by froth flotation of other materials, also of metals and other substances
- 1c-11 Special installations and processes for aftertreatment of concentrates and other products of oil-froth-flotation dressing, recovery of reagents, also dewatering, installations for froth distribution, and flotation-cell switching
- 1c-12 General dressing processes and installations which include froth-flotation processes
- 1c-13 Auxiliary installations, especially metering and feeding installations for oils and reagents (for general chemical purposes 12f-4)
- 1c-14 Sorting of suspended ore or fuel in emulsions solely by means of differential sedimentation, by applying additives for the purpose of differently influencing the individual components (1a-16/01; 12d; 85b; 85c)