



1	Foundry plants and installations, planning, construction, engineering	2.6.6	Gas, industrial
		2.6.7	Gas, hydrogen
2	Melting shop	3	Refractories technology
2.1	Cupolas	3.1	Refractory materials and products, insulating materials
2.1.1	Cupolas, coke-fired	3.1.1	Refractory ramming mixtures
2.1.2	Cupolas, cokeless, gas-fired or oil-fired	3.1.2	Refractory bricks
2.2	Electric melting and holding furnaces (pouring equipment see 10.1)	3.1.3	Refractory gating system parts
2.2.1	Electric arc furnaces for foundries	3.1.4	Insulating materials and products
2.2.2	Crucible induction furnaces	3.2	Equipment for the lining of melting and pouring equipment
2.2.3	Channel type induction furnaces	3.2.1	Compaction apparatus for refractory ramming materials
2.2.4	Melting and holding furnaces, electric resistance type	3.2.2	Spraying machines for refractory material
2.2.5	Hearth-type electric melting and holding furnaces	3.2.3	Break-out equipment for furnace and ladle lining
2.2.6	Crucible lifting furnaces	4	Metallic charge materials
2.2.7	Bale-out furnaces, electric	4.1	Charge materials for iron, steel and malleable iron casting
2.2.8	Vacuum melting furnaces	4.1.1	Pig iron
2.2.9	Other electric melting and holding furnaces	4.1.2	Scrap, scrap iron
2.2.10	Dosing furnaces, gas and electric heated	4.1.3	Ferro-alloys
2.3	Fuel-heated melting and holding furnaces	4.1.4	Alloying metals, master alloys
2.3.1	Crucible melting and holding furnaces, fuel-heated	4.1.5	Inoculants
2.3.2	Hearth-type melting and holding furnaces, fuel-heated	4.1.6	Nodularizing additions for spheroidal graphite cast iron
2.3.3	Rotary furnaces	4.2	Charge materials for non-ferrous metal castings
2.3.4	Bale-out furnaces, fuel-heated	4.2.1	Aluminium, aluminium alloys
2.3.5	Melting and holding furnaces, fuel heated	4.2.2	Magnesium, magnesium alloys
2.4	Auxiliary melting and melt processing facilities	4.2.3	Copper, copper alloys
2.4.1	Charging plants	4.2.4	High-grade zinc alloys
2.4.2	Charge preheating facilities	4.2.5	Tin, zinc, alloys
2.4.3	Electromagnetic conveying channels for molten metal	4.2.6	Alloying metals, master alloys
2.4.4	Blowing-in equipment for cupolas	4.2.7	Alloys for thixocasting and squeeze-casting
2.4.5	Oxygen addition equipment for cupolas	4.2.8	Non-ferrous metal scraps
2.4.6	Inoculation devices, injection equipment	5	Moulding and core making
2.4.7	Induction stirring installations	5.1	Moulding machines and plants for bentonite-bonded sands
2.4.8	Recuperators	5.1.1	Moulding machines
2.4.9	Slag treatment equipment	5.1.2	Moulding plants, flaskless
2.4.10	Melt treatment stations	5.1.3	Moulding plants with flasks
2.4.11	Inert gas installations	5.2	Moulding machines and plants for non bentonite-bonded moulds
2.4.12	Gas flushing installations	5.2.1	Cold-setting resin moulding processes, equipment
2.4.13	Vacuum degassing equipment	5.2.2	Shell moulding process, equipment
2.5	Melting and holding furnaces, accessories	5.2.3	Waterglass process, equipment
2.5.1	Crucibles	5.2.4	Lost-foam processes, equipment
2.5.2	Graphite electrodes	5.2.5	Vacuum moulding process, equipment
2.5.3	Heating wires and heating bars for electric resistance type furnaces	5.2.6	Investment casting processes, equipment
2.5.4	Emergency collecting pit	5.2.7	Moulding machines and plants, other processes
2.5.5	Other accessories	5.3	Core making machines and plants
2.5.6	Power Electronics/Converter	5.3.1	Core blowing and shooting machines and plants
2.5.7	Automation	5.3.2	Core making machines, other
2.5.8	Safety Engineering		
2.5.9	Service		
2.6	Operating materials and supplies for the melting shop		
2.6.1	Foundry coke		
2.6.2	Slag-forming additives		
2.6.3	Melt additives and covering fluxes for ferrous cast alloys		
2.6.4	Melt additives and covering fluxes for non-ferrous cast alloys		
2.6.5	Recarburizers		



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5.4	Moulding and core making machines, accessories	7.1.10	Separators for chromite and silica sand, zircon and silica sand
5.4.1	Gassing equipment for moulds and cores	7.1.11	Moulding sand preparation, further equipment
5.4.2	Dosing devices for binders and additives	7.2	Sand reclamation, plants and machines
5.4.3	Mould handling equipment	7.2.1	Sand reclamation of clay bonded moulding sands
5.4.4	Core handling equipment	7.2.2	Sand reclamation of sodium silicate and cement bonded sands
5.4.5	Core treatment equipment (deflashing, coating, drilling), core glueing equipment	7.2.3	Sand reclamation of synthetic resin bonded sands
5.4.6	Automated core/mould manipulation systems	7.2.4	Crushing and grinding plants for used sand
5.4.7	Coating preparation	8	Moulding auxiliaries
5.4.8	Moulding and coremaking machines, other accessories	8.1	Pneumatic rammers
5.5	Moulding boxes and accessories	8.2	Moulding auxiliaries, general
5.6	Salt core production	8.3	Foundry tools
5.6.1	Salt cores, pressed and sintered	8.4	Mould and core adhesives
5.6.2	Core shot salt cores	8.5	Cores, prefabricated
5.6.3	Salt cores, die casted	8.6	Chaplets
5.6.4	Salt cores in the hot chamber process	9	Gating and feeding
6	Moulding sands	9.1	Covering compounds for feeders
6.1	Sands	9.2	Breaker cores
6.1.1	Silica sand	9.3	Filterelements for liquid metals
6.1.2	Chromite sand and flour	9.4	Exothermic materials
6.1.3	Zircon sand and flour	9.5	Cooling elements
6.1.4	Moulding sands with natural clay binder	9.6	Strainer cores
6.1.5	Sands, other	9.7	Feeder sleeves
6.2	Moulding sand binders	9.8	Funnels and filter Systems
6.2.1	Bentonites and clays	9.9	Other auxiliaries
6.2.2	Synthetic resin binders for cold setting processes	10	Casting machines and pouring equipment
6.2.3	Synthetic resin binders for gassing processes	10.1	Pouring equipment
6.2.4	Synthetic resin binders for thermosetting processes	10.1.1	Pouring equipment, mechanical
6.2.5	Sodium silicate binders	10.1.2	Pouring equipment, dosing
6.2.6	Cement binders	10.1.3	Pouring equipment, heated (pouring furnaces)
6.2.7	Binders for investment casting	10.1.4	Pouring ladles
6.2.8	Moulding sand binders, others	10.1.5	Launders
6.3	Moulding sand additives, coatings for moulds and cores	10.1.6	Pig casting machines
6.3.1	Lustrous carbon formers	10.1.7	Pouring equipment and plants, other
6.3.2	Moulding sand additives, others	10.1.8	Precision fine casting units
6.3.3	Mould and core coatings	10.2	Die-casting machinery and plant
6.4	Moulding sands ready-to-use	10.2.1	Cold chamber die-casting machinery
6.4.1	Precoated sands for shell moulding	10.2.2	Vacuum assisted cold chamber special process
6.4.2	Betonite-bonded sands ready-to-use, waterless	10.2.3	Thixocasting die-casting machinery
6.4.3	Moulding sands ready-to-use, others	10.2.4	Squeeze casting die-casting machinery
7	Moulding sand preparation and sand reclamation		
7.1	Moulding sand preparation		
7.1.1	Moulding sand preparation machines and plants		
7.1.2	Moulding sand mixer		
7.1.3	Crushing and grinding plants		
7.1.4	Magnetic separators		
7.1.5	Measuring and control equipment for moulding sand preparation		
7.1.6	Sand coolers		
7.1.7	Sand aerators		
7.1.8	Sand precoating plants (for shell moulding)		
7.1.9	Screening machines and installations (silos and hoppers see 15.7)		



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- 10.2.5 Warm chamber die-casting machinery
- 10.2.6 Complete die-casting plant
- 10.3** Peripheral equipment and auxiliary materials for die casting (die casting dies see 17.3.1)
 - 10.3.1 Ladling and dosing equipment for die-casting
 - 10.3.2 Die heater/-cooler units and accessories
 - 10.3.3 Die spraying units
 - 10.3.4 Release agents for die-casting
 - 10.3.5 Operating and auxiliary materials for die-casting
 - 10.3.6 Extracting equipment for die-castings
 - 10.3.7 Trimming machines for die casting
 - 10.3.8 Trimming tools for die casting
 - 10.3.9 Ascension pipes for dosing installations and low pressure casting
 - 10.3.10 Other accessories for die-casting
 - 10.3.11 Vacuum technology for die casting machines
- 10.4** Diecasting machines and accessories
 - 10.4.1 Gravity diecasting machines/plants
 - 10.4.2 Low pressure diecasting machines/plants
 - 10.4.3 Accessories, operating and auxiliary material for diecasting machines
- 10.5** Centrifugal casting machines and accessories
 - 10.5.1 Centrifugal casting machines
 - 10.5.2 Centrifugal casting moulds
- 10.6** Continuous casting machines and accessories
 - 10.6.1 Continuous casting machines and plants
 - 10.6.2 Continuous casting moulds
- 10.7** Accessories
 - 10.7.1 Inductors
 - 10.7.2 Pouring Control System
 - 10.7.3 Power Electronics
 - 10.7.4 Automation
 - 10.7.5 Safety Engineering
 - 10.7.6 Service
- 11** Knock-out, fettling and finishing
 - 11.1** Knock-out
 - 11.1.1 Knock-out and cooling drums and conduits
 - 11.1.2 Knock-out machines
 - 11.1.3 Cooling conveyors
 - 11.1.4 Decoring equipment
 - 11.2** Blasting plant and accessories
 - 11.2.1 Pneumatic blast cleaning machines
 - 11.2.2 Airless shot-blasting machines
 - 11.2.3 Pressure water blasting plants
 - 11.2.4 Dry ice blasting machines
 - 11.3** Shot-blasting abrasives
 - 11.3.1 Shot-blasting abrasives, metallic
 - 11.3.2 Shot-blasting abrasives, inorganic, nonmetallic
 - 11.3.3 Shot-blasting abrasives, organic
 - 11.3.4 Shot-blasting abrasives, others
 - 11.4** Fettling installations
 - 11.4.1 Deflashing machines
 - 11.4.2 Sawing machines

- 11.4.3 Gating and feeding system separator machines and installations
- 11.4.4 Abrasive cut-off machines and wheels
- 11.4.5 Fettling facilities, other
- 11.5** Grinding machines and accessories
 - 11.5.1 Grinding machines, automatic controlled
 - 11.5.2 A-type grinding machines, hand operated or mechanized
 - 11.5.3 Hand-grinding machines
 - 11.5.4 Grinding wheels
 - 11.5.5 Abrasives, others
 - 11.5.6 Grinding technology, others
- 11.6** Fettling tools and fettling accessories, general
 - 11.6.1 Fettling chambers, fettling benches, fettling cabins
 - 11.6.2 Fettling tools and sundries
- 11.7** Interlacing and automation of fettling shops
- 11.8** As-cast casting inspection equipment
- 12** Surface treatment
 - 12.1** Enamelling plants
 - 12.2** Paint spraying units and tools
 - 12.3** Impregnation plants
 - 12.4** Galvanizing plants
 - 12.5** Surface treatment materials
 - 12.6** Surface treatment plants
- 13** Welding and cutting
 - 13.1** Flame cutting installations and accessories
 - 13.2** Welding installations and accessories
 - 13.3** Filler metals
- 14** Heat treating and drying furnaces
 - 14.1** Mould and ladle dryers
 - 14.2** Core drying stoves
 - 14.3** Sand drying plants and stoves
 - 14.4** Heat treating furnaces and installations
 - 14.5** Burners and heaters
 - 14.6** Microwave dryer



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Transportation and storage

- 15.1 Trucks, industrial
- 15.2 Cranes, hoists, rack trucks and accessories
- 15.3 Pneumatic conveyors
- 15.4 Roller conveyors
- 15.5 Oscillating conveyors
- 15.6 Continuous conveyors
(belt conveyors, bucket conveyors and others)
- 15.7 Bunkers, silos and accessories
- 15.8 Transport containers, pallets, racks

16

Manipulation

- 16.1 Manipulators
- 16.2 Industrial robots
- 16.3 Manipulators, mechanical
- 16.4 Positioning devices

17

Pattern and die making

- 17.1 Pattern and die making, machines and tools
 - 17.1.1 Wood working machines
 - 17.1.2 Metal machining, machine-tools
 - 17.1.3 Foam pattern production, machines
 - 17.1.4 Spotting presses
 - 17.1.5 Wax pattern injection machines
 - 17.1.6 Patternmaking and die making tools
 - 17.1.7 Cleaning equipment for permanent moulds
- 17.2 Pattern and die making materials and standard elements
 - 17.2.1 Metals and alloys
 - 17.2.2 Standard elements for permanent moulds and dies
 - 17.2.3 Hot working steels for diecasting dies
 - 17.2.4 Die making, accessories
 - 17.2.5 Heating and cooling devices for moulding and castings tools
 - 17.2.6 Plastics
 - 17.2.7 Ceramics
 - 17.2.8 Pattern wood
 - 17.2.9 Pattern varnishes
 - 17.2.10 Pattern making sundries
 - 17.2.11 Plaster
 - 17.2.12 Investment casting waxes, waxes for wax injection machines, special waxes
- 17.3 Pattern equipment, permanent moulds and accessories
 - 17.3.1 Diecasting dies
 - 17.3.2 Permanent moulds, gravity dies
 - 17.3.3 Gauges and fixtures
 - 17.3.4 Patterns and core boxes made of wood and plastic
 - 17.3.5 Metal patterns and core boxes

- 17.3.6 Pattern plates
- 17.3.7 Lost foam patterns

17.4

- 17.4.1 Solid Freeform Manufacturing
Object generation, equipment and processes
- 17.4.2 Rapid prototyping, equipment and processes
- 17.4.3 Rapid tooling, materials, technologies and processes

18

Control systems

- 18.1 Process control, models, simulation
- 18.2 Control equipment, automation technology

19

Measurement and test technology

- 19.1 Measuring instruments
 - 19.1.1 Temperature measuring instruments
 - 19.1.2 Thermal analysis equipment
 - 19.1.3 Aluminium melt testing equipment
- 19.2 Scales and weighing machines
- 19.3 Testing of materials and workpieces
 - 19.3.1 Tightness testers
 - 19.3.2 Endoscopes
 - 19.3.3 Hardness testers
 - 19.3.4 Crack detection equipment, test media
 - 19.3.5 X-ray testing equipment
 - 19.3.6 Ultrasonic testing equipment
 - 19.3.7 Materials testing, further equipment
 - 19.3.8 Surface inspection
- 19.4 Chemical analyses and metallography
 - 19.4.1 Gas analysis apparatus
 - 19.4.2 Laboratory equipment
 - 19.4.3 Spectrographic analysis equipment
 - 19.4.4 Metallographic testing equipment
 - 19.4.5 Microscopes
 - 19.4.6 Grinding and polishing installations for metallography
 - 19.4.7 Analytical apparatus, others
- 19.5 Mould and moulding sand testing
 - 19.5.1 Mould testing equipment
 - 19.5.2 Moulding sand testing equipment

19.6

Quality control

20

Compressed-air technology

- 20.1 Compressed-air plants and accessories
- 20.2 Pneumatic tools
- 20.3 Compressors and accessories

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Exhaust and ventilation technology

- 21.1 Exhaust systems



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21.2	Blowers and fans	25	Additive Manufacturing
21.3	Ventilating and air-conditioning equipment	25.1	Software
22	Environmental protection and waste removal	25.1.1	3D-Visualization
22.1	Flue gas cleaning plants	25.1.2	3D-Modelling
22.2	Waste water cleaning plants	25.1.3	Data Preparation
22.3	Dust extraction systems	25.2	Manufacturer of Metal Powders
22.4	Filters and filter materials	25.2.1	Aluminium based powders
22.5	Operating supplies for waste management plants	25.2.2	Stainless Steel based powders
22.6	Foundry waste preparation plants	25.2.3	Cobalt-Chromium based powders
22.7	Pelletization plants	25.2.4	Copper based powders
22.8	Residue recycling	25.2.5	Nickel based powders
22.9	Slag dressing plants	25.2.6	Titanium based powders
22.10	Water treatment plants	25.2.7	Carbon Steel based powders
22.11	Environmental protection and waste removal, further installations	25.2.8	Other metal powders
23	Industrial safety and ergonomics	25.3	Machinery, equipment and process for additive manufacturing
23.1	Protective clothing	25.3.1	Powder bed printing
23.2	Body protection	25.3.1.1	SLS (Selective Laser Sintering)
23.3	Alarms	25.3.1.2	SLM (Selective Laser Melting)
23.4	Protection equipment, other	25.3.1.3	LBM (Laser Beam Melting)
23.5	Sound control devices	25.3.1.4	LMF Laser Metal Fusion
23.6	Work station layout	25.3.1.5	DMLS (Direct Metal Laser Sintering)
24	Information processing	25.3.1.6	LMD (Laser Metal Disposition)
24.1	Data processing, product development and optimisation software CAD/CAE	25.3.1.6.1	LPF (Laser Powder Forming)
24.2	Simulation of casting processes	25.3.2	Binder Jetting
24.3	Computer programs for the construction of models and moulds	25.3.3	Surface coating
24.4	Software for business and process data capture	25.3.3.1	Laser Material Processing / DED Directed Energy Deposition
24.5	Quality assurance software	25.3.3.2	CLAD Process / Cladding
24.6	e-business, e-commerce, IT solutions	25.3.3.3	Turning, grinding, milling
24.7	Engineering services	25.3.4	Other installations and procedures for additive manufacturing
		25.4	Post Processing
		25.4.1	Machining
		25.4.2	EDM (electrical discharge machining)
		25.4.3	Peening
		25.4.4	Grinding
		25.4.5	Polishing
		25.4.6	Surface treatment
		25.4.7	Heat treatment
		25.4.8	HIP (hot isostatic pressing)
		25.4.9	controlling
		25.5	Research, development, associations, institutions
		26	Consulting, design, service and engineering
		27	Technical publications, technical periodicals, associations
		28	Training, further education