The KEY to Steel Industry Suppliers 2011

Classification by Nomenklature

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Are there any headwords you would like to have included? If so, please, enter them in the order form

List of headwords

01. Raw Materials, Auxiliary Materials and Operating Materials

01.01 Ores

10 Chrome Ore
20 Iron Ore
30 Ore
40 Manganese Ore
50 Steelwork Ore

01.02 Coke

60 Lignite Coke
65 Foundry Coke
70 Coke
80 Coke Breeze
90 Coke Breeze
100 Petroleum Coke
110 Pit Coal, Anthracite

01.03 Scrap

120 Scrap

01.04 Direct Reduced Iron (DRI)

128 Direct Reduced Iron (DRI)
129 Hot Briquetted Iron (HBI)
130 Sponge Iron

01.05 Metals and Alloys

140 Cer-Misch-Metal
150 Chrome Metal
160 Cobalt
170 Deoxidation Alloys (also Aluminium)
171 Deoxidation Alloys (also Aluminium-Rod/ Solid Wire)
180 Granulated Iron
190 Iron Powder
200 Ferroboron
210 Ferrochromium
220 Ferro-Manganese
230 Ferromolybdenum
240 Ferro-Nickel
250 Ferroniobium
260 Ferroniobium Carbide
270 Ferroniobium Powder
280 Ferrophosphorus
290 Ferro-Selenium
300 Ferrosilicon
310 Ferro-Silicon-Manganese
315 Ferro-Silicon Manganese
320 Ferrotitanium
330 Ferrovanadium
340 Ferrotungsten
350 Ferrozinc
360 Granulated Special Materials
380 Alloys
385 Magnesium Alloys
390 Manganese Metal
400 Metals and Alloys
410 Metal Powder
420 Molybdenum
430 Molybdenum Oxide
435 Non-Ferrous Metals
440 Nickel
450 Nickel-Base Alloys
460 Nickel-Niobium
470 Niobium, Metals, and Alloys
475 Pure Iron
480 Silicon Carbide
490 Silicon and Silicon Alloys
500 Special Metals
510 Special Alloys
520 Tantalum
530 Titanium and Titanium Alloys
540 Vanadium Metal
550 Vanadiumpentoxide
560 Prealloys
570 Tungsten
572 Tungsten, Granulated, for C- and S-Analysis
610 Alloy Addition

01.06 Additives and Fluxes

580 Carburizing Agents
590 Fluorspar
600 Lime and Limestone
612 Slag Conditioner
616 Olivine

01.07 Gases

620 Acetylene
625 Argon
630 Technical Gases

640 Carbon Dioxide
650 Oxygen
660 Inert Gas
670 Nitrogen
675 Hydrogen

01.08 Lubricants

680 Coating Powder (LDPE, EVA, PP, PU)
690 Lubricants

01.09 Composite Material

678 Duplex Metal for Saws

01.10 Other Materials

695 Glass Granules
698 Titanium Dioxide for Hearth Protection/Repair (Rutilit)

02. Raw Material Pretreatment

700 Engineering and Technical Assistance
703 Engineering and Project Management

02.01 Ore Dressing

710 Beneficiation/Dressing Plant for Ore and Fluxes
720 Crushing Plants
730 Crushing and Mixing Plants
740 Mixers
750 Sieve Bottoms
760 Sieves and Screening Plants

02.02 Coal Preparation

770 Coal Washing and Grading Plants
780 Coal Grinding Plants

02.03 Burden Preparation

790 Burden Preparation

02.04 Pelletizing Plants

795 Ore Dressing Facilities
800 Pelletizing Plants
810 Pelletizing Plants with Ore Dressing Plants

02.05 Sintering Plants

820 Sintering Plants
826 Brate Bars for Sintering Plants

02.06 Briquetting Plants

830 Briquetting Plants
840 Briquetting of Coal and Coke
850 Compacting Plants

02.07 Coke-Oven Plants

858 Charging and Pushing Emission Control for Coke Plants
859 Heat-Recovery Coke Plants
860 Coke Oven Plants (in general)
870 Coke Crushing and Screening Plants
880 Coke Quench Towers
890 Coke Ovens
900 Coke Oven Operating Machinery
910 Coke Oven Gas Treatment Plants
920 Coke Ramming Machines and Pushers
930 Coke Dry-quenching Plants
940 Stamping-Charging-Pushing Machines
950 Heat Exchangers
960 Grapples for Scrap Handling

02.08 Scrap Preparation Plants

968 Coil Magnets
970 Lifting Magnets
980 Magnetic Drums
990 Scrap Baling Presses
999 Scrap Drying Systems
1000 Scrap Mills, Crushers
1010 Scrap Shears
1015 Scrap Shear Knives
1017 Scrap Handling Magnets
1020 Shredder Plants, also Pre-Shredders
1022 Separation Magnets
1030 Turning Crushers
1040 Vertical Grinding Mills

02.09 Other Matters

1041 Granulating Plants for Sludges and Dusts
1050 Ferroalloy Plants
1058 Lime-burning Plants
1060 Lime Slaking Plants
1070 Calcining Plants

03. Ironmaking

1080 Engineering and Technical Assistance
1090 Ironmaking Plants
1100 Smelting Reduction Plants

03.01 Blast Furnaces

1110 Blast Furnaces
1120 Blast-Furnace Linings
1123 Hearth Protection/Repair
1125 Linings of Blast-Furnace Channels
1130 Cowpers for Blast Furnaces
1140 Ceramic Burners for Hot-Blast Stoves
1145 Shaft Melting Furnaces
1150 Heat-Recovery Plants
1152 Hot Blast Stoves

03.02 Direct Reduction Plants

1160 Direct Reduction Plants
1170 Coal-Based Reduction Plants
1174 Ore Fines Beneficiation with Coal or Gas
1175 Rotary Hearth Furnaces

03.03 Cupolas

1180 Hot-Blast Cupolas
1190 Cold-Blast Cupolas
1195 OxiCup Shaft Furnaces

03.04 Components

1200 Valves for Hot-Blast Stoves
1205 Cupola Fittings
1207 Cupola Copper Fittings
1210 Valve Services
1220 Charging Installations for Blast Furnaces, Cupolas, and Melting Shops
1230 Tuyère and Tuyère Stock Changing Carts
1240 Bar Loaders
1250 Tuyère Stocks
1260 Installations for Carbon Injection
1270 Installations to inject Coal, Oil, or Gas into Blast Furnaces
1280 Installations to inject Oil or Gas into the Blast Furnaces
1285 Top-Gas Expanders
1290 Cover Manipulators
1295 Hot Gas Generators for Blast Furnace and Coke Oven Gas
1300 Hot-Blast Valves
1310 Blast-Furnace Blowers
1320 Blast Furnace Steel Structures and Jackets
1330 Blast-Furnace Burdening (incl. Larry Cars)
1340 Blast-Furnace Probes
1350 Coal Grinding, Drying and Injection Installations
1351 Copper Valves and Fittings for Cupolas
1353 Ladles and Mixers, Pig Iron/Hot Metal, Engineering and Supply
1355 Process-Gas Screw Compressors
1360 Radar-aided Stock-Line Measurement
1370 Blast-Furnace Bosh and Stack Cooling Plates
1380 Pig-Casting Machines
1390 Pig Iron Mixers
1400 Hot-Metal Ladle Cars, -Mixer- and Transfer Cars
1410 Slag Monkeys
1420 Slag Pots
1425 Flexible Tubes for Blast-Furnace Cooling
1430 Special Fittings for Blast-Furnace Cooling
1432 Copper Staves for Blast-Furnace Cooling
1440 Blast-Furnace Mud Guns
1450 Drills for Tapholes or Slag Holes
1460 Heat Exchangers
1467 Weighing Systems for Torpedo Cars
1470 Tuyères and Tuyère Stocks
1480 Blast Gates

03.05 Blast-Furnace Products for Foundries

1490 Foundry Pig Iron
1500 Hematite Pig Iron
1510 Hematite Pig Iron for Grey Cast Iron
1520 Blast Furnace Ferro-Manganese
1550 Special Crude Iron (for Ductile Iron)
1560 Spiegel Iron
1570 Basic Pig Iron

03.06 By-Products

1580 Ferrous Sulphate or Ferric Sulphate
1589 Blast Furnace Slag
1590 Blast-Furnace Slag as Road Building Material
1600 Blast-Furnace Slag and LD-Slag
1610 Foamed Slag
1620 Slag Lime
1630 Granulated Blast-Furnace Slag
1639 Fine-Grained Steel Slag
1640 Fine-grained Steel Slag
1643 LD-Slag
1650 Thomasphosphate

03.07 Services

1663 Furnace Combustion Optimization

04. Steelmaking

1668 Equipment for Steel Works
1670 Engineering and Technical Assistance
1680 Mini Mills
1690 Second-Hand Steelmaking Plants and Equipment
1698 Steelmaking Plants and Equipment
1699 Steelmaking Equipment
1700 Steelmaking Plants and Equipment (Stainless)
1710 Steelmaking Plants and Equipment

04.01 Hot-Metal Preparation Plants

1715 Desulphurizatin Plants with Slag Regeneration
1720 Hot-Metal Desulphurization Plants

04.02 Converters

1730 Basic-Oxygen Steelmaking Plants (BOF-Shops)
1735 Bottom Blowing Installations (N^2 and AR)
1740 KTB Equipment (Kawasaki Top Blowing)
1745 Combined Bottom Blowing (Converters)
1750 Converter Equipment
1752 Converter Slag Treatment Installations
1755 Converter Stopper Rods
1758 Converter Stopper Rod Manipulators
1760 Porous Plugs
1763 Porous Ceramics (Plugs - Nozzles)

04.03 Energy Optimizing Furnaces

1770 Energy Optimizing Furnaces

04.04 Electric Furnace Melting Shop

1780 Electric Furnace Charging Devices
1788 Bottom Blowing Installation EAF (N^2 and AR)
1790 Bottom Tapping
1795 CO-Post Combustion
1800 AC Electric Arc Furnace
1808 Carbon Injection Devices for Electric Furnaces
1810 Injection Devices for Electric Furnaces
1820 Electrode Holders and Clamps for Electric Furnaces
1830 Electrode Regulation for Electric Arc Furnaces and Ladle Heating Systems
1840 Extrusion Presses for Electrodes
1850 Electrode Jib Arms
1855 Electrode Jib Arms of Aluminium, Current-conducting (Hot-Arms)
1860 Electrode Jib Arms, Current-Conducting (Hot-Arms)

1865 Electrode Arm Insulation
1870 Electric Arc Furnaces
1875 Electric Arc Ladle Furnaces
1880 EAF with integrated Scrap Preheater (Shaft Furnace)
1882 Electro Magnetic Stirring Power Systems (EAF)
1885 Spare and Wear Parts, Consumables
1890 DC Arc Furnaces
1900 Graphite Electrodes
1908 Jet Box Technology
1910 Cooling Elements (Radiant Wall Segments, Bay Coverings)
1920 Oil/Gas-Oxygen Burners
1930 Scrap Baskets
1938 Scrap Driers
1940 Scrap Preheating Plants
1945 Stirring Machines for Electric Furnaces
1950 Evaporating Systems/ Heat Recovery Systems
1960 Water Cooled Cables
1970 Water-cooling Systems
1980 AC Arc Furnaces
1981 EAF - Power Insulation
1982 Power Supplies for AC Arc Furnaces
1983 Power Supplies for DC Arc Furnaces

04.05 Induction Furnaces

1990 Induction Furnaces
1995 Protection Systems of Induction Coils
1996 Repair-Induction Furnaces
2000 Water Cooled Cables

04.06 Vacuum Melting Furnaces

2008 High-Vacuum Melting Furnaces
2010 High-Vacuum Melting Furnaces (incl. Electron Beam Melting Furnaces)
2020 Vacuum Induction Melting Furnaces
2021 Vacuum Pumps, Dry Running, for Vacuum Furnaces

04.07 Secondary Steelmaking

2028 Plants for Chemical Heating
2030 Argon Purging Devices
2040 Blow and Injection Conveying Equipment for Filtration Residues
2042 Combined Blowing and Burning Lances for RH
2050 CAS, CAS-OB and CAB Plants
2060 Injection Devices for Metallurgical Processes
2070 ESR-Plants
2080 Ladle-Metallurgy Plants
2090 Plasma Arc Plants
2100 Plasma Ladle-Furnaces
2110 Secondary Steelmaking Plants
2120 Steel Degassing Plants
2130 Steel Desulphurization Plants
2140 T+P Lance Devices
2145 Induction Stirrers for Ladle Furnaces

04.08 Components

2150 Deslagging Machines
2155 Tap Hole Closures for Converters
2160 Tap Hole Valves for Converters and Electric Arc Furnaces
2170 Andromat-Manipulator
2175 Burn-out Machines for Ladles
2180 Break-out Machines for Electric Furnaces, Converters, Pouring Ladles, etc.
2182 Flame Lances (Oxygen) for Tundish and Ladle Slide Gates
2184 Co-Injection Devices
2190 Equipment for Oxygen/Carbon Lance Manipulators (EAF)
2200 Automatic Stirring Gas (Argon) Coupling-Stations
2210 Heating Equipment for Teeming Ladles, Mixers, Converters, and Tundishes
2215 Charging Equipment for Metallurgical Plants

2220 Brakes
2230 Charging Machines (Troughs and Tongs)
2235 Stream Jet Vacuum Pumps for Steel Degasing
2240 Dolomite Centrifuging Machines
2250 Cored-Wire Feeding Machines
2268 Argon Bubbling Equipment for Ladles
2270 Argon Injecting Equipment
2280 Blowing Equipment for Cementite Dust
2290 Blowing Equipment for Hyl and DRI Dusts
2300 Blowing Equipment for Lime Granules
2310 Carbon Injecting Equipment (EAF)
2312 Installation for Injection of Alloying Additions
2320 Electric Heating Elements for Steel Degassing Plants
2340 Electromagnetic Conveying and Dosing Channels for Liquid Metals
2350 Desulphurizing Equipment
2360 Bay Tapping Fillers, Arc Furnaces
2370 Pouring Ladles, in general
2380 Pouring Ladle Firing Plants
2390 Pouring Ladles for Melting Shops
2400 Pouring-Ladle Closing Devices (also Valve Locks)
2410 Pouring-Stream Protection
2420 Pouring Cars
2430 Manipulating Devices
2440 Oxygen/Carbon Lance Manipulators
2444 Oxygen Probes for Flue Gas
2450 Hydraulic Installations for Metallurgical Plants and Rolling Mills
2460 Lime-Oxygen-Dosing and Injecting Systems
2480 Ladle Tilting Devices
2490 Pulverized-Coal Injection-Lances
2500 Ingot Moulds for Melting Shops
2510 Ingot Mould Buggies
2514 Continuous Optical Analysis Equipment for Process Receptables
2515 Temperature Measuring, Continuous and Optical, for Process Vessels
2525 Converter Probes and Sampling Devices
2530 Lance Robots/Manipulators
2535 Lance Tip for Oxygen Lance
2540 Alloying Installations for Steelworks
2541 Multifunctional Lances and Burners for EAF
2542 Ladles and Mixers, Pig Iron/Hot Metal, Engineering and Supply
2543 Bull Ladels (Hot Metal Mixing)
2545 Ladle Slide Gates
2550 Ladle Cars
2555 Cleaning and Debricking Machines for Electric Furnaces, Converters, Pouring Ladles, etc.
2560 Cutting of Slags by Robotics
2570 Sand Feeding Devices for Casting Ladle Taphole
2580 Oxygen Nozzles and Lances
2590 Oxygen Roof Lances
2600 Oxygen Lance Equipment
2610 Hoses for Oxygen, Heat Protected
2618 Ashes (Volume Stability)
2620 Slag Pots
2640 Slag Cars
2650 Hose Reels
2655 Fuses, multifunctional, for Torches/EAF
2660 Special Safety Oxygen Hose-Reelers
2665 Brick Coating Material for Pouring Ladle Valves
2666 Ceramic Refractory Brick Lubrications for Sliding Valve Systems

2668 Stoking Machines for Electric Furnaces
2669 Sublances
2670 Submerged Nozzle Spraying-Devices
2680 Radar-aided Charge-Level Measurement for Torpedo Cars
2686 Vacuum Pumps, Dry Running, for Vacuum Furnaces
2690 Preheating Station for Casting Ladles and Tundishes
2695 Weighing Systems for Scrap and Alloying Elements
2700 Heat Exchangers for Steelworks
2702 Torch Cutting Machines for Ladles
2704 Crucibles for Remelting Furnaces

04.09 Steel Works Materials

2710 Recarburizing Agents, all Grades
2712 Burning Lances
2713 Safety Igniters for Burning Lances
2720 Deoxidizing Agents
2730 Deoxidation Technology
2735 EBT Taphole Filling Mass
2740 Dephosphorizing Agents
2748 Desulphurising of Coke Oven Gas
2750 Desulphurizing Mixtures
2760 Desulphurizing Agents
2770 ESR-Slags
2780 FeNb Cored Wire
2790 Cored Wire
2798 Hot Tops
2800 Casting Fluxes
2801 Casting Fluxes, Granulated and Powdery
2810 Graphite
2820 Graphite Powders
2825 Heat Resisting Fabrics up to 1260° C
2827 Isulating Covering Agents for Tundish, Ladels, and Channels
2830 Moulds
2840 Mould Inserts
2850 Mould Spray Protection and Plate Protection
2855 Oxygen Nozzles and Blast Lances
2860 Anti-Piping Powders
2865 Mats and Felts for Temperatures up to 1260° C
2868 Olivine Slag Conditioners
2870 Ladle Covering Compounds
2871 Ladle Covering Agents, Granulated and Pulverised
2880 Ladle Slide-Gate Sands
2885 Rotary Nozzles for Steel-Ladles
2887 Slag Conditioners for Pig Iron Production
2888 Slag Granulation
2890 Slag Sands
2900 Slag Foaming
2905 Special Stickers up to 1200° C
2907 Special Adhesives (up to 1200° C)
2910 Ladle Slide-Gate Materials
2915 Crucibles for ESR, VAR, and Direct Strand Reduction
2920 Tundish Covering Compounds, Granular or Powdered

04.10 Preparation of Steel Works Materials

2930 Preparation of used Refractories
2940 Preparation of Dusts, Fines, and Oily Sludges from Steelworks
2950 Preparation of Slags (Slag Transportation and Slag Recycling)
2954 Separation Magnets

04.11 Services

2956 Engineering for Steelmaking Plants and Equipment
2958 Slag Pot Servicing

05. Continuous Casting

2960 Engineering and Technical Assistance

05.01 Continuous Casting Plants of Different Design

2962 Flat Ingots
2965 Casting Platform Roboters
2970 Casting-Wheel Plants
2980 Casting Wheels
2982 Casting Rolls, Casting Rollers
2990 Horizontal Continuous Casting Plants
3000 Continuous Casting Plants, in general
3010 Vertical Continuous Casting Plants

05.02 Continuous Casting Plants for Different Product Dimensions

3020 Continuous Casting Plants for Beam Blanks
3030 Continuous Casting Plants for Slabs
3035 High-Speed Billet Casters
3040 Continuous Casting Plants for Billets
3043 Continuous Casting Plants for Billets, Horizontal
3045 Combined Slab Casters
3050 Round Casters
3055 Round Casters, Horizontal
3058 Continuous Casting Plants for Blooms
3060 Continuous Casting Plants for Blooms and Slabs
3070 Continuous Casting Plants for Blooms and Billets
3071 Continuous Casting Plants for Billets, Blooms, and Slabs
3075 Continuous Casting Plants for Blooms and Billets, Horizontal
3080 Continuous Casting Plants for Blooms and Rounds
3085 Continuous Casting Plants for Blooms and Rounds, Horizontal

05.03 Spray Deposition Plants

3090 Spray Deposition Plants

05.04 Components

3100 Al Wire Reeling Machines
3110 Slab Finishing
3120 Slab Edge Induction Heating
3130 Slab Cooling Plants
3140 Slab Cooling Boilers/Heat Recovery Plants
3150 Slab Slitters or Cutters
3160 Slab Grinders
3170 Brakes
3180 Flash Trimmers/Deburrer
3190 Flame Cutting Machines
3200 Rotating Unions for Water-cooled Rollers
3210 Stamping Machines
3212 Marking Machines
3215 Electro Magnetic Stirring Systems (Slab/Bloom/Billet Casters)
3216 Electro Magnetic Brakes, EMBR
3220 Single-Component Nozzles for Continuous-Casting Cooling
3230 Deburrers
3240 Paints for Marking Devices
3250 Paint Marking Plants
3260 Automatic Powder Control
3262 Pouring-Stream Protection by Argon
3264 High Speed Billet Moulds with Integrated Hydraulic Oscillation
3265 Hydraulic Nozzles for Continuous-Casting Cooling
3270 Induction Stirring
3280 Cold Tundish Plates
3285 Chains and Sprockets
3290 Marking Systems for Slabs, Blooms and Billets
3292 Billet Grinders
3300 Billet Working Machines
3310 Billet Sawing Machines
3320 Grinding Machines for Billets and Slabs
3330 Mould Flow Meters
3333 Mould Plates
3340 Read Systems for Automatic Identification of Marks

3345 Air Atomizing Nozzles for Continuous-Casting Cooling
3350 Cutting Torches for Emergency
3355 Optical Product Recognition (OPR) for Marked Billets
3360 Plasma Tundish Heating
3370 Plate Moulds
3380 Precision Stopper Devices
3390 Tubular Moulds
3400 Manipulators for Shrouding Nozzles
3410 Marking Inks
3415 Slab Turning Magnets
3420 Stamping Machines
3422 Stamping Machines, Hydraulic/Pneumatic Driven
3429 Coninuous Casting Moulds
3430 Continuous Casting Moulds (also made of Electro-Graphite)
3440 Continuous Casting Rolls
3450 Tundish Heating
3460 Tundish Plasma Heaters
3470 Tundish Flow Control
3480 Tundish Slide Gates
3490 Finishing Mills for Blooms and Billets
3500 Heat Exchangers
3503 Weighing Systems for Ladles, Tundish, and Related Products
3510 Binary Nozzles for Continuous Casting Cooling

05.05 Operating Materials

3520 Casting Powders
3530 Lubricants for Continuous Casting Plants
3535 Welding Additions for Regeneration and versus Wear-out

06. Near-Net-Shape-Casting

3540 Engineering and Technical Assistance

06.01 Plants

3550 Strip Casting Plants
3560 Thin Strip Casting Plants
3570 Thin-Slab Casters
3572 Combined Thin Slab Casting and Rolling Lines
3573 EUROSTRIP-Strip Casting Plants
3574 EUROSTRIP Strip Casting and Rolling Plants, directly combined
3575 Continuous Casting Plants for Billets

06.02 Components

3590 Flash Trimmers
3600 Flame Cutting Plants
3610 Stamping Machines
3630 Thin-Slab Slitters or Cutters
3640 Thin-Slab Grinders
3670 Paint Marking Plants
3680 Charging Devices for Casting Fluxes
3700 Read Systems for Automatic Identification of Marks
3710 Marking Inks
3712 Punching Machines (Hydraulic/Pneumatic Driven)
3720 Spray Marking Systems for Thin-Slab Casters

06.03 Operating Materials

3750 Coolants
3760 Lubricants

07. Hot Rolling

3770 Engineering and Technical Assistance
3780 Second-Hand Hot-Rolling Mills

07.01 Hot Strip Mills

3773 Flat Ingot Plants
3776 Flat Ingot Plants for Rolling
3790 Thin Slab Rolling Mills
3805 Modernizing of Rolling Mills
3820 Steckel Mills, complete
3830 Rolling Mills, complete
3840 Hot Rolling Mills for Slab Products

07.02 Plate Rolling Mills

3850 Hot Rolling Mills, complete

07.03 Rolling Mills for Billets and Semi-finished Products

3860 Rolling Mills for Blooms, Billets and Sheet Bars

07.04 Section Mills

3870 Rolling Mills for Light Sections
3875 Section Machines
3880 Special Steel Section Mills
3890 Rolling Mills for Beams and other Sections

07.05 Bar and Rod Mills

3900 Automatic Coil Handling
3910 Guide Equipment for Wire, Bar, or Light-Section Rolling Mills
3920 Sizing Mills
3930 Precision Sizing Blocks
3940 Reducing and Sizing Blocks
3950 Bar and Rod Mills
3955 Bar and Wire Rod Mills for Quality and Special Steels
3960 Bar Mills
3968 Rolling Mills for Flat Products
3970 Hot Rolling Mills for Long Products
3974 Rolling Mills for Wire Rods, Rebars, and Bars

07.06 Ring Rolling Mills

3980 Ring Rolling Machines and Mills

07.07 Dressing and Straightening Plants

3990 Dressing and Straightening Facilities
4000 Dressing and Straightening Machines
4010 Chamfering Grinders for Cylindrical and Square Billets
4017 Flat Ingot Plants for Rolling
4020 Flying Shears
4030 Hot/Cold Abrasive Cut-Off-Machines
4040 Cold Circular Sawing Machines
4050 Roller Levellers for Section Steel
4060 Rotary Saws
4065 Second-Hand Dressing and Straightening Lines
4070 Packaging Lines
4080 Hot Levelling and Cropping Machines
4085 Shearing Machines (automatic, hydraulic)

07.08 Rolls for Hot Rolling Mills

4090 Work Rolls
4100 Plate Rolls
4110 Blooming Rolls
4120 Slab Rolls
4123 Coiler Drums
4128 EcoRolls
4130 Small-Section and Wire Rolls
4140 Forged Rolls
4160 Chilled Cast Iron Rolls
4170 Tungsten Carbide/Steel Rolls
4180 Grooved Rolls
4190 Rolls for Billets and Semi-finished Products
4200 Straightening Rolls
4210 Spheroidal Graphite Rolls
4220 Cast Steel Rolls
4230 Back-up Rolls
4240 Composite Cast Rolls
4250 Composite Cast Rolls of High-Chromium and Indefinite Materials
4260 Composite Chilled Cast Rolls
4270 Composite Rolls
4280 Rolls for Tube Mills
4290 Roll Rings

07.09 Roll Machining and Machines

4300 EDT Systems
4310 Surface Grinding Machines
4320 Highly Wear-Resisting Coatings on Rolls etc.

4330 Roll Pass Dressing Machines
4340 Groove Grinding Machines
4350 Notch Milling Machines
4360 Special Machines
4370 Roll Machining Devices
4380 Roll Lathe4390 Roll Grinding Machines
4395 Roll Grinding Wheels
4400 Shot-Blasting Machines for Rolls
4410 Roll Forming Lines
4420 Services for Roll Surface

07.10 Components

4430 Decoilers - Recoilers
4440 Drives, Gearings and Pinion Stands
4450 Strip Cooling Equipment
4460 Strip Grinding Machines
4470 Brakes
4479 Coil Magnets
4480 Coil Cooling Boilers
4482 Coiler Drums
4490 Nozzles for Descaling
4500 Nozzles for Roll Cooling
4502 Selective Roll Cooling Systems
4503 Stainless Steel Roll Cooling
4510 Electric Motor Rollers and Roller Tables
4515 Skimmers for Hot Rolling Strip Plants up to 1000° C
4520 Descaling Systems using Solid Abrasives
4528 Descaling Systems using High Pressure Water
4530 Descaling Systems using Liquid Abrasives
4540 Inks for Marking Equipment
4550 Paint Marking Systems
4555 Chains and Sprockets
4560 Lubrification Installations
4570 Flame-scarfing Machines, Hot and Cold
4580 Flame-Scarfing Instruments, Machines, and Plants
4582 Robotic Scarfing Machines
4590 Transmission Rolls
4600 Testing, Sorting and Cleaning Lines for Semi-finished Products
4610 Reels
4630 Manipulators for Turning-over and Shifting
4640 Marking Paints for Sheets, Slabs, and Tubes
4650 Marking Systems for Sections, Coils and Plates
4660 Marking Systems for Slabs, Blooms and Billets
4680 Devices for Coil Compaction and Strapping of Wire Rod
4690 Cooling Banks
4700 Read Systems for Automatic Indentification of Marks
4710 Oil-Hydraulic Adjusting Equipment
4720 Circulation Plants for Oil or Emulsion
4730 Rollers for Roller Tables
4740 Rotary and Straight Shear Knives
4750 Lubricating Plants
4760 Quick-Change Mill Stands
4780 Marking Inks
4790 Marking Pencils for Hot Surfaces
4800 Steel Strip Strapping
4810 Stamping Machines
4820 Stamping Machines and Stamps for Hot and Cold Operation (incl. fully-automatic ones)
4830 Stamps and Dies
4840 Transport and Conveying Devices for Wide Strip
4850 Coil Strapping Machines
4860 Heat Exchangers
4870 Roll Handling Equipment
4880 Roll Cooling Systems
4890 Roll-Deadening Devices
4892 Rolling Stock Guiding
4893 Cantilevered Rolls
4897 Weighing Systems for Bundles and Coils

07.11 Operating Materials

4898 Controlled Atmosphere for Heat Treatment
4900 Lubricants for Hot Rolling Mills

07.12 Services

4910 Deposit Strip and Cord Overlaying of Rolls etc.
4920 Highly Wear-Resisting Coating of Rolls etc.

08. Forging, Extrusion

4930 Engineering and Technical Assistance
4940 Modernization of Water-Hydraulic Controls

08.01 Forging Mills

4950 CNC-Precision Forging Machines
4955 Cross Wedge Rolling Machines
4960 Open-Die Forging Plants
4970 Die Forging Plants
4980 Steel Die Spray Plants
4990 Hydraulic Forging Presses
5000 Cold Flow Forming Presses
5020 Presses, in general
5030 Presses/Forging Machines
5040 Radial Forging Machines
5050 Radial and Axial Die Rolling Mills, Machines, and Plants
5060 Radial Forging Machines
5061 Radial Forging Machines, Hydraulic
5070 Ring Blank Presses
5080 Forging Presses
5084 Forge Rolling
5090 Horizontal Forging Equipment, Upsetting Machines

08.02 Extrusion

5100 Metal Tube Pressing and Metal Extrusion
5110 Steel Tube Extrusion
5120 Extrusion Presses for Sections (non-ferrous)

08.03 Components

5130 Brakes
5150 Forging Manipulators
5155 Rail-Bound Forging Manipulators
5160 Forging Robots
5170 Self-lubricated Guides and Bushes (High-Temperature)
5180 Transportation Manipulators
5184 Water-Hydraulic Drive and Control Technology

08.04 Operating Materials

5188 Controlled Atmosphere for Heat Treatment
5190 Lubricants for Extruding Presses
5195 Sliding Materials, Heat Resistant

09. Powder Metallurgy

5200 Engineering and Technical Assistance
5210 Powder Metallurgy

09.01 Hard Metal Alloys

5220 Hard Metal Alloys, in general
5230 Hard Metal Alloy, Machinable and Hardenable

09.02 Carbides

5240 Carbides, in general
5290 Tungsten Carbides

09.03 Hard Material Powders

5300 Iron-, Steel-, Alloy Powders, Non-Ferrous Metal Powders
5310 Hard Metal Powders

09.04 Additions

5320 Auxiliary Metals
5330 Organic Components

09.05 Equipment for Powder Production

5340 Machines and Plants for Water Atomization
5350 Melt Spinning Machines and Plants
5360 Machines and Plants for Spray Drying

09.06 Equipment for the Production of Sintered Carbide Alloys

5370 Plants, complete
5380 Hot and Cold Isostatic Presses and Facilities
5390 Metal Powder Extruders
5400 Presses
5405 Hydraulic, Mechanical, and Hybrid Powder Presses
5410 Furnaces with Inert Gas Atmosphere
5420 Vacuum Furnaces
5422 Vacuum Pumps, Dry Running, for Vacuum Furnaces

09.07 Metal Powder Parts

5430 PM-Metals
5432 PM-Rolls Rings
5440 PM-Steels
5450 Compounds

09.08 Further Processing of Metal Powder Parts

5460 Plasma-Powder-Deposit Welding
5470 Thermal Spraying

10. Cold Rolling

5480 Engineering and Technical Assistance
5482 Handling Systems
5484 Engineering and Technical Assistance

10.01 Cold Rolling Mills

5490 Rolling Mills for Strip, Sheet, as well as Cold Rolling Mills and Metal Rolling Mills
5520 Cold Rolling Mills, complete
5523 Modernizing of Cold Rolling Mills
5530 Second-Hand Cold Rolling Mills
5540 Cold Rolling Mills for Flat Products

10.02 Skin Pass Rolling Mills

5550 Skin Pass Rolling Mills
5555 Skin Pass Stands for Hot and Cold Strip

10.03 Dressing and Straightening Plants

5559 Coil Build-up Lines
5560 Dressing and Straightening Plants
5570 Dressing and Straightening Machines
5580 Strip Edge-Rounding Plants
5590 Strip Processing Lines
5595 Cross-Stretching Rolls
5600 Slitting and Cut-to-Length Lines
5610 Cut-to-length-lines
5620 Straightening Machines for Strip and Plate
5630 Roller Levellers
5640 Stretch Levelling Facilities for Strip
5660 Packaging Lines
5663 Tension Levelling Lines

10.04 Annealing Plants

5668 Continuous Annealing Lines
5670 Annealing Plants
5672 Annealing and Pickling Lines
5673 Bright Annealing Lines
5680 Annealing Plants, inductive
5682 Annealing Lines, Continuous
5685 Modernizing of Annealing and Pickling Plants

10.05 Rolls for Cold Rolling Mills

5686 Consolidation Rolls
5690 Working Rolls for Cold Rolling Mills
5695 Curved Rolls
5700 Rolls for Skin Pass Rolling Mills
5710 Planishing Rolls
5715 Levelling Rolls
5720 Straightening Rolls
5730 Back-up Rolls for Cold Rolling Mills
5750 Mill Rolls (Non-Woven Rolls)
5760 Rolls
5766 Roll Core Production and Treatment

5770 Polyurethane-coated Rolls

10.06 Components

5780 Drives, Gearings and Pinion Stands
5784 Strip Flow Control
5790 Baling Cord Removal
5800 Brakes
5803 Brake Coverings made of Felts, Stripper Felts
5810 Types (Numerals and Characters) for Stamping Machines
5814 Labelling Machines for Rolled Sections (Cold)
5830 Labelling Machines
5835 Chains and Sprockets
5840 Paint Marking Systems
5845 Coil Covering Materials
5850 Read Systems for Automatic Identification of Marks
5860 Marking Systems
5870 Oil-Circulation Plants
5880 Shear Knives, Rotary and Straight
5890 Marking Inks for Stamp Machines
5900 Marking Instruments
5910 Marking Pencils for Metals
5920 Steel Strip Strapping
5930 Stamping Machines and Stamps for Hot and Cold Operation (incl. fully-automatic ones)
5932 Selective Roll Cooling Systems
5940 Heat Exchangers
5950 Coiling Reels
5952 Weighing Systems for Bundles and Coils

10.07 Operating Materials

5957 Controlled Atmosphere for Heat Treatment
5960 Lubricants for Rolls for Cold Rolling Mills

11. Surface Treatment

5970 Engineering and Technical Assistance
5980 Descaling of Sheet Parts

11.01 Descaling Plants

5990 Descaling by Bending of Strip
6000 Descaling by Bending of Wire
6010 Descaling Systems using Solid Abrasives
6018 Descaling Systems using High Pressure Water
6020 Descaling Systems using Liquid Abrasives
6030 Hose Blasting Machines
6040 Overhead Conveyor Machines
6050 Shot Peening Machines
6060 Tumblast Machines
6070 Roller Conveyor Machines

11.02 Pickling Plants

6080 Preparation of Pickling Baths
6088 Pickling Plants for High-Grade Steel, free of Waste Gas Emissions
6090 Pickling Plants, in general
6100 Pickling Lines for Strip and Wire
6109 Pickling Vats, Highly Strainable
6110 Pickling Vats and Electrolysis Cells for High Straining Rates (Mechanical)
6120 Pickling Baskets and Hooks
6130 Pickling Agents
6140 Pickling Agents for High-Grade Steels
6150 Pickling Products for Stainless Steel
6160 Pickling and Surface Treatment Lines, in general
6170 Pickling and Surface Treatment Plants
6180 Pickling Compounds
6190 Job Pickling
6192 Pumps for Pickling of Steel and Special Steel
6200 Pickling Solution Regeneration Plants
6203 Push Pickling Plants

11.03 Grinding and Polishing Machines/Systems

6210 Strip Grinding Machines
6220 Grinding and Polishing Machines for Strip
6230 Centrifugal Grinding Machines
6240 Planishing Systems
6250 Drag Grinding Machines

11.04 Surface Treatment Plants

6260 Coil Coating Plants
6270 Edge Working
6280 Equipment for Surface Treatment and Refinement of Strip
6285 Strip Washers
6290 Coating Plants
6295 Burnishing Plants and Appliances
6300 CVD Coating Plants
6305 Color Coating Lines
6310 Industrial Services of Pickling and Electro-polishing of Steel and High-Grade Steel
6320 Lubrication Machines
6330 Electric Polishing Plants
6340 Deburring
6350 Deburring Machines
6360 Paint Coating Lines
6370 Paint Spraying Systems
6380 Superfinishing Plants for Suface Treatment of Metal Parts
6385 Controlled Atmosphere for Heat Treatment
6386 High Pressure Water Jet Cleaning Technology
6390 Shot Peening
6400 Plastic Coating Lines
6410 Metal Processing Lines, Electrochemical
6420 Metal Degreasing Facilities
6430 Degreasing Lines for Metal Strip
6440 Metal Cleaning and Drying Plants
6450 Surface Treatment, Surface Techniques
6460 Surface Treatment Lines
6470 Surface Drying, in general
6480 Surface Drying, Inductive
6490 Surface Finishing
6500 Phosphate Coating Lines
6510 Phosphating Methods
6520 Plasma CVD Coating Plants
6523 Plasmanitriding Systems
6525 Plasma Power Generators, Power Supply
6527 Sheet Bar Cleaning Plants
6530 Plating Installations
6540 Plasma-CVD Plants
6550 PVD Coating Plants
6560 Ion Implanters
6565 Abrasive Blasting Plants
6570 Pretreatment Plants for Electrogalvanizing Plants
6580 Water Demineralization for Surface Treatment

11.05 Aluminizing, Galvanizing and Tinning

6590 Aluminizing, Galvanic/Electrolytic
6595 Aluminizing, Galvanizing and Tinning
6600 Continuous Strip Hot Dip Tinning and Aluminizing Equipment
6603 Equipment for Hot Dip Tinning, Galvanizing and Aluminising of Strips
6610 Electrogalvanizing Plants
6620 Electrolytic Tinning Plants
6630 Hot Dip Galvanizing Lines
6640 Hot Dip Galvanizing Plants, Equipment
6648 Galvannealing
6650 Induction Galvannealing
6660 High-current Conductions for Electrogalvanizing Plants
6670 Galvanizing
6675 Tinning Plants
6680 Fusing of Tin, Inductive (Tin Reflow)

11.06 Corrosion Protection

6690 Linings and Coatings
6700 Coatings, Anorganic/Organic
6702 Layers, Coatings, Reporting
6710 Burnishing Agents and Anti-corrosive Compounds
6720 Lubrication Machines

6740 Rubberizing
6744 Corrosion Protection Systems
6750 Protection against Corrosion and Oxidation
6755 Oil Felt Pads
6760 Powder Varnishes
6770 Anti-Corrosion Paints

11.07 Components

6790 Nozzles (also for Grit-Blasting and Descaling)
6800 Rubber and PU-Roller Covers for the Plate Refining Industry
6810 Rubber Rollers for Plate-refining Industry
6820 Spraying Systems
6826 Weighing Systems for Bundles and Coils

11.08 Operating Materials

6830 Chips and Compounds for Superfinishing
6840 Wire Cores
6850 Electrogalvanizing Additives
6860 Electro Corundum Abrasives
6865 Sliding Lacquers
6870 Metal Cleaners
6880 Phosphatizing Agents
6890 Shot-Blast Glass-Beads
6898 Steel Abrasives
6900 Abrasives and Shot Techniques, in general

11.09 Consulting

6910 Job Refining

11.10 Wear Protection

6914 Ceramic Wear Protection
6915 Hard Cast Wear Protection
6916 Linings and Coatings
6917 Overlay Welding
6918 Wear Protection, Metal
6919 Wear Protection, in general

12. Production of Bright Steel and Wire

6920 Engineering and Technical Assistance
6925 Second-Hand Plants and Installations

12.01 Wire Rod Mills

6930 Rolling Mills for Rods and Light-Sections
6950 Guide Appliances for Wire, Steel Bars and Small Sections Rolling Mills
6960 Rolling Mills for Flat Wires and Wire Profiles

12.02 Drawing of Wire, Rods and Structures

6965 Wire Drawing Dies
6970 Wire Drawing Machines
6980 Wire Stretching Machines
6990 Drawing Machines for Bars and Sections
7000 Rod Drawing Benches

12.03 Dressing and Straightening Systems for Drawing Plants

7010 Automatic Stirrup Bending Machines
7020 Automatic Combi-Machines
7030 Wire Straightening and Cutting-off Machines
7040 Rotary Bar and Wire Peeling Machines
7050 Bar Straightening and Polishing Machines
7060 Bar Peeling Machines
7065 Grinders
7070 Bar Grinding Machines

12.04 Components

7080 Binding Machines for Wire Rod, Concrete Steel and Bars
7090 Brakes
7100 Jointings and Packings for Rolling Mills
7110 Wire Cooling Lines
7120 Wire Reeling and Coiling Machines
7140 Wire and Bar Pointing Machines
7150 Electric Motor Rollers and Roller Tables
7160 Inks for Marking Devices
7170 Paint Marking Systems
7180 Hook Conveyor Systems

7200 Devices for Coil Compaction and Strapping of Wire Rod
7210 Read Systems for Automatic Identification of Marks
7220 Marking Systems
7230 Marking Inks
7240 Stamping Machines and Stamps for Hot and Cold Operation (incl. fully-automatic ones)
7250 Heat Exchangers

12.05 Operating Materials

7267 Controlled Atmosphere for Heat Treatment
7270 Lubricants and Process Auxiliaries
7280 Drawing Agents (Greases, Oils, Soaps, etc.)

13. Production of Tubes/Pipes

7290 Engineering and Technical Assistance
7295 Second-Hand Plants

13.01 Tube Mills

7300 Becking Mills
7310 Diescher Mills
7312 Cross Roll Elongators
7320 Section Mills
7330 Sizing Mills
7332 Precision Sizing Mills
7335 Pilger Mills, Hot and Cold
7340 Sinking Mills
7350 Tube and Becking Mills
7360 Pipe Mill Trains with Planetary Rotary Piercing Mills
7368 Cone-Type Piercing Mills
7370 Rotary Piercing Mills
7380 Plug Mills
7390 Stretch Reducing Mills

13.02 Tube Drawing Machines

7400 Continuous Drawing Machines
7410 Tube Drawing Machines
7420 Bull-Block Machines
7430 Drawing Benches

13.03 Tube Welding Systems

7438 Large-Diameter Pipe Plants
7440 Longitudinal Tube Welding Systems
7450 Tube Welding Installations
7460 Spiral Tube Welding Plants

13.04 Tube Dressing and Straightening Systems

7480 Dressing and Straightening Machines
7490 Dressing and Straightening Systems for Tubes
7495 Deburring Machines for Tubes, Pibes, Sections, and Solid Bars
7500 Carry-over Separating Devices
7510 Straightening Machines for Tubes, Section Steel and Beams
7520 Machines for Bending Pipes
7525 Steel Wire Industrial Brushes for Tube Trimming
7530 Tube-End Sizing and Upsetting Presses
7540 Tube Deburring Devices
7542 Deburring Machines for Tubes and Pipes
7550 Tube Straightening Presses
7560 Tube Straightening and Cutting Machines
7570 Tube Grinding Machines (inside and outside)

13.05 Components

7580 Binding Machines
7582 Pipe End Chamfering and Threading Machines
7585 Industrial Brushes for Tube Rolling Mills
7588 Chains and Sprockets
7590 Strip and Plate Edge Milling Machines
7600 Inks for Marking Devices
7610 Paint Marking Systems
7615 Cleaning Machines for Pipes, Sections, Profiles, and Solid Pieces

7620 Tube Pointing Machines
7630 Tube Marking Devices
7640 Tube Testing Installations
7650 Tube Sawing Installations
7653 Steel Wire Industrial Brushes to Clean Tube Coatings
7660 Tube Spoolers
7663 Sawing Machines, Automatic
7665 Technical Brushes

13.06 Operating Materials

7678 Controlled Atmosphere for Heat Treatment
7680 Lubricants for Mandrel Rods

14. Secondary Forming

7690 CAD Constructions
7700 Metal Spinning
7710 Roller Spinning of Sheets
7720 Engineering and Technical Assistance
7730 Cold Working of Sheets and Plates

14.01 Installations, Presses, Machines

7740 Bending-off Systems
7750 Strip Edge-Working Machines
7760 Strip Straightening Machines
7770 Edge Trimmers for Deep Drawing Parts
7775 Plate Deburrers
7776 Plate Edge Crimping Presses
7780 Machines for Bending Round Plates
7790 Sheet-Metal Stacking Devices, automatic
7800 Sheet Deformation
7810 Sheet-Metal Working Machines, in general
7820 Bordering Machines
7830 Deburring Machines
7835 Deburrers for Pipes, Profiles, and Solid Rods and Bars
7840 Die-Bending Presses
7845 Riveting Machines (Hot and Cold)
7848 Hydraulic High Pressure Sheet Metal Forming Presses and Plants
7849 Hydro Forming
7850 Hydraulic Presses and Machines
7860 Hydraulic Presses for Fine-blanking
7865 Hydroforming (IHPF)
7868 Internal High-Pressure Systems
7870 Cold Flow Presses
7880 Plants for Cold Profiling
7882 Feeders for Presses
7890 Mechanic Presses for Fine-blanking
7900 Pneumatic Feeders for Presses
7920 O-Press Installations
7921 Tilting Metal Forming Presses
7922 Special Plants for Coiling
7924 Punching Plants
7926 Setting Machines
7930 Deep-Drawing Presses
7940 U-Press Installations
7945 Feed Setting Machines
7947 Roller Feeds
7960 Second-Hand Machine Tools and Sheet Metal Working Machines

14.02 Plate Cutting Systems

7970 Strip Slitting Plants
7980 Sheet Slitting and Cut-to-Length Lines
7990 Laser-Cut Sheet Blanks
7995 Slitter Knives and Accessories for Slitting Lines
8010 Fine-Edge Blanking Plants
8015 High Pressure Water Jet Cutting Technology
8020 Slitting and Cut-to-Length Lines
8030 Slitting and Cut-to-Length Machines
8040 Laser-Beam Cutting Systems
8050 Plasma-Cutting Systems
8070 Cut-to-Length Lines
8072 Plate Shears
8075 Shears for Plates
8080 Laser-Beam Cutting Systems, Second-Hand
8090 Tuning of Shot Blasting Plants

8100 Scrap Optimisation Systems

14.03 Welding Techniques

8110 Deposit Welding of Rolls etc.
8120 Strip Welding Machines
8121 Strip Welding Machines for Coil-Joining
8130 Stud Welding Plants
8140 Electron Beam and Laser Beam Welding (Service)
8150 Electron-Beam Welding Machines
8170 Planing Tools for Edges and Joints
8180 Lattice Girder Welding Machines
8190 Carbon Electrodes
8200 Ingot Mould Welding
8210 Laser-Beam Welding Systems
8211 Laser Welding Systems
8220 Welding Torches
8230 Peripheral Equipment for Robots
8250 Repair of Cracks, Engravings and other Defects
8260 Repair Weldings
8270 Friction Welding Machines
8280 Weldings, in general
8288 Welding Wires
8290 Welding Rods, Stainless
8300 Welding Rods and Additives (also made from CuAl-Alloys)
8310 Welding Electrodes
8320 Welded Structures
8330 Welding Machines, in general
8340 Welding Robots
8350 Welding Technology, in general
8360 Welding Auxiliaries, in general
8363 Wire-Mesh Welding
8370 Sensor Systems for Computer-Aided Welding
8380 Butt Welding Machines, electric
8400 Resistance Welding Plants

14.04 Components

8410 Brakes
8415 Paint Marking Plants
8420 Laser Beam Labelling
8430 Plate Stretchers
8435 Profile Stretchers
8440 Rotary Shear Blades and Equipment
8450 Cutting Tools and Blanking Tools
8460 Self-lubricated Guides and Bushes (high-temperature)
8470 Marking Pencils for Metals
8480 Deep-Drawing Dies

14.05 Services

8481 Electron and Laser Beam Welding
8482 Laser Beam Cutting of Steels
8483 Laser Beam Welding
8484 Water Jet Cutting of Steels
8485 Cutting Tubes and Pipes with Laser Tube Machine

15. Steel Products

15.01 Rolled Steel

8490 Aluminized Sheet (Hot-dip Aluminized or Cladded by Rolling)
8500 Al-Zn-Coated Steel Sheet
8510 Noise Absorbing Sheets
8520 Elevator Tees
8530 Strip Steel, Hot-Rolled
8540 Machined Plates
8550 Tank Bottoms
8560 Coated Sheet (Lacquered, Foil Coated)
8570 Concrete Reinforcing Steel
8580 Cold-Ribbed Concrete Steel in Coils
8590 Concrete Reinforcing Steel in Coils, Hot Rolled
8600 Concrete Reinforcing Steel, Bars
8610 Concrete Reinforcing Steel Bars and Rings
8620 Concrete Steel (Stainless)
8630 Wide-Strip Sections, organically coated
8640 Wide Strips, Cold Rolled

8650 Wide Strip, Hot Rolled/Cold Rolled
8660 Wide Flat Steel
8670 Wide Flanged Beams
8680 Electrical Quality Sheet and Strip
8690 Steel Sheet, Suitable for Enamelling
8700 Sheet Metals, Special Productions
8710 Sheet, Cold Rolled
8720 Sheet, Surface Treated
8740 Laser-Welded Sheet Products
8750 Mash-Seam Welded Sheet Products
8760 Flat Steel
8769 Section Steel
8770 Section Steel (incl. Colliery Arches)
8780 Welded Sections
8790 Heavy Plate
8800 Heavy-Plate Products, Pressed, Dished, Bended, Edge-trimmed
8810 Heavy Plate and Light Plate, incl. Coat Plate
8820 Semi-finished Products
8830 Semi-finished Products, Continuously Cast
8831 Semi-finished Products, Continuously Cast, Ingot
8840 Semi-finished Products for Finish-Rolling
8850 Semi-finished Products for Forging
8860 Track Material
8870 Cladded Sheets
8880 Rails
8890 Ship-Building Material
8900 Shipbuilding Profiles
8910 Semi-finished Products, Forged
8920 Slit Strip
8922 Slit Strip with Surface Finishing
8930 Cold Drawn Special Steel Sections
8940 Special Steel Sections, Hot-Rolled
8950 Special Sections, Hot Rolled or Drawn, for Fork Lifts, Automotive Construction, Machine Building and Pipeline Construction
8960 Special Steel Sections, Hot Extruded
8970 Steel Bars (Quality Steel, Case Hardening Steel, Heat-Treatable Steel, Spring Steel, Free-Cutting Steel)
8975 Steel Bars (Angles)
8976 Bars (High-Grade Steel, of all Dimensions)
8980 Steel Sheet Piling Sections (Box-Shaped Piling Planks and Auxiliaries, Sheet Pilings)
8981 Steel Sheet Piling Sections (Box-Shaped Piling Planks and Sheet Pilings)
8985 Steel Sheat Piling Sections, Box Piles, Steel Piles, Pinnings, and Auxiliaries
8990 CC-Billets
8992 Trapezoid Sections - PUR and Mineral Mode, Sandwich Elements, Acoustic Elements
9010 Galvanized Steel Strip
9020 Galvanized, Shaped Steel Sheets
9029 Galvanized Steel Sheets in Coils, Galvanized Strip Steel
9030 Galvanized Steel Sheets in Panels or Coils, Galvanized Strip Steel
9040 Castellated Beams, Fixed Beams
9050 Wire Rod
9060 Wire Rod, Rectangular or Round Cross-Section
9070 Wire Rod, Round
9080 Wire Rod, Spring Steel Quality
9090 Wire Rod, Cold Upsetting Quality
9100 Wire Rod, Welding Rod
9130 Rolled Steel
9140 Hot Wide Strip
9150 Tinplate, Chromium Coated Steel (ECCS/TFS) Blackplate
9160 Y Thresholds

15.02 Tubes

9170 Stainless Steel Fittings
9180 Line Pipes

9190 Line Pipes, Spiral Welded
9200 Boiler Tubes
9210 Stainless Steel Elbows
9220 Stainless Steel Flanges
9230 Line Pipes for Oil Fields
9240 Oil Country Tubular Goods
9260 Clad Tubes
9270 Precision Steel Tubes, Welded
9280 Precision Steel Tubes, Seamless or Seam-Welded (round, oval, square, rectangular, as well as special Shapes)
9290 Precision Steel Tubes, Seamless or Welded, Surface Treated (e. g. electro galvanized, chromized, phosphatized, etc.)
9300 Tube Billets (round/square)
9310 Tubes
9320 Oxide Ceramic Tubes
9330 Tubes made of Cryogenic Steels or Weldable Fine Grained Structural Steels
9332 Tubes, ceramic
9334 Tubes, Cross Section Square and Circular
9335 Tubes with Round or Square Cross-Sections, Hot-Dip Galvanized
9340 Stainless Steel Tubes
9345 Tubular Parts and Components
9350 Tubular Products (Tube Bends with Special Radii, Pipe Work Systems)
9360 Spun Iron Pipes (also made of High-Grade Steel)
9370 Special Section Tubes, Welded, Cold Rolled
9380 Steel Outlet Pipes, Hot Dip Galvanised
9390 Mechanical Steel Tubes
9400 Steel Tubes, Seam Welded
9410 Steel Tubes, Seamless
9415 Tubes, Pipes, and Services
9420 Reinforcing Sections for Gates, Welded
9430 Reinforcing Sections for Gates, Seamless
9440 Cylinder Tubes
9442 Fittings, in general

15.03 Forged Pieces

9450 Tanks
9460 Products for Mechanical Engineering (Crankshafts, Tools, Gears, etc.)
9470 Products for Energy Mechanical Engineering (for Generators, Turbines, etc.)
9480 Products for Constructing Aero-Engines (e. g. Compressor Blades, Discs)
9490 Products for Shipbuilding
9500 Open-die Forgings, in general
9510 Drop Forgings, in general
9520 Seamless Rings
9530 Forgings, in general
9532 Forgings of Non-Ferrous Metals (Copper and Copper Alloys, Aluminium Alloys)

15.04 Railway Material

9540 Axles
9550 Wheel Tyres

15.05 High-Grade Steel

Following deliveries:
a) Semi-finished Products, Rolled or Forged
b) Merchant Bars, Rolled or Forged
c) Wire Rod
d) Sheets, Hot Rolled or Cold Rolled
e) Wide Strip, Hot Rolled or Cold Rolled
f) Strip Steel, Hot Rolled
g) Cold Strip
h) Cladded Sheets
i) Hammer Forgings
j) Drop Forgings
k) Bright Steel (bars or wires, drawn, rough turned, grounded, polished)
l) Seamless or Seam-welded Tubes and Joints
m) Special Sections, Hot Rolled, Hot Extruded or Drawn

n) Cold-rolled Sections
o) Vacuum-melted Steel, ESR-Steel
p) Heavy-plate Products, Pressed, Dished, Bended, Edge-trimmed
q) Seamless Rings
r) Narrow Strip, GK (cut edges), and Round-off Edges
s) Blanks, Round Blanks, Rings
t) Bars made of Strip, GK (cut edges), Round-off Edges
u) Flat Steel
v) Wide Flat Steel

9560 Engineering Steel, in general
9570 Special Structural Steels, Tempering Steels, Steels for Surface Hardening, Cryogenic Steels, High-Temperature Steels, Cold Upsetting Steel (a-v)
9580 High-Grade Steel Special and Off-Line Items (Ia and IIa Quality)
9590 High-Grade Steels (a-v)
9600 Case Hardening Steel, Wear Resisting Steel (a-v)
9610 Case Hardening Steels, Nitriding Steels, Spring Steels, Wear Resisting Steels (a-v)
9620 Spring Steel Wire, Stainless
9625 Sheet Metal
9630 High-Temperature Steels and Alloys (a-v)
9635 Perforated Plates
9638 Cold Rolled Sections
9640 Stainless Bars and Tubes
9642 Special Sectons, Hot Rolled, Hot Extruded or Drawn
9645 Stainless Steel Wire
9650 Stainless, Acid, and Heat Resistant Steels (a-v)
9655 Stainless, Acid and Heat Resistant Steels and Alloys (a-v)
9660 Stainless, Acid-resisting, and Heat-resistant Steels and Alloys, also Alloys for Electric Resistance (a-v)
9670 High-Speed Steels (a-v)
9680 Special Steels, Alloyed, Weldable (a-v)
9685 Special Constructional Steel, Alloyed, Weldable (a-v)
9690 Steels with Special Physical Properties (a-v)
9696 Chrome Plated Steel
9700 Rough-machined Steel Bars or Panels, Rough Milled, Precision Milled, Ground
9710 Roller-Bearing Steels (a-v)
9714 Low-Carbon Steel
9716 Tool Steel, Bars, hardened (a-v)
9718 Tool Steel, hardened (a-v)
9720 Tool Steel, alloyed or unalloyed (a-v)

15.06 Products from Drawing Plants and Cold-Rolling Mills

9730 Bright Steel (incl. Bright Free-Cutting Steel, Bright-Steel shafts, Bright Special shapes)
9740 Steel Strip for Springs
9750 Cold Rolled Strip
9755 Cold Strip with Plated Surface
9760 Cold Strip with Bright Surface
9770 Cold Strip with Refined Surface
9775 Cold Strip with Plated Surface
9780 Cold Strip, Cladded by Rolling
9790 Cold-Shaped Profiles Made of Hot or Cold Strip
9800 Cold-Shaped Profiles with Refined Surface
9810 Autobody Components
9814 Plate Shapes
9817 Precision Strip Steel
9820 Pressed, Stamped and Drawn Parts
9830 Steel Strips for Baling
9838 Tailored Beams
9840 Tailored Blanks
9850 Metal-Working Components for Automobile Industry (made of Tubes or Sheets)
9860 Products from Drawing Plants and Cold-Rolling Mills

9870 Cylindrical Tubes for Hydraulics and Pneumatics

15.07 Wire and Wire Products

9880 Tie Steel, Screwable
9885 Welded Wire Fabrics
9890 Reinforcing Wire, Reinforcing Wire Mesh, Mine Matting
9900 Rod Mats for Concrete Reinforcing Steel
9920 Wire Nettings
9930 Wire Weavings
9932 Wire Grates
9948 Wire Ropes
9950 Wire Ropes and Braided Wire
9960 Wire and Wire Products
9970 Wires (Galvanised Iron, Easy-Machining, Cold Upsetting and Extrusion)
9980 Fine Wire (Iron)
9990 Iron and Steel Wire, Drawn
10000 Spring Steel Wire, Oil Hardened
10010 Spring Steel Wires, Unalloyed
10020 Flat Wire, Section Wire
10025 Chaser
10030 Other Wire Products
10035 Prestressing Steel
10040 Prestressing Steel, Prestressed Concrete Strand
10050 Galvanised and PVC-Coated Iron Wire

15.08 Steel Structural Work

10058 Lifting Devices, Automotive, Mobile
10060 Automatic Reinforcing System
10070 Plate and Sheet Construction
10080 Bridge Construction
10090 Construction of Halls
10100 Masts
10110 Steel Structural Work, in general
10115 Joining in Structural Steel Work
10120 Steel Structural Engineering
10130 Construction of Assembly Buildings

15.09 Services

10145 Finish Rolling
10146 Blanks (Tool Steel)

16. Furnace and Energy Technology

10150 Engineering and Technical Assistance
10160 Heating Installations, complete
10170 Furnace Optimization (Low NOx Combustion)
10180 Process Control Systems for Industrial Furnaces and Power Plants
10190 Economic Energy Employment

16.01 Rolling Mill Furnaces

10200 Soaking Pits for Annealing
10210 Rolling-Mill Furnaces, Inductive
10220 Soaking Pits for Rolling Mills

16.02 Forging Furnaces

10230 Forging Furnaces
10240 Forging Furnaces, Gas Fired
10250 Forging Furnaces, Inductive

16.03 Continuous Roller-Hearth Annealing Furnaces

10260 Continuous Roller-Hearth Furnaces
10270 Roller Hearth and Walking Beam Furnaces

16.04 Continuous Furnaces for Wire Strip

10280 Strip Heating, Inductive
10290 Strip Edge Heating, Inductive
10300 Continuous Furnaces for Wide Strip

16.05 Bell-Type Furnaces

10310 Bell-Type Furnaces

10320 Bell-Type Annealing and Pot Annealing Furnaces

16.06 Vacuum Furnaces

10330 Vacuum Annealing Furnaces
10340 Vacuum Hardening Furnaces
10341 Vacuum Pumps, Dry Running, for Vacuum Furnaces

16.07 Hardening and QT-Plants

10350 Quenching Baths
10355 Carburizing Furnaces
10360 Hardening Furnaces
10370 Hardening Shop Installations, in general
10375 Hardening and QT-Plants, Electric Heated
10380 Hardening and QT-Plants, Gas-fired
10390 Hardening and QT-Plants, Induction-heated
10400 Hardening and QT-Plants, with Resistance Heating
10401 Laser Hardening Plants
10403 Nitriding Furnaces

16.08 Heating and Heat Treatment Installations

10408 Continuous Furnaces
10410 Double Walking Beam Furnaces
10420 Hardening Shops
10430 Bogie-Type Furnaces
10440 Induction Heating Systems
10450 Industrial Furnaces, Second Hand
10460 Cell Furnaces
10470 Conductive Heating Plants
10480 Furnaces with Mechanically Driven Hearth
10490 Wire Patenting Plants
10500 Plasma Nitriding Plants
10505 Radiators
10510 Roller Hearth and Walking Beam Furnaces
10520 Shaft Furnaces
10530 Steckel Furnaces
10540 Pusher-Type Furnaces, Roller Hearth, and Rotary Hearth Furnaces
10545 Tempering and Drying Stations
10550 Continuous Strand Furnaces for Heat Treatment, Vertical and Horizontal
10560 Heat Treatment Installations
10570 Intermittent Reheating and Heat-treating Furnaces, Open-fired

16.09 Bath Furnaces

10580 Melting Furnaces for Aluminium
10590 Furnaces and Installations for Lead-coating, Galvanizing and Tinning
10600 Salt Bath and Metal Bath Furnaces

16.10 Industrial Furnaces for Special Use

10610 Kilns for Ceramic Industry
10615 Lime Kilns
10620 Controlled Atmosphere And Vacuum Furnaces
10630 Malleablizing Furnaces
10640 Drying Ovens for Cores, Moulds and Die Hoods
10650 Drying Ovens for Stopper Rods
10652 Microwave Furnaces/Dryers
10660 Auxiliaries for Industrial Furnaces

16.11 Inert Gas Plants

10670 Inert Gas Plants

16.12 Insulations

10680 Ingot Insulation
10690 Burning Supports
10700 Calcium Silicate
10710 Insulation Materials
10720 Concussion Protection
10730 Backing Insulating
10735 Heat Protection and Insulation Products
10750 Insulating Bricks
10760 Cooling Tube Insulations
10770 Building Components for Furnaces
10780 Sound Insulation

10790 Vibration Insulation
10800 Thermal Insulation
10803 Wools Felts for Bright Annealing Boxes

16.13 Components

10805 Waste Gas Technology
10810 Bath Rollers
10820 Strip Coolers and Dryers
10830 Ingot Pushers
10840 Ingot and Slab Pusher for Heating Furnaces
10850 Burners for Gas and Oil
10860 Burners, Special Design
10870 Charging and Discharging Machines
10880 Electric Heating Elements
10890 Natural Gas Burners
10895 Fire Place Probes (for Video Cameras)
10900 Gas Burners
10910 Generators for Inert and Reaction Gases
10915 Hardening Agents
10920 Heating Conductors
10950 Pulverised Coal Firing, Plants and Equipment
10960 Laser Light Barriers
10970 Oil Burners
10990 Furnace Riders
11000 Furnace Rolls
11005 Plasma Power Generator
11010 Regenerative Burners
11020 Recuperator Burners
11028 Recuperators
11030 Recuperators, Regenerators
11050 Safety Devices for EAF Oxy Fuel Burners
11060 Radiant Tubes
11070 Radiant Tube Burners
11078 Vacuum Pumps, Dry Running, for Vacuum Furnaces
11080 Heat Exchangers
11090 Heat Recovery Systems
11092 Weighing Systems for Melting Furnaces
11093 Wool Felts for Bright Annealing Boxes

16.14 Operating Materials

11100 Heat Carrier Oil Systems
11110 Hardening Agents (also Hardening Powders and Recarburizing Agents)
11120 Hardening Oils
11130 Hardening Protection Agents
11140 High Quenching Oils
11150 Fire Resistant Hydraulic Fluids
11155 Controlled Atmosphere for Heat Treatment
11160 Polymer Solutions
11170 Lubricants
11180 Spraying Cleaners
11190 Heat Transfer Fluids

16.15 Services

11200 Energy Consulting
11210 Energy Savings
11215 Launching, Attendance and Service for Heating Equipment
11240 Planning and Projecting of Power Plants

17. Refractories Technology

11245 Product Know How for Basic Refractory Bricks and Mixes
11248 Controlling of Refractory Components

17.01 Heating and Heat Treatment Installations

11250 Aluminum Hydroxide
11260 Aluminium Oxide, Alumina
11263 Reinforcement Rods for Refractories
11265 Binding Agents for Refractory Materials
11270 Electro Corundum
11280 Graphite
11290 Ganister
11300 Coke Breeze
11310 Coke Breeze, Dry
11320 Burnt Magnesite
11330 Micro Silica
11340 Fused Aluminium Oxide
11360 Silicon Carbide
11366 Titanium Dioxide
11370 Clays
11380 Alumina Specials
11390 Zirconium Oxide

17.02 Refractory Producing Plants

11400 Refractory Producing Plants

17.03 Refractories

11410 Taphole Bricks for Converter Vessels and Electric Arc Furnaces
11420 Coating, Primer and Gunning Materials
11430 Basic Tamping Clay, Spraying Mixtures and Refractory Mixtures
11440 Basic Bricks (Magnesia-, Magnesia-Chromium-, Chromium Ore-, Chromite-, Dolomite-, Forsterite bricks)
11450 Calcium Silicate
11460 Dolomite Products
11470 Electrode Pastes
11480 Fibre-Ceramic Moulded Articles, Vacuum Moulded
11481 Finre-Ceramic Moulded Articles, Vacuum Moulded, up to 1750° C
11485 Fibre Mats and Felts up to 1600° C
11490 Fibre Products, Ceramic
11500 Prefabricated Units, Refractory
11510 Refractory Concrete
11512 Refractory Concrete, High Strength, for Industrial Floors
11520 Refractories, in general
11530 Refractory Tamping Clays
11540 Anchorages, Refractory
11550 Refractory Materials
11560 Light-Weight Refractory Bricks
11570 Light-Weight and Insulating Refractory Mixes
11580 Light-Weight and Insulating Refractory Bricks
11590 Gas Rinsing Devices, Refractory
11600 Foundry Refractory Mixtures, Self-fluxing
11603 Foundry Mica Slipping plane, Coil Protection, System Coilguard
11610 Hearth Mixes
11620 High-Temperature Burnt Bricks
11630 Blast-Furnace Bricks
11640 Induction-Furnace Mixes
11650 Insulating Material, free from Asbestos
11660 Isostatically Pressed Products
11670 Carbon- and Graphite Bricks
11690 Converter Bricks
11700 Arc-Furnace Bricks
11710 Perforated Bricks
11720 Refractory Mixes, in general
11725 MgO-C-Stones
11730 Mortars and Putties, Refractory
11740 Injection Materials
11750 Ladle Mixes
11752 Torpedo Ladle Linings
11753 Tundish Lining Refractories
11755 Ladle Lining, monolithic
11760 Ladle Bricks
11768 High Temperature Wool (HTW) Products
11790 Runner- and Taphole Linings
11800 Gutter Relining, Cooled
11810 Acid-Proof Bricks
11820 Acid Ramming Masses and Slinger Masses
11830 Fire-Clay Bricks
11840 Ladle Shrouds
11850 Slide Gate Nozzle Ceramics
11860 Cast Basalt
11865 Protection Coats, Fabric, Fire-Resisting
11870 Silicon-Carbide Bricks
11880 Silica Bricks, Refractories "Tondinas"
11886 Special Adhesives (up to 1200° C)
11890 Spraying and Repair Compounds
11900 Casting Pit Refractories
11910 Tamping Clays, Foundry Refractory Mixtures, and Vibrating Compounds
11915 Tamping Clays, Spraying and Refractory Mixtures
11920 Stoppers and Nozzles
11930 CC-Products, Refractory

11940 Submerged Entry Nozzle (SEN), Mono Submerged Nozzle
11950 Technical Ceramics
11960 High-Alumina Bricks (Andalusite, Bauxite, Corundum, Mullite, and Sillimanite bricks)
11970 Torpedo Ladle Bricks
11978 Release Lubricants for Sliding Valve Refractory Nozzles
11979 Release Lubricants for Sliding Valve, Nozzles as well as Steel Ladle Gas pouring Cones
11980 Tundish Compounds
11985 Cementfree Castables for Blast Furnace Runners
11990 Vermiculite
12000 Thermal Insulation Materials, free from Asbestos
12004 Vacuum Moulded Articles
12005 Vacuum Moulded Articles, free from Ceramic Fibre
12020 Zirconium Nozzles
12030 Zirconium Bearing Bricks
12040 Zirconium Silicate and Powder

17.04 Processing of Refractories

12050 Preparation of Used Refractories
12060 Testing of Refractory Material

17.05 Machines for Refractory Construction

12070 Air Hammers to Break-out Slag and Refractories
12071 Lining and Removal Robots
12075 Chaff
12080 Converter-Taphole Repair Cars
12090 Converter Lining Devices, Mobile
12100 Manipulators for Refractories
12110 Ladle Spraying and Gunning Installations
12120 Pumping Machines for Refractories
12130 Centrifugal Machines for Refractories
12140 Spraying and Gunning Machines for Refractories
12142 Tundish Lining, Casting and Spraying
12150 Ladle Ramming Equipment, automatic

17.06 Refractory Constructions

12160 Linings for Furnaces of all Types
12170 Combustion Chambers
12180 Refractory Constructions
12190 Refractory Tamping Clays
12200 Suspended Roofs

17.07 Services

12204 Training Measures - Refractories
12205 Refractory Maintenance at Operating Temperature
12206 Refractory Systems

18. Machinery and Plant Engineering

12210 Plant Construction, in general
12220 CAD Constructions
12230 Engineering and Technical Assistance
12240 Bars, Columns, and Shafts
12250 Industrial Engineering
12258 Standard Elements for the Production of Cutting and Punching Tools
12260 Cleaning Material
12270 Second-Hand Machines (Buy and Sell)
12280 Special Constructions
12285 Heat Exchangers

18.01 Mining Plants, Machines and Equipment

12290 Underground Plants and Machines

12300 Bucket Conveyors

12309 Conveyors
12310 Conveying Plants and Machines
12330 Structural Steel Sections for Mines

18.02 Chemical Plants and Auxiliaries

12350 Construction of Vessels and Apparatus
12360 Liquid Gas - Deposit Stations
12370 Gas Holders, Gasometers
12390 Acid Stacks
12400 Acid and Chemical Resisting Plants and Installations
12410 Nitrogen Extraction Plants
12420 Hydrogen Producing Plants

18.03 Steam Generators, Plants and Auxiliaries

12425 Waste Gas Techniques
12430 Waste Heat Boilers
12440 Steam Filters
12450 Steam Boilers, in general
12460 Pressure Vessels
12480 Pulverized Coal Firing Plants and Equipment

18.04 Foundry Plants, Machines and Requirements

12354 Pouring Ladles
12489 Automatic Pouring Control
12490 Shot Blast Equipment
12500 Moulding Machines
12520 Pouring Units
12530 Foundry Plants, Machines and Equipment
12535 Casting Auxiliaries
12536 Foundry Tools
12540 Foundry Consulting and Engineering
12542 Casting Software
12550 Core Shooters
12560 Boshing Machines
12570 Robots
12580 Sandmixer
12586 Melting Furnaces, inductive
12590 Shaking Ladles
12592 Lifter
12600 Mould Plates

18.05 Power Stations

12610 Steam Power Stations
12620 Power Stations (Plants and Centers), Electric

18.06 Airing Plants and Appliances

12630 Blowers
12635 Ventilators for Industrial Use
12650 Air-Conditioning Systems, in general
12660 Heating/Cooling Instruments for Hot Shops
12670 Air-Conditioning Systems for High Temperatures up to 90° C, for Crane Cabins, Control Rooms, etc.
12690 Expansion Pipes
12700 Air Ducts
12710 Airing Plants and Appliances, in general
12720 Natural Ventilation
12730 Exhausters
12740 Ventilators

18.07 Water-Economic Plants, Appliances and Auxiliaries

12750 Chemical Water Treatment
12760 Equipment for Hydraulic Water and Accumulators
12770 Filtering Installations for Circulating Water
12780 Expansion Pipes (Rubber)
12790 Cooling Towers
12796 Magnetic Filters
12800 Additions for Hydraulic Pressure Water

12810 Water Preparation Plants
12820 Water Treatment Plants
12830 Chemical-free Water Demineralization, Water Purification and Recycling
12840 Water Re-cooling Plants
12845 Liquide Chillers
12846 Water Filtration

18.08 Other Plants

12850 Flexible Tubes for Granulated Slags
12860 Slag-Disposal Plants (incl. Slag Granulation Plants)
12870 Plants for Lubricating Oil

18.09 Maintenance

12875 Erection and Maintenance
12880 Spare Parts and Consumer Goods
12890 Maintenance, in general
12894 Maintenance Systems
12895 Steel Mill Services
12896 Repairing and Modernizing of Machine-Tools
12900 Maintenance of Large Gearings
12920 Maintenance for Continuous Casting Plants for Blooms and Slabs
12930 Maintenance for Continuous Casting Plants for Blooms and Billets
12940 Maintenance for Continuous Casting Plants for Blooms and Rounds
12950 Mould Repair
12960 Ingot Mould Repairs
12964 Cleaning of Cooling Systems
12970 Ladle Repair Technique, Refractories
12980 Repairs, Spare Parts
12983 Software for Maintenance
12990 Preventive Maintenance
13000 Cleaning of Heat Transfer Systems
13010 State-dependent Maintenance of Machines

18.10 Engines and Machines

13020 Steam Turbines
13021 Gas Turbines
13030 Rotary-Piston Compressors
13040 Compressed Air Equipment
13050 Compressors for Natural Gas and Long-Distance Gas
13060 HD Stores for Natural Gas
13070 Piston Pumps
13080 Piston Compressors
13083 Corrosion Resistant Pumps
13090 Centrifugal Pumps
13100 Mixers for Fuel Gases
13120 Lubricating Pumps
13130 Screw-Type Compressors
13150 Turbo Compressors
13160 Vacuum Pumps

18.11 Gearings and Driving Elements

13170 Driving Technology Engineering
13174 Steel Fitting Gears
13180 Brakes
13190 Brake-Disc Fastening
13195 Torque Limiting
13200 Flanged Couplings
13210 Articulations (Wearing Pieces)
13220 Universal-joint Shafts
13230 Geared Rollers
13240 Gearings and Driving Elements
13250 Heavy Gearings
13255 Chain Gears and Wheels
13260 Hirth Serration
13261 Serration
13270 Couplings
13280 Couplings, Elastic
13290 Couplings, Mechanical and Hydrodynamic
13298 Planetary Gearboxes
13300 Planetary Gearings
13308 Swivelling Drives
13310 Safety Couplings
13320 Special Constructions

13350 Shaft-Hub Junctions, free from Play
13360 Shaft Couplings (Rigid)
13380 Gearings (Toothed Wheel)
13390 Cogged Wheels

18.12 Bearings

13400 Rotating Unions
13404 Elastomer Bearings
13406 Joint Bearings/Tops
13410 Sleeve Bearings
13420 Compact Sleeve Bearings (Ceramics-Metal)
13430 Ball Bearings
13440 Cam Rollers
13460 Linear Systems
13470 Roller Bearings
13480 Back-up Rollers
13484 Thermal Separation
13485 Supporting and Controlling Rollers
13490 Anti-Friction Bearings
13492 High-Temperature Ball and Roller Bearings
13500 Roll Bearings

18.13 Oil-Hydraulic Equipment, Appliances and Auxiliaries

13510 Rotary Feeders
13520 Pressure Gauges, Switchgears, and Logging Devices
13530 Pressure Switches
13540 High-Pressure Flange Couplings
13548 Hydraulic Accumulators
13550 Hydraulic Power Units
13560 Hydraulic Jointings and Shaft Seals
13570 Hydrogearings
13580 Hydromotors
13590 Hydropumps
13595 Hydro-Stores
13600 Hydrovalves
13610 Hydrocylinders
13620 Oil-hydraulic Equipment, Appliances and Auxiliaries
13630 Vibration Dampers
13640 Servo Valves
13645 Continuous Valves
13660 Oil-hydraulic Plants (complete)
13670 Water Hydraulics

18.14 Control Equipment and Components

13680 Cut-off Fittings
13695 Torque Limiting
13710 Electric-hydraulic Actuators
13718 Cylinders, Power-Assisted
13720 Multiple-Spot, Single-Purpose and All-Purpose Controllers
13730 Control Equipment, complete
13740 Control Armatures
13745 Control Valves
13760 Servomotors
13780 Continuous Single-Purpose and All-Purpose Controllers

18.15 Pipelines and Auxiliaries

13786 Waste Gas Technology
13790 Retaining Valves
13810 Fittings
13820 Flanges
13840 Rubber Expansion Joints
13850 High-Pressure-Tube Technology
13859 Excess Flow Cut Off Valves
13860 Expansion Joints
13890 Pipe-Break Safety Valves
13900 Pipe Swivel Joints
13910 Pipelines and Auxiliaries
13920 Pipework
13930 Pipeline Auxiliaries
13940 Return Valves
13945 Flexible Tubes
13947 Flexible Tubes with Ceramic Wear Protection
13950 Goggle Valves

18.16 Wire-Stranding Machines

13955 Cable-Stranding Machines
13958 Rope-Stranding Machines

18.17 Pattern Construction

13960 Material for Pattern and Prototype Construction

13970 Pattern and Prototype Construction

18.18 Machine Tools

13980 Slicing Machines
13990 Threading Machines
14000 Band Sawing Machines
14010 Bending and Straightening Machines
14015 Slab-Sawing-Machines
14020 Wire Processing Machines
14030 Roller Spinning Machines
14040 Milling Machines
14060 Spark-Erosion Machines
14070 Honing and Lapping Machines
14080 Cable Sheathing Presses
14081 Cable Sheathing Presses (Lead and Aluminium)
14088 Sharpening Machines
14090 Cold Circular Sawing Machines
14095 Hot Circular Sawing Machines
14100 Mould-working Machines
14130 Shears for Metallurgical Plants
14140 Flying Shears, Pedestal Shears, Plate-working Machines
14148 Shear Blade Grinders
14150 Shears Centers
14158 Rotary Table Grinders
14160 Grinding and Polishing Machines
14168 Slitter Knife Grinders
14170 Special Machines for Machining
14180 Special Machines for Chipless Forming
14190 Special Machines for Special Jobs
14195 Concrete Cutting Saws
14200 Stone-cutting Saws
14210 Plate Shears
14215 Saw Manufacturers
14220 Friction Sawing Machines

18.19 Tools

14230 Bending-off Tools
14240 Drills
14242 Drills for Tapholes
14250 Diamond Tools
14260 Pneumatic Tools
14280 Cemented Carbide Alloys (Cermets)
14290 Hard Metal Cutting Panels and Shape Elements
14300 Carbide/Hard Metal Cutting Tools
14304 HP-Grinding Wheels
14306 Sawing Bands and Blades for Metallic and Non-Metallic Materials
14310 Saw Blades for Metal
14318 Mill Blades
14320 Shear Blades
14323 Slitter Knives and Accessories for Slitting Lines
14324 HP-grinding Wheels
14325 Cut-off Wheels
14326 Roll Grinding Wheels
14330 Abrasive Materials and Wheels
14334 Special Tools for Die Casting
14336 Cutting Wheels
14337 Roll Grinding Discs
14338 Machining Tools, Special Machining Tools

18.20 Tooling and Chucking Techniques

14380 Clamping Hydraulic
14400 Prestressing Elements
14401 Bolting, large

18.21 Components

14410 Sealings
14412 High Chemical- and Thermal-Resistant Sealings
14420 Rotary Sealings for Charging of Gases or Liquids
14430 Rotating Unions for Cooling Water for Continuous-Caster Rollers
14440 Nozzles (incl. Blow-off Nozzles and Descaling Nozzles)
14450 Pistons
14460 Flexible Tubes, made of Metal

14470 Buffers (made of Rubber or Cellulose)
14480 Stuffing-Box Packings
14490 Wear Plates

18.22 Operating Materials

14500 Solid Lubricants
14510 Industrial Oils
14520 Cooling Lubricants

18.23 Tribology

14522 Metering and Monitoring Devices for Lubricants
14523 Oil Circulating Systems for Bearing and Gear Lubrication
14524 Dual-line Grease Lubrication Systems for Steel Works and Rolling Mill Plants
14525 Special Lubricants
14526 Lubricating Devices, Central
14527 Oiling and Deoiling Machines

18.24 Services

14528 Service for Compressors and Turbines
14529 Mechanical Treatment of Hydraulic Setters

19. Transport and Storage Techniques

14530 Engineering and Technical Assistance
14538 Magnetic Stackers and Conveyors
14540 Transports and Logistics for Industrial Recyclings
14548 Transports, Forwarding, Haulage
14550 Transport Technology

19.01 Iron and Steel Works Vehicles

14560 Slab, Bloom and Billet Transporting Equipment, Rubber-Mounted
14570 Coil Transport Systems
14580 Coil Transfer Cars
14590 Iron and Steel Works Vehicles, in general
14600 Railmounted Vehicles for Metallurgical Plants
14605 Air Cushion Vehicle
14610 Slag Pot Carriers
14620 Slag Transfer Cars
14630 Scrap Transport Trailer with Weighing Device
14640 Steel Work Vehicles

19.02 Rail-Born Vehicles

14650 Diesel Locomotives/Engines
14660 Railway Wagons
14670 Self-propelling Wagons

19.03 Track Technique

14680 Turntables and Transfer Tables
14684 Track Technique
14690 Shunting Units

19.04 Trackless Vehicles

14700 Trailers
14705 Trucks and Trailers
14720 Electric Ground Level Transporters
14730 Electric Trucks
14734 Electric Four-Way Sideloaders
14740 Driverless Transport Systems
14742 Driverless Transport Systems for Steel and Aluminium Coils
14750 Fork Pilers and Transverse Fork Pilers
14760 Rubber-tired Heavy-Load Vehicles
14790 Trucks
14810 Heavy-Load Tractors (Vehicles)
14820 Telescopic Excavators
14822 Transport Systems for Coils

19.05 Continuous Conveyors

14830 Conveying Installations, in general
14840 Pneumatic Conveyors
14850 Vibrating Conveyors
14860 Vertical Conveying
14880 Steeply Inclined Conveyors

14890 Continuous Conveyors for Bulk Material
14900 Continuous Conveyors for Parcelled Goods
14910 Belt Conveyors and Worm Conveyors
14920 Troughed Chain Conveyor

19.06 Cranes

14930 Rotary Cranes
14940 Casting Cranes
14950 Cranes, Lifting Gears, and Auxiliaries, in general
14955 Crane Services
14960 Overhead Travelling Cranes
14970 Portal Cranes
14980 Claw Cranes
14990 Buffers
14992 Vacuum Devices for Heavy Industry
14993 Automatic Pilers/Stackers (vacuum lifting devices)

19.07 Balances

14997 Balances for Bunches and Coils
15000 Blending and Mixing Scales
15010 Wagon Weighbridges and Vehicle Balances
15020 Crane Scales
15030 Scales for Roller Tables
15040 Balances for Continuous Weighing
15041 Balances for Alloying Elements
15042 Balances for Pig Iron
15043 Balances for Scrap
15044 Balances for Static Weighing
15045 Balances for Stationary Weighing
15050 Load Systems for Ladle-Turrets or Cars
15060 Load Cells
15080 Weighing Systems for Silos

19.08 Storage and Handling Equipment

12862 Slag Granulation Plants
15090 Coil High-Bay Warehouses
15100 Flowbien Yard Systems
15110 Labelling Systems
15120 Lattice Girder Storage Systems
15134 Lift Working Stage
15140 Storage Technology and Automation Systems for Sheets, Long Products, and Stackable Boxes
15141 Storage Technology and Automation Systems for Sheets, Long Products, and Bunker Stocks
15150 Storage and Handling Equipment
15154 Vacuum Lifting Devices for Large and Medium Formate Plates
15155 Storage Systems for Coils
15160 Stock and Shelf Systems
15164 Dispatch Equipment for Long Items, Stackers for High-Bay Warehouses
15170 Marking Systems
15180 Pallets and Cassettes
15188 Vertical Carousels (Paternosters)
15189 AS/RS(automated storage/retrieval system)
15190 Operation of Shelves
15192 Sideloaders
15193 Crossheads and Turning Arrangements
15195 Castellated Shelves Systems

19.09 Stores Organization

15198 Labels
15200 Identification
15208 Stock Logistics
15210 Stores Organization

19.10 Components

15220 Arresting Appliances
15230 Loading and Unloading Devices
15240 Sheet Pack Dogs
15250 Ingot Pusher, Withdrawing Devices
15270 Bunker Discharging Equipment
15280 Bunkers and Silos
15290 Coil and Sheet Packaging

15300 Dogs for Coils
15310 Permanent Magnets
15320 Electric Equipment for Cranes etc.
15330 Electric Hoists
15335 Labels
15350 Conveyor Belt Skimmers
15360 Conveying Plants and Appliances
15380 Conveyor-Belt Vulcanizing Devices and Materials
15390 Grabs and Tongs
15400 Manipulators
15410 Lifting Clamps, Safety Clamps
15420 Industrial Robots, Suitable for Ironworks, Sensor-controlled
15430 Chains
15431 Chain Wheels
15435 Sprockets
15440 Tilting Shackles, Heavy Shackles
15450 Crane Traversing Wheels
15455 Crane Cables
15460 Stock Yard Equipment
15470 Laser Distance Measuring Instruments for Cranes
15480 Lifting Belts
15490 Lifting Magnets and Equipment
15500 Electromagnetic Brake Systems
15510 Magnets, Magnetic Systems
15515 Slab Turning and Transportation Magnets
15520 Wheels
15530 Friction and Wear Protection
15540 Containers for Bulk Materials
15550 Sheaves
15560 Separation Magnets
15570 Silos for Refractories
15580 Silos for Bulk Materials
15590 Bulk Handling Plants
15600 Guide Pulleys
15610 Packaging Technique
15620 Wear Resisting Coating (Aluminum Oxide Ceramics)
15630 Wear Resisting Coatings (Rubber)
15632 Wear Protection
15635 Rotary Railcar Dumpers
15640 Wagon Tipplers
15650 Hot Transport and Thermo-Hoods for Steel Ingots
15652 Weighing Systems for Steelmaking

19.11 Operating Materials

15660 Lubricants

19.12 Packaging Technique

15664 Packaging Materials

20. Electrical Engineering and Automation

15670 Linear Actuators and Turn Tables, electromechanically
15680 Engineering and Technical Assistance
15690 Technical Translations and Documentation

20.01 Electrical Equipment for Metallurgical Plants and Rolling Mills

15700 Work Layout Systems
15720 Three-Phase AC Motors
15730 Electrical Equipment for Metallurgical Plants and Rolling Mills
15740 Electrical Equipment for Rolling Mills
15750 Electric Large Plants, complete
15760 Energy Supply for Movable Consumers
15770 Spring Cable Reels
15780 Spring Hose Reels
15785 Remote Radio Control Systems
15788 Radio Systems
15790 Radio Control Systems
15800 Geared Motors
15810 DC Motors
15820 High Current Cables and Electric Wires, Water Cooled

15830 Cables and Electric Wires
15850 Motor Wire Reels
15860 Low-Voltage Switch Gears
15864 Switches, Pressure
15866 Switches, Temperature
15870 Switch Stations
15880 Slipring Assemblies
15890 Safety Systems
15900 Heavy Current Capacitors
15910 Plug Appliances
15920 Rectifiers (Frequency Converters)
15930 Current Leads (incl. Moveable ones and Bus-Bars)
15932 Thermowells
15940 Transformers (also for Industrial Furnaces)
15960 Intercom Telephone Systems
15962 High Tension Leads and Contact Pieces
15964 Speed and Position Measurement Units
15965 Speed and Position Measurement Encoders

20.02 Automation

15970 Automation, in general
15980 Automation Lines for Ores and Fines
15990 Automation Lines for Blast Furnaces
16000 Automation Lines for Industrial Furnaces, in general
16010 Automation Lines for Cold-Rolling Mills
16020 Automation Lines for Cokery
16030 Automation Lines for Steelworks
16035 Automation Systems for Blast Furnaces
16040 Automation Systems for Hot Rolling and Pipe Mills
16041 Automation Systems for Hot Rolling
16050 Automation Lines and Process Control Systems for Metallurgical Plants
16055 Automation of Strip Processing Lines
16060 Automatic Character Recognition Systems
16063 Strip Flow Control
16070 Data Transmission Systems
16080 Industrial TV-Engineering
16090 Information and Communication Systems
16100 Identification
16110 Tailor-Made Complete Systems
16120 Automation Systems for Vehicles (inductive)
16130 Automation Systems (by Image Processing) for Vehicles
16140 Automation, in general
16150 Positioning Devices for Cranes
16160 Process Automation
16162 Process Automation for Strip Processing Lines
16170 Process Automation for Continuous Steel Casters
16180 Process Automation for Steelworks Plants
16190 Process Control Systems
16192 Process Control with IR-Detectors
16200 Process Optimization
16202 Process Optimization with Weighing Systems
16205 Shopfloor Systems
16210 Control Equipment, complete
16220 Control Centres for Metallurgical Plants and Rolling Mills
16230 Controls, electric
16240 Controls, electronic
16250 Controls for Pressure-Water Tanks
16260 Controls, hydraulic
16270 Controlling Devices, Infrared
16280 Current Supply for Automation and Control
16290 Networks (LAN, WAN)
16293 Video Technology
16295 Weighing Systems for Steel Plant Process Automation

20.03 Data Processing

16300 Analog Instruments and Auxiliaries
16305 Archiving
16310 Acquisition of Operating Data and Machine Data
16320 Data Acquisition Systems
16330 Data Processing
16338 Digital Image Processing
16340 Digital Instruments and Auxiliaries
16350 Expert Systems
16355 Manufacturing Execution System (MES)
16360 Turnkey Hard-/Software Systems
16376 Weighing Systems for Steel Plant Data Processing
16380 X-Window Terminal

20.04 Software

16390 Software for Simulations
16393 Software for Archiving, Document Management, and Workflow
16395 Software for Order Processing, Warehouse, and Test Certificate Management
16400 Application Software
16410 Software for Slitting Lines
16415 Merchandise Planning and Control Systems for Steel and Metal Trade
16420 Software for Production Planning and Control
16430 Software for Statistic Process Control and Quality Control
16440 Technical Calculation Programs

20.05 Maintenance

16450 Machine Diagnosis
16460 Maintenance and Inspection

21. Measuring and Testing Techniques

16470 Gas Measuring Instruments for Degreasing Lines
16472 Gas Measuring Instruments for Metal Degreasing Plants
16480 Gas Measuring Instruments for Metal Cleaning Systems

21.01 Measuring and Testing Techniques, in general

16490 Automation and Measuring, Colorimetry
16500 Pressure Transmitter
16508 Corrosion Testing Sets
16510 Measuring Techniques
16511 Measuring of Magnetism
16520 Measuring and Testing Systems, in general
16530 Measuring and Testing Techniques, in general
16540 Data Acquisition
16550 Data Processing
16552 Identification Markers for Measuring and Testing Means
16553 Labels for Measuring Devices and Testing Status Marking
16560 Radio Activity Signalling
16564 Recorders
16565 Tension Control and Tension Measurement
16566 Breakout Detection and Residual Wall Thickness Testing (Refractory Relining)
16568 Roll Measuring Instruments

21.02 Measurement Physical Properties

16570 Distance Gauges
16580 Distance Sensors for Positioning and Length Measurement (Laser, Ultrasonic, and Inductive)
16581 Distance Sensors for Positioning and Length Measurement (magnetostrictive)

16585 Molten Metal Level Control
16590 Converter Bath-Level Indication
16600 Bath Level Control Systems
16605 Coating Measurement Systems
16608 Automatic Gauge Control (AGC)
16610 Slip Gauge
16612 Strip Flatness Gauges
16613 Strip Flatness Control
16615 Strip Flow Control
16620 Strip Tension Measuring Systems
16625 Strip Tension Installations for Driven S-Rolls
16630 Width Gauges
16640 Extensometers and Resistance Strain Gauges
16645 Extensometers (non-contact, optical)
16650 Elongation and Massflow Measuring Systems
16652 Temper Rolling and Bulk Flow Measuring Systems
16660 Thickness Measuring Devices and Gauges
16670 Thickness Gauge
16680 Distance-to-Fault Switches and Measuring Devices (Optical, Acoustical and Inductive)
16690 Torque Measuring Installations for S-Rolls
16700 Torque Measuring Devices
16702 Edge Defect Detection
16704 Section and Profile Measurement for Rods and Bars
16710 Revolution Counters
16720 Flow Meters
16721 Flow Meters, e. g. for Coal Injection
16730 Flow Control
16740 Measuring of Diameter
16750 Electrical Measuring of Mechanical Quantities
16755 Electronic Measuring Systems for Hydraulic and Lubricating Oils
16770 Shape Measuring Technology
16780 Level Indicators
16790 Level Control
16800 Level Control
16810 Gas-measuring Instruments
16815 Oxygen Probes for Flue Gas
16820 Instruments and Chemicals for Waste Water Control
16830 Speed Gauges
16840 Mold Flow Measurement Systems
16850 IR-Switches
16860 IR-Radiation Pyrometers
16861 IR-Radiation Thermometers
16870 IR-Radiation Pyrometers with Scanner
16871 IR-Radiation Thermometers with Scanner
16873 IR-Thermography
16875 Infra-red Thermography
16877 IR-Cameras, Infra-red Slag Detection
16880 Insulating Capillaries
16890 Dynamometers for Tension and Pressure
16891 Force Measurement and Weighing Systems
16900 Cooling-Water Control
16910 Length-Measuring Devices for Tubes
16920 Length Gauges
16930 Length Measuring Instruments (also for Lines and Paths)
16940 Length Measuring Equipment, Ultrasonic, (also for Distances, Intervalls, and Lines)
16950 Length and Speed Measuring Systems (Optical)
16955 Speed and Position Measurement Units
16956 Speed and Position Measurement Encoders
16960 Laser Speed and Length Measuring Instruments
16970 Measuring Devices for pH and Conductibility

16980 Mass Flowmeters
17000 Measuring of Refractory Linings (under Operating Conditions)
17010 Electric Measuring Instruments
17020 Measuring Machines
17030 Data Printers
17033 Microstructure/ Roughness Measurement
17035 Surface Crack Identification
17040 Measuring Instruments, opto-electronic
17050 Flatness Measuring Devices
17057 Profile Measuring Gauges
17060 Shape Measuring Systems (Non-Contact)
17080 Pyrometers
17090 Pyrometer Pipes
17100 Quotient Pyrometers
17110 Hot Metal Detectors, HMD
17118 Measurement Devices for Rolls
17120 Measuring Devices for Tubes
17130 Layer Thickness Gauges
17133 Layer Thickness Controlling
17135 Layer Thickness Controlling
17138 Slag Detection by Infrared
17140 Slag Detectors
17150 Slag Thickness Measurement
17160 Forgings, Measuring
17170 Lubrication Control for Roller Bearings
17180 Vibration Measuring Devices
17190 Wire Rope Testing Machines for Steel Ropes having Round or Rectangular Cross-Sections (Rope Belt Conveyor)
17200 Dust Measuring Devices
17210 Radiation Detection Equipment
17220 Input Inspection Concerning Nuclear Radiation
17230 Immersion Thermocouples
17240 Dew-Point Measuring Devices
17250 Thermometers
17260 Thermocouples
17270 Sheath Tubes for Thermocouples
17274 Thermographic Measurement
17276 Thermometers
17280 Measuring Instruments for Thermal Conductivity
17290 Roll Force Measuring Systems
17300 Measuring Devices for Rolling Mills
17310 Resistance Thermometers
17320 Line Scan Cameras
17322 Non-destructive Thickness Measuring of Refracotry Linings (while Shut Down)
17325 2-Colour Pyrometers with Glass Fibre Optics

21.03 Quality Management

17340 3-D Shape Measuring of Rails and Similar Profiles
17341 3-D Shape Measuring of Welded Joints
17350 Breakout Predetection
17352 Break-out Protection and Control
17360 Break-Out Control
17370 In-line Optical Surface Inspection
17380 Measuring Instruments for Quality Management
17384 Mould Check
17387 Mould Check
17390 Length, Speed, and Profile Measuring Systems
17395 Pinhole Detection
17400 Pit Detection
17408 Surface Inspection
17410 Surface Inspection
17415 Surface Inspection of Strip Steel
17420 Measuring of Refractory Linings (under Operating Conditions)
17426 On-line Measuring of Oils and Waxes

17430 On-line Optical Surface Inspection
17432 Online Surface Quality Control, Optical
17440 Roughness Detection, online
17442 Weld Seam Tracking Systems for Tubes
17445 Systems for Quality Data Inspection and Treatment

21.04 Quality Control

17385 Early Diagnosis (Sticking Type of Breakout)
17447 Surface Inspection of Strip Steel, automatic and complete
17448 Suface Inspection of Strip Steel, automatic, complete
17450 Quality Control, visual

21.05 Services

17470 Measuring Techniques, Services

22. Materials Testing

17473 Destructive and Non-destructive Testing

22.01 Non-destructive Testing

17480 Consulting, Performance, and Equipment
17490 Image Processing, IR, Barcode with Radio-MDE
17500 Demagnetising Facilities
17510 Testing Devices for Internal Pressure
17520 Corrosion Testing
17530 Measuring and Testing Devices, Automatic
17540 Ultrasonic Testing Instruments/Machines
17560 Non-Destructive Testing of Steel Ropes having Round or Rectangular Cross-Sections
17570 Non-Destructive Tube Testing Devices
17580 Non-Destructive Materials Testing Instruments, in general
17589 Non-Destructive Materials Testing Devices, Acoustic
17590 Non-Destructive Materials Testing Instruments, electromagnetic
17610 Non-destructive Materials Testing Instruments, X-ray Operated, Computer-Tomography
17620 Non-Destructive Material Testing Instruments, optical
17630 Non-Destructive Materials Testing, X-ray Operated
17640 Non-destructive Material Testing by Acoustic Emission Analysis
17650 Ultrasonic Testing
17660 Non-Destructive Materials Testing
17664 Non-destructive Material Testing by Fluorescent and Red/White Penetration Methods
17665 Non-Destructive Material Testing by Fluorescent and Red/White Testing Methods
17670 Non-Destructive Materials Testing with Ultrasonic Excitation without Coupling Agent
17680 Non-Destructive Materials Testing, Opto-electronic
17690 Non-Destructive Materials Testing (Services)

22.02 Tensile Testing, Fatigue Testing

17698 Grips for Tensile Testing
17700 Stress Analyses and Reliability Tests for Machines and Components

17710 Consulting, Performance, and Equipment
17720 Fatigue Testing Machines
17730 Hardness Testing Instruments/Machines
17740 Hardness Testing Instruments
17750 Machines for Preparation of Tensile Test Specimens
17760 Testing And Analysis of Friction and Scuffing
17770 Crack Detecting Devices
17780 Presses for Tube Testing
17790 Torsion Testing Machines
17800 Universal Testing Machines for Tensile, Compression, Bending and Tensile Test Specimens

22.03 Test Methods

17810 Chemical Analysis
17820 Particle Size Analysis
17830 Mechanical-technological Testing
17840 Metallographic Testing
17850 Technological Testing Methods
17852 Technological Testing Methods, Microscope Video Analysis
17860 Deep Drawing Testing Machines (Plates, Sheets, and Strips)
17880 Testing of Rolls (Concentric Running, Eccentricity)
17888 Corrosion Testing
17890 Machines for Impact Tests

22.05 Fatigue Strength Tests under Variable Stress Amplitude

17896 Testing of Safety Valves under Operating Conditions

22.06 Failure Analysis

17898 Failure Analysis

23. Analysis and Laboratory Equipment

17900 Engineering and Technical Assistance

23.01 Sampling and Preparation

17910 Gas Probes
17915 Sampling
17920 Sampling Devices
17940 Sample Stamping Dies
17950 Transport of Samples
17960 Preparation of Samples
17970 Specimen Preparation for X-ray Fluorescence Analysis
17980 Sample Preparation for OES and XRF
17990 Sample-Preparation Machines
18000 Spectrometer Sample Preparation with Remelting Units
18010 Stamping Tools for Samples

23.02 Analytical Equipment

18020 Analytical Equipment
18025 Evaluating Instruments for Oxygen Measuring
18027 Automated Analysis for Process Control and Waste Water Management
18030 Automation Lines for Analysis and Laboratories
18040 Gas Analysing Instruments
18048 Laser Induced Fluorescence
18050 Laser Plasma Spectrometers
18059 Mass Spectrometers
18060 Measuring Devices for pH and Conductivity
18070 Oil-in-Water Monitoring in Laboratories and Industries
18080 Optical Emission Spectrometers
18090 Analytical Equipment for O2
18100 Plasma Spectrometers

18105 X-ray Diffractometers
18110 X-ray Fluorescence Spectrometers
18120 X-ray Fluorescence Spectrometer, portable
18130 Oxygen Probes
18138 Heavy Metal Analysis in Water, Laboratories, Field, Process, and Online
18140 Nitrogen Analysis Systems for Direct Evaluation
18150 Nitrogen Probes
18160 Hydrogen Analysis Systems for Direct Evaluation
18170 Hydrogen Probes
18180 Auxiliaries for Analysis

23.03 Laboratory Equipment, in general

18190 Analytical Standards
18200 Analytical Reference Materials
18202 Sample Preparation Equipment for OES and XRF
18210 Calibration Test Pieces
18220 Annealing Boxes
18230 Laboratory Furnaces
18240 Laboratory Equipment
18250 Laboratory Automation
18260 Saggers
18270 Spectographic Samples/Tests
18280 Crucibles

23.04 Metallography

18290 Services
18300 Metallographic Equipment
18310 Metallographic Laboratories
18320 Metallographic Testing

24. Environmental Protection and Disposal

18330 Consulting and Measuring
18340 Engineering and Technical Assistance
18343 Environmental Protection and Dispard Recycling of Steel Mill Wastes
18344 Environmental Systems

24.01 Dust Removal and Gas Purification

18342 Waste Gas Techniques
18348 Oxygen Probes for Flue Gas
18350 Suction Systems and Equipment
18360 Waste-Gas Cooling Facilities
18362 Waste Gas Cooling with Heat Reclamation
18370 Waste-Gas Purification Plants
18375 Secondary Waste Gas Cleaning Systems
18376 Sintering Waste Gas Cleaning Systems
18377 Desulphurisation of Sintering Waste Gas
18378 Waste Gas Cleaning for Pelletizing Plants
18380 Waste Heat Boilers
18390 Aerosol Separation
18400 Agglomeration of Fines from Foundries and Steelworks
18410 Electrostatic Precipitators (also Wet)
18420 Dust Removal and Gas Purification
18430 Dust Removal Installations and Auxiliaries, in general
18434 Dedusting Systems
18436 Primary Dedusting
18438 Secondary Dedusting
18440 Dust Removal Filters and Installations (Cartridge, Circular and Hose Filters)
18450 Plants for Nitrogen Removal
18460 Catalysts for Nitrogen Removal (DENOX)
18470 Secondary Dust Removal for Sintering Plants
18480 Filter Mediums
18490 Gas-Recovery Plants
18500 Cloth Filters
18502 Puls Jet Filters

18504 Reverse Air Filters
18510 Casthouse Dust-Removal
18515 Blast Furnace Off-Gas Cleaning
18520 Hot-Gas Filtration
18530 Industrial Vacuum Cleaners
18535 Catalytic Plants
18536 Service for Catalysts
18540 Compact Air Purifiers
18550 Laser-Clean-Box
18560 Air Filters (also Tandem Filters)
18570 Cyclones
18580 Post-Combustion, Catalytic
18590 Post-Combustion, Thermal
18600 Wet Separators
18608 Wet Dust Removing Plants
18610 Secondary Dust Removal (wet) for Sintering Plants
18615 Wet Electro Filters
18620 Wet Cleaning Plants
18630 Exhaust Gas Desulphurization for Boiler and Sintering Plants
18640 Flue Gas Collectors for Waste and Miscellaneous Waste Compustion Plants
18645 Recycling of Steel Mill Wastes
18650 Dust Separators
18660 Dust Measuring Devices
18670 Dust Recovery Plants
18675 Dust and Erosion Control
18680 Dust Suction Systems and Equipment
18690 Thermal Waste Air Cleaning
18693 Dry Cleaning Plants for Waste Gas
18695 Quenching Towers
18700 Dust Removing Plants, Dry
18710 Dry Cleaning Plants
18720 Venturi-Tube-Type Dust Removers
18728 Central Exhausting Plants
18730 Central Dust Suction Fans
18735 Forced Draught Coolers
18737 Canopy Hoods

24.02 Sewage Clarification

18740 Waste Water Plants, Grease Separators, Chemistry Pumps
18750 Waste Water Treatment
18755 Waste Water Treatment, thermal
18760 Sewage Treatment Plants
18770 Chemical Water Treatment
18774 Evaporation Plants
18790 Waste-Water Purification Plants
18800 Circuit Systems
18802 Water Recirculation Treatment
18810 Solvent Recovery Plants
18820 Neutralization and Detoxification Plants
18830 Sludge-draining Systems, mobile
18840 Sludge-Draining Systems, stationary
18841 Vacuum Evaporators for Waste Water Treatment
18842 Water Management

24.03 Regeneration Plants

18870 Plants for Regeneration of Spent Pickle Liquor
18880 Acid Resistant Drip Pans and Wall Coatings with DIBT Character Check
18890 Plants for Regeneration of Sand

24.04 Disposal Plants

18900 Waste Air Purification
18910 Reprocessing of Contaminated Materials
18920 Plants for Recycling of Raw Materials (Dusts)
18921 Residue Recycling Plants
18923 Electric Arc Dust Utilisation
18925 Exhaust Air Cleaning, Natural
18928 Briquetting of Steel Swarf

18930 Reprocessing of Sites and Ground Water
18940 Excess Gas Burning Systems, Thermal Post Combustion
18970 Injection Installations for Filter Residues
18975 Injection Plants for Alloying Additions and other Residuals (by Oxygen Burners)
18980 Storage of Water Polluting Materials
18990 Oil and Grease Removal
18997 Radioactive Materials
19000 Superfinishing, free from Waste Material
19005 Preparation of Slags (Slag Transportation and Slag Recycling)
19009 Construction and Building of Chimneys and Smokestacks
19010 Chimneys and Smokestacks
19020 Separation of NF-Metals
19040 Plants for Vacuum Thermal Recycling
19045 Plants for Processing and Recycling of Residuals from Blast Furnaces
19050 Other Disposal Plants
19060 Utilisation of Residuals (like Ashes, Slags, Dusts, Granulates)
19070 Roll Scale Sludge Oil Seperation
19072 Dezincification of Blast Furnace Dusts
19080 Recovery of Valuable Materials

24.05 Components

19110 Separators (Distillate Fuel, Benzene, Oil, Water)
19120 Demulsifier Plants
19130 Injection Installations for Treated Oil-Bearing Mill Scale Sludge
19140 Injection Installations for CARBOFER
19150 Injection Installations for PE-Granules
19160 Heat Exchangers

24.06 Operating Materials

19170 Activated Carbon
19180 Lignite Coke
19190 Oil Binding Agents
19200 Lubricants

24.07 Services

19210 Waste Gas Measurings
19220 Chemical and Mineralogical Analyses
19230 Emission Measurings
19232 Simulation Software for Waste Gas Data and Optimizing of Waste Gas Systems

25. Accident Prevention and Ergonomics

25.01 Accident Prevention

19240 Workers' Protective Clothes
19260 Respiratory Protection Masks
19263 Fire Protection Covers
19266 Fireproof Protection Covers
19270 Gas Alarm Apparatus
19280 Heat Protective Clothing
19285 High-Temperature Resistant Protection Covers
19289 Protective Glass
19290 Protective Glass for Industries
19300 Light Protection Curtains (for Accident Prevention etc.)
19305 Soldering Protection Cover
19310 Siting Glass for Observing Melting Furnaces, Neotherm®
19320 Switchboards
19340 Protective Glass for Welders' Goggles (Athermal®)
19350 Welding Equipment
19360 Dust Measuring Devices

25.02 Noise-protecting Installations

19368 Hearing Protection Devices

19370 Noise-Deadening
19380 Industrial Sound Protection
19390 Noise Protection Systems
19400 Noise Control
19410 Level Recorders
19420 Sound Absorption
19430 Sound Level Meters
19432 Sound Protection

26. Other Products

26.01 Foundry Products

19469 Foundry Products, in general
19470 Special Steel Centrifugal Casting
19490 Investment Casting
19500 Spheroidal Graphit Cast Iron
19510 Grey Cast Iron
19520 Cast-Iron Mould Casting
19530 Cast-Iron Continuous Casting
19540 Chilled-Iron Castings
19550 Heat-resisting Casting
19560 Die Casting
19570 Copper and Copper Alloy Casting
19580 Light-Metal Casting
19590 Engineering Casting
19610 Acid-Proof Casting
19630 Centrifugal Casting
19640 Heavy-Metal Casting
19660 Steel Casting
19670 Wear-resistant Casting

27. Consulting, Planning, Services

19695 Hot Tapping
19700 Accessories' Services
19710 Skill in Welding Technology
19715 Consulting, Planning, Services
19720 Information Centres
19721 Weighing System Optimization Consulting
19730 Consulting Services
19731 Purchasing, Procurement, eProcurement
19734 Blended Learning
19740 Services, Quality Assurance
19750 Emission Measuring
19760 Energy Consulting
19770 Energy Savings
19780 Energy Services (Optimizing, Recycling, Supply)
19785 Complete Coke Battery Maintenance
19786 Complete Coke Battery Maintenance and Rebricking
19790 Decoating
19794 Commissioning
19800 Industry and Market Assessment
19805 Inspection Services
19806 Inspection Services and Condition Monitoring
19810 Consulting Engineers (also start-up of iron and steel works equipment)
19815 Technical Problem Solutions
19820 Maintenance Organization
19822 Cooling and Boiling Water Treatment
19824 Lean Management
19825 Leak Tightening under Operating Pressure
19830 Logistic Consulting
19850 Job Annealings (own Mobile Annealing Plants)
19860 Management Consulting
19862 Management Consulting - Coaching
19875 Mechanical Processing (Milling, Drilling, Turning, Grinding, etc.)
19880 Erection and Maintenance
19890 Marketing Services
19895 Quality Management Consulting
19900 Experts
19910 Cutting and Welding Consulting
19911 Cutting, Nesting, and Slitting Optimisation Software
19920 Welding Technology, Research and Teaching
19930 Simulation Studies and Software

19935 Software for Metals Processing
19940 Steel Industry Suppliers for Spare Parts, Machinery, and Equipment, in general
19950 Shot Blasting
19952 Radiation Protection
19955 Supply Chain Management
19960 Subcontracting PVD Coating
19970 Subcontracting Heat Treatment
19980 Ion Implantation Service
19990 Technical Translations and Documentation
20000 Training and Start-Up of Iron and Steel Works Equipment
20005 Management Consultancies
20010 Rental of Electronic Measuring Instruments, Data Technology and Computers
20015 Training, Vocational
20016 Training Measures - Refractories
20020 Certification

28. Steels in Civil and Structural Engineering

28.01 Software for Building and Construction

20050 CAD-Software

28.02 Steel for Structural Steelwork

20058 Constructional Steel
20070 Hall Gates
20086 Pipelines

28.03 Steels in Civil Engineering

20100 Offshore Tchnology
20106 Tubes
20112 Sheet Piling

30. Service concerning Steel Materials, in general

30.01 Joining

20178 Brazing Technology

30.02 Cutting/Separating

20190 Folding and Cutting

30.03 Stainless Steel Cutting Services

20230 Laser Cutting
20238 Plasma Cutting
20246 Shearing

30.04 Metal Forming and Shaping

20258 Cold and Warm Bending of Tubes and Sections
20260 Cold Bending of Tubes, Profiles etc.

30.05 Surface Treatment

20310 Pickling
20320 Descaling
20332 Surface Treatment
20335 Surface Conditioning Services (grinding/scarfing)

30.06 Heat Treatment and Drying

20374 Heat Treatment, Annealing
20375 Heat Treatment and Drying

31. Steel Trading/ Distribution

20400 Steel Trading/ Distribution

31.01 Products, in generell

20420 Bright Steel, in general

31.02 Products, particularly

20450 Shapes and Sections, bright drawn

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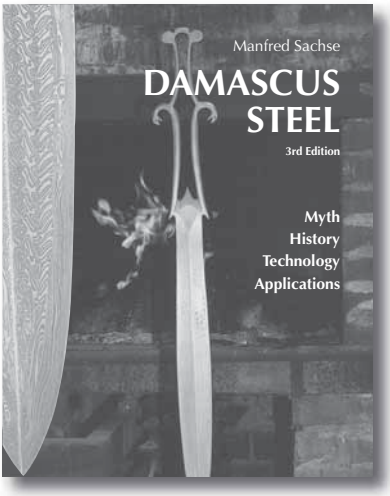

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Manfred Sachse

DAMASCUS STEEL

This book is a comprehensive and in-depth description of Damascus steel and steelmaking. After the introduction "Magic and myth of sabres" by Helmut Nickel, the author describes the development of the material and the history of European, Middle Eastern and East-Asian forge-welded composite steels used in the design of blades and fire arms.

A special chapter is dedicated to the great variety of Oriental dasmascus steels (wootz steels). The author covers the topic of historical and modern fakes and how they can be recognized as well as conservation and restoration of Damascus steels. In one chapter he demonstrates that not only weapons but also decorative articles of daily use and jewellery can be made of Damascus steel.

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