



DEZAN SHIRA & ASSOCIATES

Your Partner for Growth in Asia



Catalogue of

Encouraged Industries for Foreign Investment (Edition 2020)

Provided by Dezan Shira & Associates

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Catalogue of Encouraged Industries for Foreign Investment, 2020

The Catalogue of Encouraged Industries for Foreign Investment (Edition 2020), adopted upon deliberation at the 11th executive meeting of the National Development and Reform Commission and ratified by the Ministry of Commerce on 5 November 2020, is hereby promulgated upon approval by the CPC Central Committee and the State Council, effective 27 January 2021. The Catalogue of Encouraged Industries for Foreign Investment (Edition 2019) shall be repealed simultaneously.

Catalogue of Encouraged Industries for Foreign Investment (Nationwide):

I. Agriculture, forestry, animal husbandry and fishery

1. Planting, development and manufacturing of woody edible oils, spices and industrial raw materials
2. Development of cultivation technologies, planting and production of green and organic vegetables (including edible fungus, watermelons and melons), dried and fresh fruits, and tea
3. Breeding, planting and manufacturing of wine grapes
4. Breeding, planting and manufacturing of beer raw materials
5. Development of new planting technologies and manufacturing of crops such as sugar crops, fruit trees and forage grass
6. Breeding and development of new varieties of high-yield and high-efficiency silage plants
7. Flower production and construction and operation of nursery bases
8. Planting of rubber trees, oil palms, sisal hemp and coffee
9. Breeding and planting of fragrant plants and extraction of essential oils
10. Planting and cultivation of Chinese medicinal herbs
11. Comprehensive utilization of crop straw resources and development and manufacturing of organic fertilizer resources
12. Cultivation of forest resources (fast-growing and high-yield timber forests, large-diameter timber forests, bamboo forests, camellia oleifera and other economic forests, timber forests of precious tree species, etc.)
13. Ecological planting and breeding in undergrowth areas
14. Development and application of technologies for standardized scale breeding of livestock and poultry
15. Breeding of breeding stock, poultry and aquatic offspring (exclusive of precious quality varieties peculiar to our country)
16. Construction and operation of ecological environmental protection projects for combating desertification, soil and water conservation and greening of land, etc.
17. Aquaculture, cage aquaculture in deep water, industrial aquaculture, and ecological oceanic aquaculture

II. Mining

18. Exploration and development of oil and natural gas and utilization of mine gas
19. Development and application of technologies which can increase the recovery factor of crude oil (in the form of engineering services) and related new technologies
20. Development and application of new technologies of petroleum exploration & development in areas such as geophysical prospecting, well drilling, logging, mud logging and downhole operation, etc.
21. Development and application of new technologies for raising utilization of mine tailings and comprehensive utilization of technologies for ecological restoration of mines
22. Exploration, mining and beneficiation of minerals in short supply in China (such as potash and chromite, etc.)

III. Manufacturing

(I) Agricultural and side-line food processing industry

23. Development and production of safe, efficient and environmentally friendly feeds and feed additives (including vitamins and methionine), and substitute products of antibacterial drugs for animal growth promotion
24. Development and production of pet feeds and foodstuffs
25. Processing of aquatic products, purification and processing of shellfish, development of healthcare food with seaweed
26. Processing of vegetables, dried and fresh fruit, livestock and poultry products
27. Development and production of bioethanol (excluding conversion of grain to ethanol)

(II) Food manufacturing industry

28. Development and production of high temperature sterilized milk (sterilized under more than 130 ° C for 2 seconds)
29. Production of cheese, remade cheese and cheese conditioned food
30. Development and production of infant formula food, infant supplementary food, special medical use formula food and health food
31. Development and production of nutritional and health-care food, food additives and formula food catering to the elderly population and improving the quality of life of the elderly population
32. Development and production of baked food (including chocolate and its products using natural cocoa beans), convenience food and related ingredients
33. Production of candy, chewing gum, preserves, ice cream, puffed food and yogurt
34. Processing of forest food
35. Development and production of bionic meat products containing plant protein
36. Development of new technologies for and production of natural food additives, spices, enzymes, fermented products and natural spices
37. Development and production of sterile liquid food packaging materials

(III) Manufacturing of alcohol, beverages and refined tea

38. Development and production of fruit and vegetable drinks, protein drinks, tea drinks, coffee drinks and botanical drinks

(IV) Textile industry

39. Production of functional industrial textiles by using non-woven, woven, knitting, weaving and other new techniques such as composite and long-acting finishing of various techniques
40. Clean production technologies for dyeing and finishing by using digital intelligent printing and dyeing technical equipment (enzyme treatment, high-efficiency short-flow pretreatment, continuous flat width pretreatment for knitted fabrics, low temperature pretreatment and dyeing, low-salt or salt-free dyeing, low urea printing, airflow or air-liquid dyeing with small bath ratio, digital inkjet printing, foam finishing, etc.), functional finishing technologies, new dyeing processing technologies, production of high grade textile fabrics, as well as development and application of intelligent cheese yarn dyeing technologies and equipment

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41. Processing technology for and production of natural fibers such as special animal fiber, hemp, mulberry tussah silk, colored cotton and colored mulberry cocoon silk that meet environmental protection requirements
 42. Recycling and utilization of waste textiles

(V) Textile and garment, apparels

43. Production of high-count cotton yarn
44. Production of garment and semi-finished garment products, using the computer integrated manufacturing system
45. Production of functional and special garments

(VI) Leather, fur, feather and related products, and shoemaking

46. Leather and pelage cleaning technology and processing
47. Post ornament and processing of leather with new techniques
48. Comprehensive utilization of leather wastes
49. Production of high-performance elastic shoe materials

(VII) Industries of wood processing and manufacturing of wood, bamboo, rattan, palm and straw products

50. New technologies for the comprehensive utilization of three forestry leftovers, "substandard wood, small wood, fuel wood", waste wood and bamboo material, development and production of new products, pollution control and treatment in the production of wood and bamboo material, emission reduction of fine particulate matter, and development and application of dust explosion proof technologies

(VIII) Manufacturing of cultural, educational, arts, sports and entertainment products

51. Production of high-grade carpets, embroidery and drawnwork products

(IX) Petroleum processing, coking and nuclear fuel processing

52. Phenol oil processing, washing oil processing, and preparation of high-end chemicals from coal tar pitch (excluding modified asphalt)

(X) Manufacturing of chemical raw materials and chemical products

53. Development and production of new downstream products of polyvinyl chloride and organosilicon
54. Production of auxiliary raw materials for synthetic materials, including hydrogen peroxide propylene oxide method, hydrogen peroxide chloropropane epoxy chloropropane, naphthalene dicarboxylate (NDC), 1,4-Cyclohexane dimethanol (CHDM), adiponitrile, hexamethylene diamine, high-performance polyurethane using butadiene method with an annual capacity of 50,000 tons or more
55. Production of polyethylene polyamine products
56. Development and production of high carbon Alpha-Olefin copolymerization with metallocene polyethylene and other high-end polyolefin
57. 57. Production of raw materials for synthetic fiber: nylon 66 salt, 1,3-propanediol

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58. 58. Production of synthetic rubber: polyurethane rubber, acrylate rubber, epichlorohydrin rubber, and special rubber such as fluorine rubber and silicone rubber
 59. Production of engineering plastics and plastic alloys: non-phosgene polycarbonate (PC) with an annual capacity of 60,000 tons or more, polyformaldehyde, polyphenylene sulfide, polyether etherketone, polyimide, polysulfone, polyarylether (PAR), polyphenylene ether, polybutanediol terephthalate (PBT), polyamide (PA) and its modified materials, and liquid crystal polymers, etc.
 60. Fine chemicals: new catalyst products and technologies, commercialization of dye (pigment) processing technologies, electronics and paper chemicals, leather chemicals (excluding N-N Dimethylformamide), oilfield chemicals, surfactants, water treatment chemicals, adhesives, sealants, adhesive tape, production of inorganic fibers and inorganic nanomaterials, treatment and deep processing of pigment coating
 61. Production of high purity electronic grade hydrofluoric acid (above 9N) and hydrogen fluoride
 62. Production of low- volatile inks such as water-based inks, electron beam curing inks and UV curing inks, and environment-friendly organic solvents
 63. Production of natural spices, synthetic spices, single ion spices and intermediates of spice components
 64. Production of high-performance paints, high solid solvent-free paints, and supporting resins, water-based industrial paints and supporting water-based resins
 65. Production of high-performance fluororesin, fluorine coating materials, medical intermediates containing fluorine, environment-friendly refrigerants containing fluorine, detergents and foaming agents
 66. Production, storage, transportation and liquefaction of hydrogen fuels
 67. Production and supply of large, high-pressure, high-purity industrial gas (including electron gas)
 68. Construction and operation of carbon capture, utilization and sequestration (CCUS) projects
 69. Production of fluorine resources recovered from phosphorus chemicals and aluminum smelters
 70. Development and production of new technologies for forestry chemical products and relevant new products
 71. Development and production of environmental inorganic, organic and bio-films
 72. Development and production of new fertilizers: high potassium fertilizer, compound microbial inoculation agent, compound microbial fertilizer, straw and refuse rotting agent, and microbial agents with special functions
 73. Development and production of efficient, safe and environment-friendly new varieties of pesticides, new formulations, special-purpose intermediates and additives, development and application of relevant clean production processes, and production of chiral and three-dimensional pesticides by directional synthesis
 74. Development and production of bio-pesticides and bio-control products: microbial pesticides, microbial fungicides, agricultural antibiotics, bio-stimulating hormone, insect pheromones, natural enemies of insects, and microbial herbicides
 75. Comprehensive utilization, treatment and disposal of waste gas, liquid waste and waste residue

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76. Production of organic polymer materials: aircraft skin coating, rare earth cerium sulphide red dyes, lead-free electronic packaging materials, lithographic slurry specifically for color plasma screens, microfibers with a small diameter and a large specific surface area, high-precision fuel filter paper, lithium-ion battery separators, surface treatment self-repairing materials, and superhydrophobic nano-coating materials

(XI) Pharmaceutical industry

77. Production of new compound drug products or active ingredient drug products (including APIs and formulations)
78. For amino acids: production of tryptophan, histidine, methionine, etc. through zymotechnics
79. Development and production of new anticarcinogenic drugs, new cardiovascular and cerebrovascular drugs, and new nervous system drugs
80. Production of new drugs by applying bioengineering technologies
81. Production of AIDS vaccine, Hepatitis C vaccine, contraceptive vaccine and new vaccines for cervical cancer, malaria, hand, foot and mouth disease, etc.
82. Development and production of marine drugs
83. Production of pharmaceutical formulations: new dosage forms and new products employing new technologies, such as slow release, controlled release, targeting, percutaneous absorption
84. Development and production of new pharmaceutical excipients
85. Production of antibacterial drugs dedicated for animals (including antibiotics and chemical synthesis category)
86. Production of new products and formulations of antibacterial drugs, anthelmintics, insecticides and anti-coccidiosis drugs for veterinary use
87. Development and production of new diagnostic reagents
88. Development and production of cell therapy drugs (except in areas where foreign investment is prohibited)
89. Development and production of new key raw materials for vaccine and cell therapy drugs, etc.
90. Development and production of new medicine packaging materials and technologies (neutral borosilicate medical glass, functional materials with good chemical stability, good degradation, light-shielding and high barrier, and new packing drug delivery systems and devices such as aerosol, powder, self-administration, pre-encapsulation, automatic mixing, etc.)

(XII) Manufacturing of chemical fibers

91. Continuous copolymerization modification of differentiated and functional polyester (PET) [cationic dye dyeable polyester (CDP, ECDP), alkaline soluble polyester (COPET), high-shrinkage polyester (HSPET), flame-retardant polyester, low-melting point polyester, amorphous polyester, biodegradable polyester, etc.]; R&D of high-efficiency flexible preparation technologies for differentiated and functional chemical fibers such as flame-retardant, anti-static, anti-ultraviolet, anti-bacterial, phase change storage energy, photochromism, liquid coloring, etc.; production of intelligent, super simulation, etc.; production of green, high-efficiency and environment-friendly oil agents for use in creative development of high-speed spinning

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92. Development and production of high performance fibers and products: carbon fiber (CF), aramid (AF), polysulfone (PSA), ultra-high molecular weight polyethylene fiber (UHMWPE), polyphenylene sulfide fiber (PPS), polyimide fiber (PI), polytetrafluoroethylene fiber (PTFE), polybenzo-bisoxazole fiber (PBO), polyaroxadiazole fiber (POD), basalt fiber (BF), silicon carbide fiber (SiCF), polyether ether ketone fiber (PEEK), high strength glass fiber (HT-AR), poly (2,5-dihydroxy-14-phenylpyridine and diimidazole) (PIPD) fibers
 93. Production of new types of polyester for fiber and non-fiber applications: polyethylene terephthalate (PTT), polyethylene naphthalate (PEN), polyethylene terephthalate (PCT), and polyethylene terephthalate -modified (PETG)
 94. Production of biomass fibers by utilizing new renewable resources and environment-friendly process, including new solvent spun cellulose fibers (Lyocell), regenerated cellulose fibers using bamboo, hemp, etc., poly lactic acid (PLA), chitin fiber, polyhydroxyalkylate (PHA) fibers, animal and plant protein fibers, etc.
 95. Development and production of new types of polyamides such as nylon 11, nylon 12, nylon 1414, nylon 46, long carbon chain nylon, heat-resistant nylon, etc., and of differentiated, functional, and high value-added modified nylon (including nylon elastomer, copolymer nylon, nylon engineering plastics, flame-retardant nylon)

(XIII) Rubber and plastic products industries

96. Development, production and application of organosilicon products
97. Development, production and application of biodegradable plastics and related products
98. Development and production of new types of photo-ecological, wide and pollution-free and degradable agricultural films
99. Recycling and reutilization of waste plastics
100. Development of new technologies for, and production of new types of flexible plastic packaging products (including high-barrier and multi-functional films and relevant raw materials)

(XIV) Non-metallic mineral products manufacturing industry

101. Development and production of building materials featured with energy conservation, environmental protection, waste recycling, light-weight, high-strength, high-performance, and multi-function
102. Development and production of molded products with integrated molding and injection molding
103. Production of energy-saving and high-efficiency chemical building materials with plastic in lieu of steel and wood
104. Intelligent manufacturing of new assembled building components
105. Production of elastomer or plastic-modified bituminous waterproof rolls with an annual production of 10 million square meters or more, wide (more than 2 m) ethylene propylene diene rubber waterproof rolls and their auxiliary materials, wide (more than 2 m) polyvinyl chloride (more than 2 m) waterproof rolls, and thermoplastic polyolefin (TPO) waterproof rolls
106. Development and production of functional glass with new technologies: electromagnetic wave shielding glass, glass substrate for microelectronic use, infrared transmitting lead-

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- free chalcogenide glass and products, electronic-grade large-scale quartz glass products (pipe, plate, crucibles, instruments, utensils, etc.), multi-functional windshield glass with excellent optical performance (light transmittance $\geq 70\%$), coated privacy windshield glass, soundproof windshield glass, solar windshield glass, conductive color-changing windshield glass, electric heated windshield glass, head display windshield glass, extreme materials and products for use in information technologies (including quartz glass bushing and ceramic substrate for waveguide-grade and high-precision optical fiber preform rod), purification processing of raw materials for high purity ($\geq 99.998\%$) or ultrapure ($\geq 99.999\%$) crystal
107. R&D and production of sapphire substrate
 108. Production of conductive glass for thin film battery, solar collector glass and conductive glass used in construction
 109. Production of glass fiber products and special glass fibers: superfine glass fibers (monofilament diameter ≤ 5 microns), degradable glass fibers, special-section glass fibers, alkali resistant glass fibers, low dielectric glass fibers, quartz glass fibers, high silica glass fibers, high strength and high elastic glass fibers, ceramic fibers and their products
 110. Production of optical fibers and their products: optical fiber bundles for image transmission and laser optical fibers for medical treatment, super second-generation and third-generation microchannel plates, optical fiber panels, image inverters and glass fiber cones
 111. Standardized refinement of ceramic raw materials and production of high-grade decoration materials for ceramic use
 112. Production of long-life energy-saving and environment-friendly (chromizing free) refractory materials used in furnaces such as cement, electronic glass, ceramics and microporous carbon bricks
 113. Production of porous ceramics
 114. Production of new inorganic and non-metallic materials and products: composite materials, special ceramics, special sealing materials (including high-speed oil-seal materials), special friction materials (including high-speed friction brake products), special binding materials, special latex materials, underwater acoustic rubber products, and nanomaterials
 115. Production of organic-inorganic composite foam insulation materials; production of high-performance and energy-saving insulation materials for buildings; and production of insulation materials for modern centralized agricultural breeding
 116. Production of high-tech composite materials: continuous fiber reinforced thermoplastic composites and prepregs, technical auxiliary materials used in prototyping of resin-based composite materials of heat resistance $> 300^\circ\text{C}$, biodegradable resin-based composite materials, resin-based composite materials used in additive manufacturing, resin-based composite materials (including sporting goods, light-weight and high-strength vehicle parts), special feature composite materials and their products (including products of composite materials for deep-sea and diving, and composite material products for medical and therapeutic uses), carbon/carbon composite materials, high-performance ceramic-based composite materials and their products, metal-based and glass-based composite materials and their products, metal-layered composite materials and their products, ultra-high-pressure composite hoses of pressure $\geq 320\text{MPa}$, tires for large passenger aircrafts, and

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- polyester structural foaming materials (used in the fields of light-weight and high-strength vehicle parts, wind power blade core materials, building materials and other fields)
117. Production of raw materials for precision and high performance ceramics: ultra-fine silicon carbide (SiC) powders (purity > 99%, average particle size < 1 µm), ultra-fine silicon nitride (Si₃N₄) powders (purity > 99%, average particle size < 1 µm), high-purity ultra-fine aluminum oxide powders (purity > 99.9%, average particle size < 0.5 µm), low-temperature sintered zirconia (ZrO₂) powders (sintering temperature < 1350 ° C), high-purity aluminum nitride (AlN) powders (purity > 99%, average particle size < 1 µm), rutile TiO₂ powders (purity > 98.5%), white carbon black (particle size < 100 nm), and barium titanate (purity > 99%, particle size < 1 µm)
 118. Development and production of high quality artificial crystals and crystal thin film products: high quality synthetic crystals (piezoelectric crystals and UV transmitting crystals), ultra-hard crystals (cubic boron nitride crystals), high temperature resistant and highly insulating synthetic crystals (synthetic mica), new electro-optic crystals, high power laser crystals and large size scintillation crystals, diamond film tools, ultrathin synthetic diamond saw blade with a thickness of 0.3mm and below
 119. Fine processing of nonmetallic minerals (ultra-fine grinding, high purity, refining and modified)
 120. Production of ultra-high power graphite electrodes
 121. Production of pearlescent mica (particle size 3 – 150 µm)
 122. Production of multi-dimensional woven fabrics and shaped fabrics
 123. Production by using new dry process cement kiln and sintered wall materials and harmless disposal of solid wastes
 124. Recycling of building wastes
 125. Comprehensive utilization of industrial by-product gypsum and other industrial wastes
 126. Development and application of new technologies for comprehensive utilization of nonmetallic mine tailings and ecological restoration of mines

(XV) Non-ferrous metal smelting and calendaring industries

127. Production of high-tech nonferrous metallic materials and products: compound semiconductor materials (gallium arsenide, gallium phosphide, indium phosphide and gallium nitride); high-temperature superconducting materials; memory alloy materials (titanium nickel, copper- and iron-based memory alloy materials); ultra-fine (nano) calcium carbide and ultra-fine (nano) grain carbide; ultra-hard composite materials; precious metal composite materials; aluminum foils for radiators; aluminum foils for medium- and high-voltage cathode capacitance; aluminum foils for lithium battery electrodes; electrolytic copper foils; aluminum alloy sections with large and complex sections; aluminum alloy precision forging; overhead conductors for electrified railway lines; ultra-thin copper strips; copper alloy materials for corrosion-resistant heat exchangers; high-performance copper-nickel and copper-iron alloy strips; materials for processing beryllium copper strips, lines, pipes and rods; heat-resistant and anti-senescence tungsten filaments; magnesium alloy castings; lead-free solder; magnesium alloys and their products; foamed aluminum; titanium alloy smelting and processing; sponge zirconium at atomic energy level; and deeply processed tungsten and molybdenum products

128. Processing of rare earth high-end application products which comply with the requirements of new rare earth materials

(XVI) Metal products industry

129. Research, development and manufacturing of new lightweight and environmentally friendly materials for aviation, aerospace, vessels, automobiles and motorcycles (special-purpose aluminum sheets, aluminum-magnesium alloy materials, aluminum alloy motorcycle frames etc.)

130. Research, development and manufacturing of light metal semi-solid rapid prototyping materials and their products

131. Manufacturing and processing of metal packaging products (which should be complete products, with thickness of container wall less than 0.3mm) used for packaging of various cereals, oils and foodstuffs, fruits and vegetables, beverages, daily chemical products (including print coating and processing of inner and outer surfaces of products)

132. Manufacturing of steel fiber for construction use

(XVII) General equipment manufacturing industry

133. Manufacturing of key parts of high-end digital-controlled machine tools: 5-axis digital-controlled machine tool, digital-controlled coordinate boring and milling processing centers, digital-controlled coordinate grinders

134. Manufacturing of multiple-station forging forming machines of 1,000 tons or above

135. Manufacturing of large (furnace capacity of 1 ton and above) multi-functional controlled atmosphere heat treatment equipment, programmable chemical heat treatment equipment, programmable multi-functional vacuum heat treatment equipment and vacuum heat treatment equipment with furnace capacity of 500 kg and above, full-fiber furnace lining heat treatment heating furnace

136. Manufacturing of equipment for dismantling, crushing and post-processing sorting of scrapped automobiles

137. Manufacturing of FTL flexible production lines

138. Development and manufacture of complete systems for robots and industrial robots, high-performance controllers, sensors, terminal actuators and industrial intelligent gateways, high-performance reducers specially used for robots, high-performance servo motors and drivers, autonomous programming and other high-performance controllers, sensors, end actuators and industrial intelligent gateways

139. Manufacturing of high-end precision tools, production and manufacturing of nano composite coating and high-end processing equipment

140. Manufacturing of sub-micron ultrafine crushing machines

141. Manufacturing of wheeled cranes and crawler cranes of 141400 tons and above

142. Design and manufacturing of high-pressure plunger pumps and engines with working pressure $\geq 35\text{MPa}$ and low-speed large-torque engines with working pressure $\geq 35\text{MPa}$

143. Manufacturing of integrated hydraulic multiple unit valve with working pressure $\geq 25\text{MPa}$ and electro-hydraulic proportion servo components

144. Design and manufacturing of valve terminal, pneumatic solenoid valves below 0.35W and high frequency electronic valves with power above 200Hz

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145. Production of valves to be used in temperature below -120°C or more than 530°C
 146. Design and manufacturing of hydrostatic drive devices
 147. Development and manufacturing of non-contacting gas film seals with pressure $> 10\text{MPa}$ and dry gas seals with pressure $> 10\text{MPa}$ (including experimental device)
 148. Design and manufacturing of pneumatic actuators with repetition accuracy of less than or equal to 0.03 degree and axial jerk less than or equal to 0.02mm
 149. Manufacturing of noise and vibration pollution control equipment: sound barriers, mufflers, and damping spring isolators
 150. Development and manufacturing of equipment for automobile polymer materials (friction plates, remodeled phenolic pistons, non-metallic hydraulic master/sub-pumps, etc.)
 151. Manufacturing of third generation and above sedan wheel hub bearings, bearings for high- and medium-grade numerically controlled machine tools and processing centers, high-speed wire rod and plate rolling mill bearings, high-speed railway bearings, low-noise bearings with vibration below Z4, P4 and P2 level bearings of all types of bearings; bearings for wind turbine generators, aircraft bearings, bearings for aircraft engines and other aircraft bearings, medical CT machine bearings; bearings for deep-well ultra-deep well oil drilling rig, marine engineering bearings, high-speed bearings for driving motor systems of electric vehicles (speed $\geq 12,000$ RPM); and bearings for industrial robot RV reducer
 152. Manufacturing of high-density, high-precision and complex-shaped powder metallurgy parts and chains for automobile, engineering machinery, etc.
 153. Manufacturing of gear transmission used for wind power or high-speed rail; gear transmission system with adjustable blades used for vessels; and large-sized heavy-load gear boxes
 154. Manufacturing of high-temperature resistant insulation material (F and H insulation classes) and moulded insulation products
 155. Development and manufacturing of accumulator bladders and rubber and plastic seals for hydropneumatic use
 156. Manufacturing of high-precision, high-strength (grade 12.9 or above), special-shaped and assembly fasteners
 157. Manufacturing of miniature precision transmission couplings (clutches)
 158. Manufacturing of coupling shaft for heavy rolling mills
 159. Remanufacturing of machinery such as machine tools, engineering machinery and railway locomotive equipment; remanufacturing of automobile parts; remanufacturing of high-end medical devices and their key components such as medical imaging equipment; and remanufacturing of office equipment such as photocopiers
 160. Development and manufacturing of digital cameras of 10 million pixels or above or with a horizontal field of view of 120 degrees or above; and development and manufacturing of optical lenses and photoelectric modules thereof
 161. Manufacturing of office machinery (including industrial use): all-in-one multifunctional office equipment (photocopier, printer, fax machine, and scanner), printer, heads of high-resolution color printers with precision of 2400dpi or more; and OPC drums
 162. Manufacturing of film machinery: 2K, 4K digital cinema projectors, digital cinema cameras, and digital video production and editing equipment

163. Construction of facilities for receiving and handling of pollutants from vessels at ports and manufacturing of equipment; and construction of facilities for emergency treatment of dangerous chemicals and oil products at ports and manufacturing of equipment

(XVIII) Special-purpose equipment manufacturing

164. Manufacturing of trackless equipment for mining, loading and transportation in mines: mechanically-driven dump trucks of 200 tons and above used in mines, mobile crushers, 5,000 cubic meters/hour and above bucket wheel excavators, loaders of 8 cubic meters and above used in mines, and electrically-dragged shearer of 2,500 kilowatt and above etc.
165. Manufacturing of geophysical (excluding gravity and magnetic survey) and logging equipment: MEME geophone, digital telemetry seismograph, digital imaging, digital-controlled logging system, horizontal wells, directional wells, drilling rig equipment and tools, MWD logging-while-drilling apparatus
166. Manufacturing of equipment for oil exploration, drilling, gathering and transportation: floating drilling systems and floating production systems with an operating depth of more than 1,500 meters and complementary subsea oil extraction, gathering and transportation equipment
167. Manufacturing of shale gas equipment
168. Manufacturing of large-caliber rotary drilling rigs with a caliber of more than 2 m and depth of more than 30 m, push benches with a diameter of more than 1.2 m, large equipment set with a pull-back force of more than 300 tons for laying of underground pipelines without digging, underground diaphragm wall construction drilling rigs
169. Design and manufacturing of large bulldozers of 520 horsepower and above
170. Design and manufacturing of silt removers with a capacity of 100 cubic meters per hour and above, dredging device of dredgers with a capacity of 1,000 tons and above
171. Design and manufacturing of construction device for concrete cut-off wall used in flood control dike
172. Manufacturing of seismic prevention and disaster mitigation devices for civil engineering structures
173. Manufacturing of underwater earthwork construction machinery: bulldozers, loaders, excavators etc. for water depth of 9 m and below
174. Manufacturing of maintenance and self-testing equipment for highways and bridges
175. Manufacturing of operational monitoring, ventilation, disaster prevention and rescue system and equipment for highway tunnels
176. Design and manufacturing of maintenance machinery and inspection and monitoring equipment for large-scale railway construction, railway lines, bridges and tunnels and their key parts and components
177. Manufacturing of equipment for (asphalt) linoleum tiles and equipment for producing galvanised steel sheets and other metal roofs
178. Manufacturing of equipment for environment-friendly and energy-saving on-site polyurethane spraying waterproof and thermal insulation systems, technology of preparing polyurethane sealants and manufacturing of relevant equipment, and technology of preparing modified silicone sealants and manufacturing of relevant production equipment
179. Design and manufacturing of high-precision strip mills (with thickness precision of 10 microns)

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180. Manufacturing of mineral processing device for multi-element, fine-particle and refractory metal minerals
 181. Manufacturing of the key equipment of complete sets of ethylene equipment with an annual capacity of 1 million tons and above: mixing granulators with an annual processing capacity of 400,000 tons and above, centrifuges with a diameter of 1,000 mm and above, and low-flow high-head centrifugal pump
 182. Design and manufacturing of metal product molds (extrusion dies for pipes, rods and section bars made of copper, aluminum, titanium and zirconium)
 183. Design and manufacturing of punching dies for automobile body covers, large-sized injection molds for dashboard and bumper, and clamps and gauges for automobiles and motorcycles
 184. Design and manufacturing of special production equipment for power batteries for automobiles
 185. Design and manufacturing of precision die molds (punching dies with a precision higher than 0.02 mm and cavity molds with a precision higher than 0.05 mm)
 186. Design and manufacturing of non-metal product molds
 187. Manufacturing of beer bottling equipment with a capacity of 50,000 bottles or more per hour, hot- and medium-temperature beverage bottling equipment with a capacity of 50,000 bottles or more per hour, and aseptic filling equipment with a capacity of 36,000 bottles or more per hour
 188. Production technology and manufacturing of key equipment for amino acid, enzyme and food additives
 189. Manufacturing of complete set of equipment and key components for feed processing with a capacity of 189.10 tons or more per hour
 190. Manufacturing of equipment for light corrugated boards and cartons with corrugation height of 0.75 mm and less
 191. Manufacturing of sheet-fed and multi-color offset presses (width ≥ 750 mm, printing speed: single side and multiple color ≥ 16000 sheets per hour, and both sides and multiple color ≥ 13000 sheets per hour)
 192. Manufacturing of single width single roll web-fed lithographic presses with a printing speed greater than 75,000 bisect sheets per hour (787×880 mm), double width single roll web-fed lithographic presses with a printing speed greater than 170,000 bisect sheets per hour (787×880 mm), and commercial web-fed lithographic presses with a printing speed greater than 50,000 bisect sheets per hour (787×880 mm)
 193. 193. Manufacturing of multi-color wide flexographic presses (printing width $\geq 1,300$ mm and printing speed ≥ 350 m per second), inkjet digital presses (used for publication: printing speed ≥ 150 m per minute and resolution ≥ 600 dpi; used for packaging: printing speed ≥ 30 m per minute and resolution $\geq 1,000$ dpi; used for variable data: printing speed ≥ 100 m per minute and resolution ≥ 300 dpi)
 194. Manufacturing of systems for ink color computer pre-mixing, remote ink color control, water-ink speed tracking, automatic printing quality inspection and tracking, and shaftless driving technology; manufacturing of high-speed automatic pasters and feeders with a speed of 75000 sheets per hour and remotely adjustable high-speed folding machines,

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- automatic overlaying systems, cooling devices, silicone adding systems, and deviation adjustment devices
195. Manufacturing of electron-gun automatic coating machines
196. Deep processing technology and manufacturing of equipment for sheet glass
197. Manufacturing of complete sets of equipment such as new paper (including pulp) making machines
198. Manufacturing of equipment using new technology for post ornament and processing of leather
199. Manufacturing of equipment for soil pollution treatment and restoration
200. Development and manufacturing of new equipment for processing and storage of agricultural products: new equipment for processing, storage, preservation, grading, packaging and drying of food, oil plants, vegetables, dried and fresh fruit products, meat products, aquatic products and other products, testing instruments and equipment for quality of agricultural products, testing instruments and equipment for damage free quality of agricultural products, rheometers, farinograph, ultrafine crushing equipment, high-efficiency dehydration equipment, high-efficiency juice condensation equipment with five efficiency modes or more, sterilization equipment for liquid food and materials, aseptic packaging equipment for solid and semi-solid food, and disc-type centrifuge separation
201. Manufacturing of agricultural machinery: agricultural facilities and equipment (automatic irrigation equipment for greenhouses, equipment for automatic disposition of nutrient solutions and fertilization, high-efficiency vegetable seedling equipment, soil nutrient analysis equipment); tractors and the auxiliary farm implements with an engine power of 200 kW or more; diesel engines with low fuel consumption, low noise and low emission; sprayers auxiliary to large tractors and attached with residual droplets recovery devices; high-performance rice transplanters; cotton picking machines and cotton picking platforms; self-propelled (hydraulically or mechanically-driven) corn combine harvesters adaptable to various row spacings; peanut harvesters; rapeseed harvesters; sugarcane harvesters; beet harvesters; and self-propelled grape harvesters
202. Manufacturing of forestry facilities and equipment: nursery and flower intelligent greenhouses, precision irrigation, fertilization, seedling and other equipment; nursery stem diameter, leaf and root runoff, seed vigor, soil nutrients and other analytical instruments; high-power (240KW) forest land operation chassis and supporting machines; multifunctional land preparation, tree planting, tending, felling and skidding machines; difficult site afforestation machinery; machines for collection, bundling, wood chips, smashing and their comprehensive utilization; large and medium -sized plant protection and application sprayers; small and medium -sized precision application equipment or bionic application robots; cone collection and oil fruit harvesters; large and medium -sized tree transplanters, shrub stubble equipment; and high-efficiency pruning equipment; and rapid measurement equipment for stock volume of forests; and equipment for rapid measurement of forest stock volume
203. Manufacturing of wood processing equipment: fast color difference recognition technology and equipment; fast solid wood board measuring scale equipment; fast scar detection equipment; solid wood surface defect detection equipment; complete sets of sawn wood

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- equipment and technology; fast artificial board surface defect detection equipment and online quality grading equipment; online quality inspection equipment for rotary veneer; solid wood furniture paint film grinding and dust treatment equipment; intelligent polishing robots; multicolor auto-switching spray-painting robots; furniture packaging, cutting and stacking robots; fast sorting equipment for panel furniture; and furniture manufacturing intelligent warehouses
204. Manufacturing of forestry disaster monitoring equipment: forest area rapid rescue equipment, high-precision navigation and positioning equipment, drone fire and disaster monitoring and early warning equipment, fire extinguishing and pest disinfection equipment
205. Manufacturing of equipment for collection, bundling and comprehensive utilization of crop straws and stalks
206. Manufacturing of equipment for utilization of resource such as agricultural wastes and wastes from scale livestock and poultry breeding
207. Manufacturing of advanced intelligent manufacturing and processing equipment for leather, fur and related products
208. Manufacturing of fertilizer, pesticide (agricultural) and water-saving agricultural technology equipment
209. 209. Manufacturing of cleaning equipment for electromechanical wells and manufacturing equipment for cleaning agents
210. Manufacturing of electronic endoscopes
211. Manufacturing of fundus cameras
212. Manufacturing of medical imaging equipment (high-field-strength superconducting magnetic resonance imaging equipment, X-ray computed tomography imaging equipment, digital color diagnostic ultrasound equipment etc.), medical imaging intelligent diagnostic system and key components thereof
213. Manufacturing of (3D) ultrasonic transducers for medical use
214. Manufacturing of boron neutron capture therapy equipment
215. Manufacturing of image-guided intensity modulated conformal radiotherapy systems
216. Manufacturing of hemodialysis machines and blood filtration machines
217. Manufacturing of automated biochemical monitoring equipment, five-part blood cell analyzer, automated chemiluminescence immunoassay analyzer, high-throughput gene sequencing system
218. New technology for drug quality control and manufacturing of new equipment
219. New technology for analyzing the active constituents in natural medicines, new extracting process, and development and manufacture of new equipment
220. R&D and manufacturing of biomedical auxiliary consumables production equipment
221. Manufacturing of multi-layer co-extrusion water-cooled blown film equipment for non- PVC medical infusion bags
222. Manufacturing of artificial intelligence medical aid equipment
223. Manufacturing of high-end radiotherapy equipment
224. Manufacturing of high-end surgical equipment, physical therapy and rehabilitation equipment and wearable intelligent health equipment
225. Manufacturing of life support equipment for critical illness

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226. Manufacturing of mobile and telemedicine equipment
 227. Manufacturing of respirators, ECMO, monitor and PCR instruments
 228. Development and manufacturing of minimally invasive surgery medical equipment: 3D imaging, electronic microscopy system, surgical robot, robotic arm etc.
 229. R&D and manufacturing of holmium laser and carbon dioxide laser therapeutic products
 230. Development and application of manufacturing technology for high-end implant intervention equipment and materials such as new stents and prosthesis etc.
 231. Manufacturing of emergency rescue equipment
 232. Development and manufacturing of new textile machinery, key parts and components and textile testing and experimental instruments
 233. Manufacturing of computerized jacquard control artificial fur weaving machines
 234. Manufacturing of special manufacturing equipment for manufacturing of solar cells
 235. Manufacturing of equipment for capture, use, storage and monitoring of carbon dioxide
 236. Manufacturing of air pollution prevention and control equipment: high temperature resistant and corrosion -resistant filter material, low NOx combustion device, catalyst for flue gas denitrification and complete set of denitrification devices, flue gas desulfurization equipment, flue gas dust removal equipment, industrial organic exhaust gas purification equipment, diesel vehicle exhaust purification unit, treatment unit for exhaust gas containing heavy metal
 237. Manufacturing of water pollution prevention and control equipment: horizontal spiral centrifugal dehydrator, membrane and membrane materials, ozone generators with a capacity of more than 50 kg/h, chlorine dioxide generators with a capacity of more than 10 kg/h, UV disinfection unit, small domestic sewage treatment equipment in rural areas, and treatment unit for wastewater containing heavy metal
 238. Manufacturing of solid waste treatment and disposal equipment: sewage plant sludge disposal and resource utilization equipment, complete set of refuse incineration equipment with a daily treatment capacity of more than 500 tons, landfill leachate treatment technology equipment, landfill anti-seepage geomembrane, building waste treatment and resource utilization equipment, devices for disposal of hazardous waste, devices for power generation with biogas in landfill, treatment equipment for ferrous waste, and centralized disposal facilities for medical waste
 239. Development and manufacturing of equipment for comprehensive utilization of red mud from aluminum industry
 240. Manufacturing of equipment for comprehensive utilization of mine tailings
 241. Manufacturing of equipment for recycling, treatment and reutilization of waste and used plastics, electrical appliances, rubbers and batteries
 242. Manufacturing of equipment for recycling of used and waste textiles
 243. Manufacturing of equipment for remanufacturing of waste electromechanical products
 244. Manufacturing of devices for comprehensive utilization of used and waste tires
 245. Manufacturing of equipment for utilization of waste heat, pressure and gas
 246. Environmental protection technology and manufacturing of equipment for aquatic ecosystem
 247. Manufacturing of portable assembling water purifying equipment

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248. Manufacturing of unconventional water treatment and reuse equipment and water quality monitoring instruments
249. Manufacturing of leak test equipment and instruments for industrial water pipeline networks and equipment (appliances)
250. Development and manufacturing of technologies and complete equipment for sea water desalination and cooling with a daily output of 100,000 cubic meters or more
251. Manufacturing of water saving equipment in high water consumption industries such as iron & steel, paper making, textile, petrochemical, chemical, metallurgy, etc.
252. Manufacturing of equipment for special meteorological observation and analysis
253. System development of seismic stations, networks and mobile seismic observation as well as manufacturing of instrument and equipment
254. Manufacturing of radial tyre building machines with four or more drums
255. Manufacturing of rolling resistance testers and tire noise laboratories
256. 256. Manufacturing of new technical equipment for heat supply metering and temperature control devices
257. Manufacturing of equipment for preparation, storage and transportation and inspection system for hydrogen energy
258. Manufacturing of new heavy residual oil gasification and atomizing nozzles, high-efficiency steam trap valves with a leakage rate of 0.5% or less, and high-temperature ceramic heat exchanger with a capacity of 1,000 ° C or more
259. Manufacturing of equipment for recovery of marine oil spill
260. Manufacturing of equipment for utilization of low concentration coal-mine gas and ventilation air methane
261. Development and utilization of clean coal technology products and manufacturing of relevant equipment (coal gasification, liquefaction, coal water slurry, industrial briquette)
262. 262. Development of fire fighting and rescue technology and manufacturing of equipment for large public buildings, high-rise buildings, petrochemical facilities, forests, mountains, waters and underground facilities
263. Manufacturing of intelligent equipment for emergency medical rescue
264. Manufacturing of hydrologic monitoring
265. Design, R&D and manufacturing of nuclear reactor main process equipment

(XIX) Automobile manufacturing industry

266. Manufacturing of automobile engines and establishment of engine R&D organizations: gasoline engines with power of not less than 70 kilowatts per litre, diesel engines with power of not less than 50 kilowatts per litre and displacement of not more than 3 litres, diesel engines with power of not less than 40 kilowatts per litre and displacement of not less than 3 litres, and engines using new energy resources such as fuel cells and mixed fuels
267. Manufacturing of key automotive parts and R&D of key technologies: dual-clutch transmission (DCT), CVT, automated mechanical transmission (AMT), gasoline engine turbocharger, viscous coupling (for four-wheel drive), actuator of automatic transmission (solenoid valve), hydraulic retarder, eddy current retarder, automotive airbag gas generator, common rail fuel injection technology (with a maximum injection pressure of more than

2000 Pa), variable geometry turbocharging (VGT), variable nozzle turbocharging (VNT), engine emission control devices meeting Chinese Phase VI emission standards, intelligent torque management (ITM) and coupler assembly, steer-by-wire systems, particulate trap devices, dedicated axles for low floor large buses, energy absorbing steering systems, low dragged disc brake assembly, aluminum steering knuckles, variable frequency air conditioning system for large and medium buses, rubber automotive parts, and key parts of the above parts and components

268. R&D and manufacturing of automotive electronic devices: engine and chassis electronic control and key parts, vehicle electronic technologies (automotive information system and navigation system), automotive electronic bus network technologies, electronic control system input (sensor and sampling system) and output (actuator) components, electronic controller for electric power steering system, embedded electronic integrated system, electronic air spring, electronically controlled suspension system, electronic valve system devices, electronic instrument combination, ABS/TCS/ESP system, brake-by-wire system (BBW), transmission control unit (TCU), tire pressure monitoring system (TPMS), on-board diagnostics (OBD), engine anti-theft system, automatic collision avoidance system, testing system for automobile and motorcycle testing and maintenance, autopilot system, on-board electronic operating system, on-board electronic operating system application development (APP), head display technology, intelligent connected automobile dodging steering assistance system, collision warning system (FCW), automatic brake control system (ABC), automatic emergency brake system (AEB), electronic parking vehicle braking system (EPB), line-by-wire control system, adaptive cruise system (ACC), forward-view camera system, wheel speed sensor, vehicle networking technology

269. R&D and manufacturing of key parts and components of new energy vehicles: monomers of energy-based power batteries; cathode materials of batteries (specific capacity $\geq 180\text{mAh/g}$, cycle life of 2,000 times with not less than 80% of initial discharge capacity) and precursor materials of batteries, anode materials of batteries (specific capacity $\geq 500\text{mAh/g}$, cycle life of 2,000 times with not less than 80% of initial discharge capacity), separators of batteries (thickness $\leq 12\mu\text{m}$, porosity 35%? 60%); battery management systems, motor controllers, and electronic control integration of electric vehicles; motor system for driving of electric vehicles (high-efficiency area: 85%, efficiency in working area $\geq 80\%$), vehicle DC/DC (input voltage 100V? 400 V), high power electronic devices (IGBT, voltage class $\geq 750\text{V}$, current $\geq 300\text{A}$); plug-in hybrid electromechanical coupling drive systems; fuel cell engines (mass specific power $\geq 350\text{W/kg}$), fuel cell stacks (volume specific power $\geq 3\text{kW/L}$), membrane electrodes (platinum consumption $\leq 0.3\text{g/kW}$), proton exchange membranes (proton conductivity $\geq 0.08\text{S/cm}$), bipolar plates (metal bipolar plate thickness $\leq 1.2\text{mm}$, and other bipolar plate thickness $\leq 1.6\text{mm}$), low platinum catalyst, carbon paper (resistivity $\leq 3\text{m}\Omega \cdot \text{cm}$), air compressors, hydrogen cycle pumps, hydrogen ejectors, humidifiers, fuel cell control systems, booster DC/DC, 70MPa hydrogen cylinders, on-board hydrogen concentration sensors; heat pump air conditioners for electric vehicle; special 32-bit or more chips for motor drive control (at least 2 hardware cores with main frequency of no less than 180MHz, with hardware encryption functions, etc.); integrated electric drive assemblies (power density $\geq 2.5\text{kW/kg}$); high-speed reducers (maximum input speed $\geq 12,000\text{ rpm}$ and noise below 75dB)

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270. Technical development and manufacturing of equipment for on-board charger (efficiency $\geq 95\%$ under full load output condition), two-way on-board charger, non-on-board charger (output voltage 250V? 950 V, efficiency in voltage range $\geq 88\%$) and high-power density, high conversion efficiency and high applicability, wireless charging, mobile charging
271. R&D and manufacturing of key parts and components of intelligent vehicles: sensors, on-board chips, central processing unit, on-board operating system and information control system, vehicle network communication system and equipment, visual identification system, high-precision positioning device, and wired chassis system; new intelligent terminal module, multi-core heterogeneous intelligent computing platform technology, high-precision positioning and map technology for all-weather complex traffic scenes, sensor fusion and perception technology, key technology for vehicle wireless communication, and basic cloud control platform technology; new security isolation architecture technology, software and hardware identification technology, terminal chip security encryption and application software security protection technology, wireless communication security encryption technology, secure communication, certification and authorization technology, data encryption technology; R&D of testing and evaluation system architecture, virtual simulation, vehicle road testing and other technologies and verification tools, vehicle level and system-level testing and evaluation methods, and development of basic testing database
272. Manufacturing of L3/L4/L5 autopilot related hardware: laser radar, millimeter-wave radar
273. Manufacturing of charging piles and charging piles for energy storage.

(XX) Manufacturing of railway, vessel, aerospace and other transportation equipment

274. Manufacturing of engine emission control device for motorcycles with high emission capacity (emission capacity > 250ml) which attain the Phase 4 motorcycle emission standard in China
275. Design, manufacturing and maintenance of civil aircrafts: trunk and regional aircrafts, and utility aircrafts.
276. Manufacturing and maintenance of civil aircraft parts and components
277. Design and manufacturing of civil helicopters
278. Manufacturing of civil helicopter parts and components
279. Manufacturing of wing-in-ground effect, wing-in-water effect aircrafts, design and manufacturing of drones and stratospheric airship
280. Design, manufacturing and maintenance of aircraft engine parts and components, and aircraft auxiliary power system
281. Development and manufacturing of new materials for aviation and aerospace use
282. Design and manufacturing of civil aviation airborne equipment
283. Manufacturing of aviation ground equipment: civil airport facilities, civil airport operations assurance facilities, civil airport security facilities, flight test ground facilities, flight simulation and training equipment, aviation test and measurement equipment, equipment for aviation ground tests, integrated test equipment for airborne equipment, special equipment for aeronautical manufacturing, special equipment for trial manufacturing of aeronautical materials, civil aircraft ground reception and application equipment, carrier rocket ground testing equipment, equipment for carrier rocket mechanics and environmental experiments

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- 284. Design and manufacturing of civil satellites, and manufacturing of civil satellite payload
 - 285. Manufacturing of civil satellite parts and components
 - 286. Manufacturing of testing equipment for satellite-related products
 - 287. Design of cruise ship and deepwater (> 3,000 m) marine engineering equipment
 - 288. Design of seabed mineral resources development equipment
 - 289. Design of low and medium-speed diesel engine of vessel and parts and components thereof
 - 290. Design of cabin machinery of vessel
 - 291. Design of vessel communication and navigation equipment
 - 292. Design of yacht
 - 293. Design of smart ships and R&D of relevant smart system
 - 294. R&D and manufacturing of passenger ship navigation and communication system

(XXI) Electrical machinery and equipment manufacturing

- 295. Manufacturing of key auxiliary equipment used for 1 million KW ultra-supercritical thermal power units: safety valve and control valve
- 296. Manufacturing of denitrification equipment for sintering machine in steel industry
- 297. Design and manufacturing of seals for thermal power equipment
- 298. Manufacturing of large castings and forgings for coal-fired power station and hydropower station equipment
- 299. Manufacturing of key auxiliary equipment for hydropower units
- 300. Manufacturing of transmission and transformation equipment and key components
- 301. Manufacturing of new energy power generation equipment in set or key equipment: photovoltaic power generation, photothermal power generation, geothermal power generation, tidal power generation, wave power generation, garbage power generation, biogas power generation, wind power generation of 2.5 MW and above
- 302. Manufacturing of sterling generator set
- 303. Development and manufacturing of linear motors, plane motors and their driving systems
- 304. Manufacturing of hi-tech green batteries: nickel-hydrogen batteries, nickel-zinc batteries, sodium salt batteries, silver zinc batteries, lithium-ion batteries, solar cells, fuel cells, etc.
- 305. Manufacturing of refrigeration compressors for air conditioning with motor adopting direct current speed control technology, refrigeration compressors for air conditioning adopting CO₂ natural refrigerants, refrigeration equipment for air conditioning applying renewable energy (air source, water source, ground source)
- 306. Manufacturing of solar air conditioning and heating systems and solar drying devices
- 307. Manufacturing of devices for biomass drying pyrolysis systems and biomass gasification
- 308. Manufacturing of devices for biogas raw material pretreatment, feed, fermentation, purification, biogas liquor treatment
- 309. Manufacturing of alternating current frequency modulation traction devices
- 310. Manufacturing of high-voltage vacuum components and switching equipment, intelligent medium voltage switching components and complete equipment, environment-friendly insulated switch cabinets using medium pressure gases, intelligent (communicable) low-voltage electrical appliances, amorphous alloy, coiled iron core, etc.

(XXII) Computer, communication and other electronic equipment manufacturing

311. Manufacturing of high-definition digital camcorders and digital sound playing equipment
312. Manufacturing of TFT-LCD, OLED, AMOLED, laser display, quantum dot, 3D display and other flat panel displays and display materials (excluding TFT-LCD glass substrate for the 6th generation and below)
313. R&D and manufacturing of polarizer substrates and diffusion films
314. R&D and manufacturing of electronic book materials (electronic ink screens, etc.)
315. Manufacturing of silicon monocrystals with a diameter of 8 inches and above
316. Manufacturing of silicon wafers with a diameter of 12 inches and above
317. Manufacturing of key parts for large-screen color projection displays such as optical engines, light sources, projection screens, high resolution projection tubes and microscopic projection equipment modules etc.
318. Manufacturing of laser projection equipment
319. Manufacturing of ultra-high definition and high-tech video products: 4K/8K ultra-high definition television sets, 4K cameras, monitors and key end-to-end hardware and software for high-tech videos such as interactive video, immersive video, VR video and cloud games etc.
320. Manufacturing of digital audio and video coding and decoding equipment; equipment for digital broadcasting and television studios; digital cable television system and equipment; digital audio broadcasting transmission equipment; digital television up-and-down converters; digital television terrestrial broadcasting single frequency network (SFN) equipment; equipment for satellite digital TV uplink stations
321. Integrated circuit design; manufacturing of large-scale digital integrated circuit with a line width of 28nm and below; manufacturing of analog and digital-analog integrated circuit with a line width of 0.11 micron and below; manufacturing of mask plates; manufacturing of MEMS and compound semiconductor integrated circuits; and BGA, PGA, CSP, MCM and other advanced packaging and testing
322. Manufacturing of large- and medium-sized electronic computers, high-performance computers with computing speed of 10,000 trillion computing speed per second, portable minicomputers, large-scale simulation systems, industrial controlling machines and controllers
323. R&D and manufacturing of quantum, brain-like and other new mechanism computer systems
324. Development and manufacturing of etching machines for manufacturing very large scale integrated circuits, PVD, CVD, oxidizing furnaces, washing machines, diffusion furnaces, MFC etc.
325. Manufacturing of integrated circuit packaging and testing equipment
326. Manufacturing of computer digital signal processing system and boards
327. Manufacturing of graphic and image recognition and processing system
328. Development and manufacturing of high-capacity optical and disk drives and their parts
329. Manufacturing of memory system of 100TB and above, SSD solid state hard disk of 8TB and above, and intelligent memory equipment
330. Manufacturing of computer-aided design (three-dimensional CAD) systems, electronic

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- design automation (EDA) systems, computer-aided testing (CAT) systems, computer-aided manufacturing (CAM) systems, computer-aided engineering (CAE) systems and other computer application systems
331. Development and production of software products
332. Development and manufacturing of materials exclusively for electronic purposes (excluding development and manufacturing of optical fiber preform)
333. Manufacturing of equipment, testing instruments, tools and molds exclusively for electronic purposes
334. Manufacturing of new electronic components: chip components, sensitive components and sensors, frequency control and selection components, hybrid integrated circuit, power electronic devices, optoelectronic devices, new electromechanical components, polymer solid capacitors, supercapacitors, passive integrated components, high-density interconnection laminates, single-layer, double-layer and multi-layer flexible boards, rigid-flex printed circuit boards and packaging boards, high-density, high-fine circuit (line width/linewidth $\leq 0.05\text{mm}$) flexible circuit boards and others
335. Manufacturing and assembly of touch system (touch screens, touch components, etc.)
336. R&D and manufacturing of Virtual Reality (VR) and Augmented Reality (AR) equipment
337. Manufacturing of high-brightness light-emitting diodes (LEDs) with luminous efficiency of above 140lm/W, LED epitaxial wafers (blue light) with luminous efficiency of above 140lm/W, and white luminous tubes with luminous efficiency of above 140lm/W and power of above 200 mW
338. Development and production of key parts of high-density digital disc drive
339. Production of Compact Disk-Recordable (CD-R)
340. R&D and manufacturing of 3D printing equipment and key components thereof
341. Manufacturing of equipment for satellite communication system
342. Manufacturing of optical communication measuring instruments and optical transceivers with a rate of 40 Gbps or above
343. Manufacturing of ultra-wideband (UWB) communication equipment
344. Manufacture of wireless local area network (including supporting WAPI) and wide area network equipment.
345. Manufacturing of equipment for time division multiplexing (TDM) with a rate of 100Gbps or more, dense wavelength division multiplexing (DWDM), broadband passive network equipment (including EPON, GPON, WDM-PON etc.), next-generation DSL chips and equipment, optical cross-connect (OXC) equipment, automatically switched optical network (ASON) equipment, SDH optical fiber communication of above 40 Gbps
346. Development and manufacturing of IPv6 -based next-generation Internet system equipment, terminal equipment, testing equipment, software, chips
347. Development and manufacturing of 4G, 5G and subsequent mobile communication cell phones, base stations, core network equipment, optical transmission equipment, and network testing equipment
348. Development and manufacturing of visual sensors (digital camera, digital camera, 3D sensor, laser radar, millimeter-wave radar etc.) applied to fifth-generation mobile terminals (mobile phones, automobiles, unmanned aerial vehicles, virtual reality and enhanced display,

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- etc.) and their core component components (optical lens and lens, lasers, sensitive chips, motors, photoelectric modules, etc.), Internet of Things terminals
349. Development of cloud computing equipment (including server, storage equipment, cloud and cloud service equipment, etc.), software and system
350. Development and manufacturing of high end routers with a complete processing capacity greater than 64 Tbps (two way) and switches with a switching capacity greater than 40 Tbps
351. Manufacturing of equipment for air traffic control system
352. Development and manufacturing of auxiliary electronic teaching equipment for traditional Chinese medicine based on sound, light, electricity, touch control and other computer information technology, virtual pathology and physiological human model equipment
353. Manufacturing of wearable intelligent equipment, intelligent unmanned aerial vehicles, service consumption robots and other intelligent consumption equipment
354. Manufacturing of intelligent home platform system and equipment

(XXIII) Instruments manufacturing industry

355. Manufacturing of equipment for monitoring soil moisture content
356. Manufacturing of industrial process automatic control system and devices: fieldbus control system, large-scale programmable controller (PLC), two-phase flow meter, solid flow meter, and new-type sensors and field measuring instruments
357. Manufacturing of automatic, intelligent and multi-functional mechanical performance testing instrument for materials, and non-destructive testing equipment such as industrial CT and three-dimensional ultrasonic flaw detectors
358. Development and manufacturing of large precision instruments and high-resolution microscopes (with a resolution of less than 200nm)
359. Manufacturing of high-precision digital voltmeters and ammeters (with a span of more than seven and a half bits)
360. Manufacturing of automatic reactive power compensation devices
361. Manufacturing of new instruments and equipment for work safety
362. Manufacturing of VXI bus automatic testing systems (complying with IEEE 1155 international standards)
363. Development and manufacturing of underground coal mine monitoring and disaster forecasting system and coal safety inspection integrated management system
364. Manufacturing of equipment for engineering surveying and geophysical observation
365. Manufacturing of environmental monitoring instruments
366. Manufacturing of wireless remote transmission intelligent water meters
367. Manufacturing of intelligent monitoring instrument for reservoir dam safety
368. Manufacturing of instruments and equipment for hydrological data collection, processing and transmission and flood control early warning
369. Manufacturing of monitoring instruments and equipment for marine exploration
370. Manufacturing of leakage monitoring instruments for municipal pipe network and water pipeline
371. R&D and manufacturing of nuclear instruments and meters

(XXIV) Comprehensive utilization of waste resources

- 372. Coal dressing and comprehensive utilization of coal ash (including gypsum), coal gangue, etc.
- 373. Production of completely biodegradable materials
- 374. Recycling and treatment of waste and used electrical and electronic products, automobiles, mechanical and electrical equipment, rubbers, metals and batteries
- 375. Comprehensive utilization of red mud and other smelting residue

IV. Power, heating, gas and water production and supplying industries

- 376. Construction and operation of ultra-supercritical power stations with single unit power of 600,000 KW or more
- 377. Construction and operation of power stations with backpressure cogeneration unit, thermoelectric cooling polygeneration unit, ultra-critical cogeneration unit of 300,000 KW or more
- 378. Construction and operation of power stations with single unit of 600,000 KW or more in water-deficient areas
- 379. Construction and operation of clean coal generation projects such as integrated gasification combined cycle power generation etc.
- 380. Construction and operation of power generation projects with single unit power of 300,000 KW or more that use fluidized bed boilers and coal gangue, medium coal, coal slurry
- 381. Construction and operation of large hydropower stations and pumped storage power stations with the main purpose of power generation
- 382. Construction and operation of nuclear power stations
- 383. Construction and operation of new energy power stations (including solar energy, wind energy, geothermal energy, tidal energy, current energy, wave energy and biomass energy, etc.)
- 384. Construction and operation of natural gas peak-shaving power stations and natural gas distributed energy stations in areas with important load centers and guaranteed gas sources
- 385. Development and application of complementary system for power generation with gas and renewable resources
- 386. Construction and operation of waste incineration power plants
- 387. Construction and operation of clean energy micro-grids
- 388. Construction and operation of regional energy supply (cold and heat) projects driven by natural gas, electric power and renewable energy resources
- 389. Utilization of seawater (direct utilization of seawater, desalination), utilization of brackish water
- 390. Design, construction and operation of water supply plants
- 391. Design, construction and operation of renewable water plants
- 392. Design, construction and operation of sewage treatment plants
- 393. Construction and operation of motor vehicle charging stations and battery replacement stations
- 394. Construction and operation of hydrogenation stations
- 395. Construction and operation of biogas projects
- 396. R&D, application and production of green plant insulation oil

V. Transportation, warehousing and post industries

- 397. Construction and operation of trunk railway network and special railway lines
- 398. Construction and operation of intercity railways, urban (suburban) railways, railways for resource development and branch lines, and related bridges, tunnels, ferries and station facilities
- 399. Comprehensive maintenance of infrastructures of high-speed railways and intercity railways
- 400. Construction and operation of highways, independent bridges and tunnels
- 401. Road freight transportation companies
- 402. Construction and operation of public dock facilities in ports
- 403. Construction and operation of civil airports (excluding air traffic control)
- 404. Public air transport companies
- 405. General airline companies for agriculture, forestry and fishery
- 406. International maritime transport companies
- 407. International maritime transportation service for cruise passengers
- 408. Construction of transfer facilities for international container intermodal transport, and R&D, promotion and application of rapid transfer and reloading equipment and standardized delivery units
- 409. International ship management organizations and organizations engaged in overseas assignment of crew
- 410. Construction and operation of oil (gas) pipelines and oil (gas) depots (excluding aviation oil pipelines and oil depots)
- 411. Construction and operation of coal pipeline transportation facilities
- 412. Construction of warehousing facilities related to logistics business, especially construction and operation of elevated three-dimensional automatic warehousing facilities, and integrated warehousing facilities related to packaging, processing and distribution businesses
- 413. R&D and application of technical equipment and green packaging relating to courier service, R&D and application of green logistics facilities and equipment
- 414. Construction and operation of shared system of pallets and container units
- 415. Chain distribution in rural and community areas
- 416. Provision and application of logistics such as joint distribution of general merchandises, cold chain logistics of fresh agricultural products, low-temperature distribution of special medicines, and relevant technical services
- 417. Construction of distribution center for imported and exported bulk commodities

VI. Wholesale and retail trade

- 418. Cross-border e-commerce retail
- 419. Cross-border e-commerce supply chain Companies
- 420. Construction of a unified distribution network for commercial and trading enterprises;
- 421. Operation of helium
- 422. Construction and operation of fueling stations for vehicles

VII. Information transmission, software and technology services

- 423. E-commerce system development and application service; development and operation of all kinds of specialized assets trading platforms
- 424. Development and application services for online education, online medical and online office system

VIII. Leasing and business services

- 425. International economic, technology, environmental protection, logistics information, commerce, accounting and tax consulting services
- 426. Engineering consulting services
- 427. Engagement in system application management and maintenance, information technology support and management, banking back-office services, financial settlement, software development, off-shore paging centers, data processing, and other outsourced information technology and business process services in the form of undertaking outsourced services
- 428. Maintenance and repair of modern high-end equipment, reconstruction and integration of digital production line, professional maintenance services and supply chain services
- 429. Conference, exhibition and related services
- 430. Venture capital enterprises
- 431. Intellectual property services
- 432. Home service


IX. Scientific research and technology services

- 433. R&D of bioengineering and biomedical engineering technology, biomass energy development technology
- 434. R&D of DNA-encoded compound library technology
- 435. Veterinary and pet nutrition scientific research and technical services
- 436. R&D and application of artificial intelligence technologies such as intelligent devices, robots, neural network chips and neuron sensors
- 437. R&D of isotope, radiation and laser technology
- 438. Ocean development and ocean energy development technology, technology for comprehensive utilization of marine chemical resources, development and refinement/ deep processing of related products, development of marine medicine and biochemical products and relevant technical R&D
- 439. R&D of ocean monitoring technology (ocean tidal waves, weather, environmental monitoring), seabed detection and ocean resources exploration and evaluation technology
- 440. R&D of high value-add utilization of seawater chemical resources such as manufacturing of salt and extraction of potassium, bromine, magnesium and lithium by comprehensive utilization of desalinated dense seawater
- 441. R&D of offshore oil pollution cleaning and ecological restoration technology and the relevant product development, prevention and treatment of sea water eutrophication,

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- prevention and treatment of marine life explosive growth disaster, coastal zone ecological environment restoration technology
- 442.R&D and application of technologies for energy conservation, environmental protection and recycling economy
- 443.R&D and application of technologies for recycling and comprehensive utilization of resources and for recycling of emissions and discharges from enterprise production
- 444.R&D of environmental pollution treatment and monitoring technology
- 445.Development of clean production technology and services
- 446.Development of carbon capture, utilization and storage (CCUS) technology and services
447. R&D and utilization of integrated technologies for land conservation and outdoor environment, energy conservation and utilization of water resources, material conservation and utilization of material resources, indoor environment and operational management of green buildings
- 448.R&D and application of disposal technology for radioactive waste
449. Construction and operation of hazardous waste utilization and disposal facilities and technical consultancy services
- 450.New products and new technologies for energy saving and consumption reduction in production of chemical fiber and printing and dyeing processing and treatment of three waste residues
451. R&D and application of comprehensive utilization of phosphogypsum
- 452.R&D of technologies for prevention and control of desertification and desert restoration
- 453.R&D of integrated management technology for grassland and livestock
- 454.R&D and application of modern animal husbandry waste
- 455.R&D and application of new pesticide
- 456.R&D of civil satellite application technology
457. Inspection, testing and certification services
- 458.R&D centers
459. Centre for new technology, new product development and enterprise incubation
- 460.R&D and application of mobile communication technology of the fifth generation
461. R&D and application of Internet of things
- 462.R&D and application of block chain technology
- 463.Creative industries such as industrial design, architectural design, costume design
- 464.Urban and rural planning preparation services (except for urban and township master planning services)

X. Water Conservancy, Environment and Public Utility Management

465. Control of Water environment of rivers and lakes, restoration, management, protection and operation of aquatic ecology
466. Construction and management of urban closed roads
467. Construction and operation of urban subway, light rail and other track transport
468. Construction and operation of garbage treatment plants, hazardous waste treatment and disposal plants (incineration plants and landfills), and environmental pollution treatment facilities

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469. Construction and operation of urban parking facilities
470. Construction and operation of public transport systems such as taxis, trams and public transport

XI. Education

471. 471. Non-academic vocational training institutions
472. 472. Non-academic language training institutions (except for those for pre-school education, compulsory education and senior high school education)

XII. Health and social work

473. Service agencies for the elderly, the disabled and children (excluding child welfare agencies, minor rescue and protection agencies, and adoption registration agencies)
474. Elderly care institutions, community and home-based elderly care services
475. Medical institutions
476. Mental rehabilitation institutions
477. Psychological consultation institutions

XIII. Culture, Sports and Entertainment

478. Operation of performance venues
479. Operation of sports grounds, body-building, competition performance and sports training, and intermediary services
480. Construction of tourism infrastructure and tourism information services