National Catalog of Industries for Encouraging Foreign Investment

I. Agriculture, Forestry, Animal Husbandry, and Fishery Industries

1. Planting, development, and production of woody plants that contain edible oils or are used as seasonings or industrial raw materials
2. Development of cultivation technologies, planting and production of green and organic vegetables (including edible fungi and watermelon and melon), fresh fruit and nuts, and tea
3. Breeding, planting, and production of wine grapes
4. Breeding, planting, and production of raw materials for beer
5. Development of new cultivation techniques and the production of sugar crops, fruit trees, and pasture
6. Breeding and development of new varieties of plants for high-yield, high-efficiency silage
7. Production of flowers and construction and operation of nursery bases
8. Planting of rubber trees, oil palms, sisal, and coffee trees
9. Breeding and planting of aromatic plants and extraction of essential oils
10. Planting and cultivation of traditional Chinese medicinal crops
11. Comprehensive utilization of crop straw resources and development and production of organic fertilizer resources
12. Cultivation of forest resources (fast-growing, high-yield, large-diameter timber forests, bamboo forests, oil-tea camellia trees, and other economic forests, timber forests comprising rare tree species, etc.)
13. Undergrowth ecological cultivation
14. Development and application of technologies for standardized large-scale breeding of livestock and poultry and intelligent breeding technology
15. Breeding of breeding livestock, poultry, and aquatic offspring (excluding rare and endemic Chinese species)
16. Construction and operation of ecology and environmental protection projects, such as preventing and controlling desertification, soil and water conservation, and land greening
17. Aqua farming, open ocean cage aquaculture, industrial aquaculture, and ecological mariculture
18. High-efficiency water-saving irrigation, improvement and ecological management of farmland soil, comprehensive utilization of cultivated land reserve resources such as saline-alkali land, and green farmland construction and technology development and application; and construction of projects related to rural environmental improvement, treatment of rural domestic sewage and waste, and improvement and restoration of water ecology and environment, as well as technology development and application

19. Construction of cold chain logistics facilities for the storage and preservation of agricultural products
20. Intelligent agriculture (integrated application of software technology and equipment and digital transformation of agricultural production, operation, and management)
21. Rural e-commerce and new rural service industries, including agricultural production services adapted to large-scale, standardized, and mechanized agricultural production, and rural life services
22. Leisure agriculture and rural tourism, construction of practice bases for leisure and sightseeing, farming experience, outdoor activity development, ecological health care and wellness, and labor education
23. Development and production of safe, efficient, and environment-friendly feeds and feed additives (including vitamins, methionine, and feed enzymes) and substitute products of anti- bacterial agents used for promoting animal growth

II. Mining Industry

24. Exploration and exploitation of oil and natural gas (including shale gas and coalbed methane) and utilization of mine gas
25. Development and application of enhanced oil recovery (in the form of project services) and relevant new technologies
26. Development and application of new technologies for oil exploration and exploitation in geophysical prospecting, drilling, well logging, mud logging, and downhole operation, among others
27. Development and application of new technologies for enhancing the utilization rate of mine tailings and comprehensive application of ecological restoration technologies in mining areas
28. Exploration, mining, and ore dressing of minerals of which there are an acute shortage in China (such as leopoldite and chromite)

III. Manufacturing Industry

(I) Agricultural and Sideline Food Processing

29. Development and production of pet feed and food
30. Processing of aquatic products, purification and processing of shellfish, and development of seaweed health food
31. Processing of vegetables, fresh and dried fruits and nuts, and livestock and poultry products

(II) Food Manufacturing

32. Development and production of high-temperature sterilized milk (sterilized at 132°C for a short time)
33. Production of cheese, processed cheese, and food made with cheese
34. Development and production of formula food for infants, complementary foods for infants, formula food for special medical purposes, and health food
35. Development and production of baked food (including chocolates containing natural cocoa beans and their products), convenience food, ice cream, and related

ingredients
36. Production of candy, chewing gum, candied fruit, and yogurt
37. Processing of forest food
38. Development and production of vegetable protein bionic meat food
39. Development of new technologies for and production of natural food additives and natural spices
40. Development and production of packaging materials for sterile liquid food

(III) Alcohol, Beverage, and Refined Tea Manufacturing

41. Development and production of fruit and vegetable juice and other drinks, protein drinks, tea drinks, coffee drinks, and botanical drinks

(IV) Textile

42. Production of functional industrial textiles using non-woven, machine weaving, knitting, weaving, 3D weaving, and other techniques, the combination of multiple techniques, long-term finishing, and other new technologies
43. Production of high-end textile fabrics with the use of digital and intelligent printing and dyeing equipment, dyeing and finishing cleaner production technology (enzyme treatment, high- efficiency short-process pretreatment, continuous open-width pretreatment of knitted fabrics, low-temperature pretreatment and dyeing, low-salt or salt-free dyeing, low-urea printing, small bath ratio airflow or gas-liquid dyeing, digital inkjet printing, foam finishing, etc.), functional finishing technology, new dyeing technology, composite fabric processing technology; and development and application of intelligent cheese dyeing equipment
44. Processing technology and product production of special animal fiber, hemp fiber, mulberry tussah silk, color cotton, and color mulberry cocoon silk natural fibers that satisfy environmental protection requirements
45. Sorting, recycling, and utilization of waste textiles
46. Production, research, and development of textiles for therapeutic medical treatment and public health, artificial skin, absorbable sutures, hernia repair materials, new dialysis membrane materials, catheters for interventional therapy, high-end functional biomedical dressings, etc.

(V) Textile Garment and Apparel

47. Production of high-count cotton yarn

48. Clothing and semi-finished clothing production using the computer-integrated manufacturing system
49. Production of functional and special clothing

(VI) Leathers, Furs, Feathers, and Related Products and Shoemaking

50. Cleaning technical processing of leathers and furs
51. Post ornament and processing of leather with new technology
52. Comprehensive use of leather waste
53. Production of high-performance elastomer shoe materials

(VII) Wood Processing and Wood, Bamboo, Rattan, Palm Fiber, and Straw Products

54. Development of new technologies for the comprehensive utilization of three forest

residues, inferior quality lumber, small-sized lumber and firewood, waste wood and bamboo, development and production of relevant new products, development and application of the technology for pollution control and prevention in wood and bamboo production, fine particle emission reduction, and dust explosion prevention

55. Development and production of new technologies for and new products of wood structures and wood building materials

56. Development and production of new technologies and products for the recycling of waste wood

(VIII) Manufacturing of Educational and Cultural Products, Arts and Crafts, and Sports and Entertainment Products

57. Production of high-end carpets, embroidery, and drawnwork products

(IX) Petroleum Processing, Coking, and Nuclear Fuel Processing

58. Processing of phenol oil, absorber oil, anthracene oil, naphthalene oil and the preparation of high-end chemicals from coal pitch (excluding modified pitch)

(X) Manufacturing of Chemical Materials and Products

59. Development and production of new downstream products of polyvinyl chloride (PVC) and organosilicon

60. Auxiliary raw materials for the production of synthetic materials: production of hydrogen peroxide-based propylene oxide, hydrogen peroxide-based epichlorohydrin, naphthalene dicarboxylate (NDC), 1,4-Cyclohexanedimethanol (CHDM), and butadiene-based adiponitrile, hexanediamine and norbornene of 50,000 tons or more per year

61. Production of polyethylene polyamine products

62. Development and production of high-end polyolefin such as high-carbon α-olefin copolymerized metallocene polyethylene and COC/COP cyclic olefin polymer

63. Production of raw materials of synthetic fibers: 1,3-propylene glycol

64. Production of synthetic rubber: acrylate rubber, epichlorohydrin rubber, special fluorine rubber, silicone rubber, fluorosilicone rubber, thermoplastic polyurethane rubber, and other special rubbers

65. Production of engineering plastics and plastic alloys: polyphenyl thioether, polyether ether ketone, polyimide, polysulfone, polyether sulfone, polyarylate (PAR), polyphenylene ether (PPE), special polyamide (PA) and its modified materials, liquid crystal polymer, and other products

66. Fine chemicals: new catalyst products and technologies; processing technologies for the commercialization of dyes (pigments); electronic and papermaking chemicals; leather chemicals; oilfield chemicals; surfactants; safe production technology of nitrogen-protected double-shell tower for refining ethylene oxide from key raw materials; production of water treatment agents and key raw materials; production of high-solid, solvent-free, water-based, electron beam curing, UV curing, reactive adhesives, and key raw materials including high-end butyl acrylate and high-end octyl acrylate, polyester polyol and curing agents; production of sealant, adhesive tapes and key raw materials and production of efficient, safe, and environment-friendly plasticizers (such as polyester plasticizers), new plastic additives such as halogen-free flame retardants, permanent anti-static agents, organic heat stabilizers and nucleating

agents; production of inorganic fibers and inorganic nano materials; deep processing of pigment encapsulation; development and production of environment-friendly surface treatment technology products; and development and production of humic acid fine chemical products

67. Production of water-based inks and adhesives, electron beam curing inks, ultraviolet-curing inks, and other low-volatile inks, adhesives, environment-friendly organic solvent materials, and environment-friendly organic solvent-free materials

68. Production of natural spices, synthetic spices, single ion spices, and citral, the intermediate spice component

69. Production of high-performance coatings, adhesives, industrial coatings, high solids coatings, water-based, powder, radiation curing, solvent-free, and other low VOC content industrial coatings and supporting resins, water-based industrial coatings and auxiliary water-based resins (including high-end butyl acrylate and high-end octyl acrylate)

70. Production of high-performance fluororesins, fluorine coating materials, medical intermediates containing fluorine, zero ODP, and low GWP refrigerants in compliance with international conventions, cleaning agents, blowing agents, etc.

71. Development of green technologies for the production of hydrogen fuel (hydrogen production from chemical by-products, biological hydrogen production, water-electrolytic hydrogen production from renewable energy, etc.) and the storage, transportation, and liquefaction of hydrogen fuel

72. Production and supply of large, high-pressure, and high-purity industrial gas (including electronic gas)

73. Construction and operation of carbon capture, utilization, and storage (CCUS) projects

74. Production of fluoride resources recovered from the phosphorus chemical industry and aluminum smelters

75. Development of new technologies for forestry chemical products and the development and production of relevant new products

76. Development and production of inorganic, organic, and biological membranes for environmental protection purposes

77. Development and production of new types of fertilizers: high potassium fertilizers, compound microbial inoculants, compound microbial fertilizers, decomposition agents for straws and refuse, microbial preparations with special functions, and humic acid fertilizers

78. Development and production of new varieties, new formulations, special-purpose intermediates, or auxiliary agents of efficient, safe, and environment-friendly agricultural chemicals, and development and application of relevant cleaner production processes, and production of chiral and stereoselective pesticides by oriented synthesis

79. Development and production of biological agricultural chemicals and biological control products: microbial pesticides, microbial fungicides, agricultural antibiotics, biostimulants, insect pheromones, natural enemies, and microbial herbicides

80. Comprehensive utilization, treatment, and disposal of waste gas, waste liquid, and

waste residue
81. Production of organic polymer materials: aircraft skin coatings, 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, surface treatment self-healing materials, superhydrophobic nano-coating materials, ultra-high refractive index optical resins, co-extruded backsheets for environment-friendly recyclable solar modules and plastic materials for backsheets, automotive start-stop lead-acid battery separators, and energy storage lead-acid battery separators
82. Development, production, and application of new technologies and products of forestry biomass energy
83. Development of low-carbon upgrading processes for petrochemical and chemical raw materials: electrically-driven ethylene cracking; reverse water-gas shift, and partial oxidation process to convert carbon dioxide and light hydrocarbons as raw materials into carbon monoxide

(XI) Pharmaceuticals
84. Production of new compound drugs or drugs with active ingredients (including drug substances and formulations)
85. Amino acids: Production of tryptophan, histidine, methionine, and others with the use of zymotechnics
86. Development and production of new anticarcinogenic drugs, cardiovascular and cerebrovascular drugs, and nervous system drugs
87. Production of new types of drugs through bioengineering and biotechnology
88. Production of HIV/AIDS vaccines, Hepatitis C vaccines, contraceptive vaccines, new vaccines for cervical carcinoma, malaria, "hand, foot and mouth" disease, etc.
89. Development and production of marine drugs
90. Production of pharmaceutical formulations: new formulations and products employing new technologies, such as slow release, controlled release, targeting, and percutaneous absorption
91. Development and production of new excipients
92. Production of special anti-bacterial drug substances for animals (including antibiotics and chemically synthesized active pharmaceutical ingredients)
93. Production of new products and formulations of anti-bacterial drugs, anthelmintics, insecticides, and anti-coccidiosis drugs for veterinary use
94. Development and production of new types of diagnostic reagents
95. Research, development, and production of cell therapy drugs (except in areas where foreign investment is prohibited)
96. Development and production of new key raw materials for production, such as vaccines, cell therapy drugs, and large-scale cell culture products
97. Development and production of new-type drug packaging materials and technologies (neutral borosilicate pharmaceutical glass, degradable, light-resistant, and high-barrier functional materials with good chemical stability, COP cyclic olefin polymer drug packing materials, and drug delivery systems and devices with new packaging such as aerosol, powder inhalation, self-dosing, pre-filling, and automatic

mixing)
98. Development and production of drugs for rare diseases and special medicines for children
99. Development and production of pharmaceutical manufacturing consumables: separation and purification media, solid phase synthesis media, chiral resolution media, consumables for drug impurity control and detection, etc.

(XII) Chemical Fiber Manufacturing
100. Continuous copolymerization modification of differentiated and functional polyethylene terephthalate (PET) [cationic dyeable polyester and easy cation-dyeable polyester (CDP, ECDP), alkali-soluble polyester (COPET), high-shrinkage polyester (HSPET), flame-retardant polyester, low-melting-point polyester, non-crystalline polyester, biodegradable polyester, and polyester produced with green catalyst, etc.]; research and development of high-efficiency and flexible preparation technologies for the production of flame-retardant, anti-static, anti-ultraviolet, anti- bacterial, phase change energy storage, photochromic, stock solution coloring, and other differentiated and functional chemical fibers; production of intelligent, ultra-simulation, and other functional chemical fibers; and original development for the production of high-efficiency and environment-friendly oil for high-speed spinning processing
101. Development and production of high-performance fibers and products: carbon fibers (CF), aramid fibers (AF), polysulfonamide (PSA), ultra-high-molecular-weight polyethylene (UHMWPE) fibers, polyphenylene sulfite (PPS) fibers, polyimide fibers (PI), polytetrafluoroethylene (PTFE) fibers, polybenzobisoxazole (PBO) fibers, polyarylene oxadiazole (POD) fibers, basalt fibers (BF), silicon carbide fibers (SiCF), polyetheretherketone (PEEK) fibers, high-tenacity alkali-resistant (HT-AR) glass fibers, and poly (2,5-dihydroxy-1,4-phenylenepyridodiimidazole) (PIPD) fibers
102. Production of new types of polyester for fiber or non-fiber utilization: polytrimethylene terephthalate (PTT), polyethylene naphthalene (PEN), poly-cyclohexylene dimethylene terephthalate (PCT), glycol-modified polyethylene terephthalate glycol (PETG), and polylactic acid (PLA, using non-grain biomass as raw materials)
103. Production of biomass fibers by utilizing new types of, renewable resources and environment-friendly processes, including new solvent-spun cellulose fibers (Lyocell), regenerated cellulose fibers using bamboo, hemp, etc. as the raw material, polylactic acid (PLA) fibers, chitin fibers, polyhydroxyalkanoate (PHA) fibers, animal and plant protein-based fibers, polybutylene succinate (PBS), etc.
104. Development and production of new polyamides such as Nylon 11, Nylon 12, Nylon 1414, Nylon 46, Nylon 56 (using non-grain biomass as raw materials), long carbon chain nylon, and high-temperature resistant nylon, and differentiated, functional, and high value-added modified nylon (including nylon elastomer, copolymerized nylon , nylon engineering plastics, and flame-retardant nylon)
105. Development and production of landfill anti-seepage geomembrane

(XIII) Rubber and Plastic Products

106. Development, production, and application of organosilicone products
107. Development, production, and application of biodegradable plastics and relevant products
108. Development and production of new photoecological, multi-functional, and wide-width agricultural film and pollution-free, degradable film for agricultural use
109. Sorting, recycling, and reuse of plastic waste
110. Development of new soft plastic packaging technologies and products (high-barrier and multi-functional films and relevant raw materials) and production of the products

(XIV) Non-metallic Mineral Products

111. Development and production of building materials that prioritize energy efficiency, environmental protection, and waste recycling, featuring light weight and high-strength, high performance, and multifunctional design
112. Development and production of integrated molding products by compression molding, injection molding or extrusion molding
113. Production of chemical building materials that promote energy efficiency, utilizing plastic to replace steel and wood materials
114. Intelligent manufacturing of new prefabricated building components
115. Production of Styrene Butadiene Styrene (SBS) or Atactic Polypropylene (APP) modified bitumen waterproof membrane rolls with an annual output of 10 million square meters or more, Ethylene Propylene Diene Monomer (EPDM) rubber waterproof membrane rolls (at least two meters wide) and relevant auxiliary materials, Polyvinyl Chloride (PVC) waterproof membrane rolls (at least two meters wide), and Thermoplastic Polyolefin (TPO) waterproof membrane rolls
116. Development and production of functional glass using new technologies: infrared transmitting lead-free chalcogenide glass and relevant products, multiple-functional windshield glass with excellent optical performance (with light transmittance rate exceeding 70 percent), coated privacy windshield glass, sound insulation windshield glass, solar windshield glass, electrochromic windshield glass, electric heating windshield glass, HUD (Head-up Display) windshield glass, vacuum glass, purification processing of raw materials for high-pure (≥99.998%) or ultrapure (≥99.999%) crystals
117. Production of power generation glass for thin-film batteries, glass for solar illuminators, and photovoltaic power generation glass used in construction
118. Production of alkali-free glass fiber roving (monofilament diameter>9 microns) by tank furnace wire drawing with an annual yield of 80,000 tons or more and production of alkali-free glass fiber spun yarn (monofilament diameter≤9 microns) by tank furnace wire drawing with an annual yield of 50,000 tons or more, production of high-performance and special glass fibers such as superfine glass fibers (monofilament diameter≤5 microns), degradable glass fibers, special- shaped cross-section glass fibers, alkali-resistant glass fibers, low-dielectric glass fibers, quartz glass fibers, high silica glass fibers, high-strength and high-elasticity glass fibers, ceramic fibers, and production of glass fiber felt, cloth, and other products
119. Production of optical fibers and relevant products: fiber-optic bundles for image

transmission and laser optical fibers for medical treatment, super second-generation and third-generation micro-channel plates, optical fiber panels, image inverters, and glass fiber cones

120. Standardized refinement of ceramics raw materials and production of high-end decorative materials used in ceramic objects

121. Production of enduring, energy-saving, and environmentally friendly (non-chromizing) refractory materials used in furnaces, including cement, electronic glass, ceramics, and microporous carbon bricks

122. Production of porous ceramics

123. Production of new inorganic non-metallic materials and products: composite materials, special ceramics, special sealing materials (including oil seals for high-speed shafts), special friction materials (including high-speed friction brake products), special binding materials, special latex materials, rubber products for underwater acoustics, and nanomaterials

124. Production of organic-inorganic composite heat-insulating foam materials, production of high-performance, energy-saving and heat-insulating materials for buildings, and insulation materials for the modern centralized agricultural breeding industry

125. Production of high-tech composite materials: continuous fiber reinforced thermoplastic composite materials and prepregs, auxiliary materials for molding of resin-based composite materials with thermal resistance of more than 300°C, biodegradable resin matrix composite materials, resin-based composite materials used for additive manufacturing, resin-based composite materials (including sports products and lightweight, high-strength parts of vehicles), special-function composite materials and their products (including composite material products used in deep water or for diving and composite material products for medical treatment and recuperation), carbon or 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 (UHP) composite rubber hoses (pressure $\geqslant$ 320MPa), aircraft tires for large passenger planes, and polyester structural foam materials (used in lightweight and high-strength vehicle parts, core materials of wind turbine blades, building materials, and other fields)

126. Production of raw materials for precision and high-performance ceramics: ultra-fine silicon carbide (SiC) powder (purity>99 percent, average particle size<1 micron), ultra-fine silicon nitride powder (Si3N4) (purity>99 percent, average particle size<1 micron), high-purity ultra-fine alumina powder (purity>99.9 percent, average particle size<0.5 micron), low-temperature sintered zirconia (ZrO2) powder (sintering temperature<1350°C), high-purity aluminum nitride (AIN) powder (purity>99%, average particle size<1 micron), rutile titanium dioxide (TiO2) powder (purity>98.5 percent), white carbon black (particle size<100 nanometers), and barium titanate (purity>99 percent, particle size<1 micron)

127. Development and production of high-quality artificial crystals and crystal film products: high-quality synthetic crystals (piezoelectric crystals and crystals

transmitting ultraviolet ray), super-hard crystals (cubic boron nitride crystals), synthetic crystals (synthetic mica) with high temperature resistance and high insulation, new electro-optic crystals, high-power laser crystals and large-scale scintillation crystals, diamond film-coated tools; ultra-thin synthetic diamond saw blades with the thickness of not more than 0.3 millimeter

128. Fine processing of non-metallic ores (ultra-fine grinding, high-purity processing, refining, and modification)

129. Production of ultra-high-power graphite electrodes

130. Production of pearl mica (particle size of 3-150 microns)

131. Production of multi-dimensional and multi-directional integral fabrics and shaped fabrics

132. Safe disposal of solid waste using new dry-process cement kilns and sintered wall materials

133. Recycling of construction waste

134. Comprehensive utilization of industrial by-product gypsum and other industrial waste

135. Development and application of new technologies for comprehensive utilization of nonmetal mine tailings; and ecological restoration of mines

136. Development and production of high-temperature resistant and corrosion-resistant filter media

(XV) Nonferrous Metal Smelting and Rolling Processing

137. Production of new and high-tech nonferrous metal materials and their products: high- temperature superconducting materials; shape memory alloy materials (titanium nickel, copper-based, and iron-based memory alloy materials); ultra-fine (nano) tungsten carbide and ultra-fine (nano) grain carbide; ultra-hard composite materials; precious metal composite materials; light metal composite materials; deep processing of high-performance light metals and copper alloy materials for new-generation information technology industry, aerospace equipment, electric power equipment, advanced rail transit equipment, biomedicine, and high-performance medical equipment, ocean engineering equipment and high-tech ships, energy-saving and new energy vehicles, high-end numerical control machines and robots, agricultural machinery equipment, energy conservation, and environmental protection; foamed aluminum, sponge zirconium at the atomic energy level, and deep processing products of tungsten and molybdenum

138. Processing of high-end rare earth application products in line with the requirements of new rare earth materials

139. Production of high-performance AlTiB grain refiner

(XVI) Metal Products Manufacturing

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

141. Manufacturing and processing (including painting and processing the inner and outer surface of products) of metal packing products (which shall be complete

products, and the thickness of container wall shall be within 0.3 millimeters) used for packing grain, oil, food, vegetables, fruits, beverages, and household chemical products, etc.

142. Manufacturing of steel fiber for construction

(XVII) General Equipment Manufacturing

143. Manufacturing of high-end numerical control machines and their key parts and components: five-axis numerical control machines, boring, milling and processing centers for numerical control coordinates, and numerical control coordinate grinding machines

144. Manufacturing of large-scale (with a loading capacity of more than one ton) multi-function controllable atmosphere heat treatment equipment, program-based chemical heat treatment equipment, program-based multi-function vacuum heat treatment equipment, vacuum heat treatment equipment with a loading capacity of over 500 kilograms, and full-fiber furnace lining heat treatment heating furnaces

145. Manufacturing of equipment for dismantling, crushing, post-processing, and sorting of end-of-life vehicles

146. Manufacturing of flexible transfer lines (FTL)

147. Manufacturing of high-end precision tools, nano-composite coatings, and high-end processing equipment

148. Manufacturing of sub-micron and ultra-fine grinders

149. Manufacturing of wheeled or crawler cranes, each with a lifting capacity of at least 400 tons

150. Design and manufacturing of high-pressure plunger pumps and engines, each with a working pressure more than or equal to 35 megapascals, and low-speed large-torque engines, each with a working pressure more than or equal to 35 megapascals

151. Manufacturing of integrated hydraulic-pressure multiple valves, each with a working pressure more than or equal to 25 megapascals, and electro-hydraulic proportional servo elements

152. Design and manufacturing of valve terminals, pneumatic solenoid valves, each with a capacity not exceeding 0.35 watts, and high-frequency electric gas valves with a capacity of more than or equal to 200 hertzes

153. Production with valves designed to operate below -120 degrees Celcius or above 530 degrees Celcius

154. Design and manufacturing of hydrostatic drive devices

155. Development and manufacturing of non-contacting gas film seals, each with a pressure of more than 10 megapascals, and dry gas seals, each with a pressure of more than 10 megapascals (including experimental devices)

156. Design and manufacturing of pneumatic actuators with repeatability less than or equal to 0.03 degrees and axial run-out measured less than or equal to 0.02 millimeters

157. Manufacturing of noise and vibration pollution control equipment: sound barriers, mufflers, and damping spring vibration isolators

158. Development and manufacturing of macromolecular equipment for automobiles

(including friction plates, modified phenolic pistons, non-metallic master/slave-hydraulic pumps)

159. Manufacturing of second-generation wheel hub bearings (THU2) for commercial vehicles, third- and higher-generation car wheel hub bearings, bearings used in high- or medium-grade numerical control machines and processing centers, bearings used in high-speed wire rod and plate rolling mills, bearings used in high-speed railway, low-noise bearings, each with a vibration level under Z4, various bearings with P4 or P2 tolerance standards, bearings used in wind turbine generators, bearings used in aircrafts, bearings used in aircraft engines, other aviation bearings, medical CT scanner bearings, deep well and ultra-deep well oil rig bearings, bearings used in offshore engineering, high-speed bearings for electric vehicle actuation systems (rotation speed more than or equal to 12,000 rounds per minute), bearings used in RV reducers and harmonic reducers for industrial robots, bearings used in shield machines, machining numerical control machines, and heat treatment equipment for large bearings

160. Manufacturing of gearboxes for high-speed trains, variable-pitch propellers for vessels, and large-sized and heavy-load gearboxes

161. Manufacturing of high-temperature resistant insulating materials (insulation classes F and H) and formed insulation products

162. Development and manufacturing of rubber and plastic seals for bladder accumulators and hydropneumatic systems

163. Manufacturing of high-precision, high-strength (at the level of 12.9 or above), special-shaped, and assembly-type fasteners

164. Manufacturing of miniature precision transmission junction pieces (clutches)

165. Manufacturing of heavy rolling mill couplings

166. Remanufacturing of machinery of different types, such as machine tools, engineering machinery, railroad engine equipment, and automobile parts and components

167. Development and manufacturing of digital cameras, each with a resolution of more than 10 million pixels or with a horizontal field of view larger than 120 degrees, and their optical lens and photoelectric modules

168. Manufacturing of office machinery (including that for industrial use): all-in-one multi-functional office equipment (copiers, printers, fax machines, and scanners), printing devices, high-resolution color printer heads, each with a resolution of more than or equal to 2,400 dpi, and organic photoconductor (OPC) drums

169. Manufacturing of film machinery: 2K and 4K digital cinema projectors, digital movie cameras, and digital video production and editing equipment

170. Construction of facilities and manufacturing of equipment for receiving and managing maritime pollutants at ports, construction of emergency facilities for hazardous chemicals and oil at ports, and manufacturing of related equipment

171. Development and application of industrial water-saving processes and technologies, and manufacturing of related equipment

(XVIII) Special-purpose Equipment Manufacturing

172. Manufacturing of trackless equipment for mining, loading, and transportation in

mines: devices such as electric-wheel mining tippers, each with a capacity of more than or equal to 200 tons, mobile mining crushers, bucket wheel excavators, each with a capacity of more than or equal to 5,000 cubic meters per hour, mining loaders, each with a capacity of more than or equal to eight cubic meters, and electric traction coal mining machines, each with a capacity of more than 2,500 kilowatts

173. Manufacturing of equipment for geophysical prospecting (excluding gravity and magnetic geophysical methods) and geophysical logging: MEMS seismometers, digital telemetric seismographs, digital imaging systems, and digital geophysical logging systems; drilling devices and rigs for horizontal and directional wells; and measurement while drilling (MWD) tools

174. Manufacturing of equipment for oil exploration, drilling, collection, and transportation: floating drilling systems and floating production systems, each with an operating depth of more than 1,500 meters and supporting subsea oil extraction, collection, and transportation equipment

175. Manufacturing of large rotary drilling rigs, each with a caliber of more than or equal to two meters and depth of more than 30 meters, push benches, each with a diameter of more than 1.2 meters, complete sets of large equipment for trenchless installation, each with an underground pipeline pull-back force of more than 300 tons, and drilling machines for slurry wall construction

176. Design and manufacturing of large bulldozers, each with a capacity of more than or equal to 520 horsepower

177. Design and manufacturing of desilting devices, each with a capacity of more than or equal to 100 cubic meters per hour, and dredging devices for dredgers, each with a capacity of more than or equal to 1,000 tons

178. Design and manufacturing of equipment for the construction of concrete cut-off walls used for flood prevention dykes and dams

179. Manufacturing of earthquake engineering and disaster mitigation devices for civil engineering structures

180. Manufacturing of underwater earthworks machinery: bulldozers, loaders, and excavators designed for underwater operation at depths of nine meters or more

181. Manufacturing of equipment for the maintenance and automatic testing of highways and bridges

182. Manufacturing of equipment for operational monitoring, ventilation, disaster prevention, and rescue systems for highway tunnels

183. 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

184. Manufacturing of ore dressing equipment for multi-element, fine-particle, and refractory metal minerals

185. Manufacturing of the key equipment of complete sets of ethylene equipment each of which has an annual capacity of more than or equal to one million tons: mixer granulators, each with an annual processing capacity of more than or equal to 400,000 tons, helical-conveyer centrifuges, each with a diameter of more than or equal to 1,000 millimeters, and low-flow high-head centrifugal pumps

186. Design and manufacturing of metal product molds (extrusion dies for pipes, rods, and section bars made of copper, aluminum, titanium, and zirconium)
187. Design and manufacturing of stamping dies for automobile body covers, large-sized injection molds for dashboards and bumpers, and clamps and inspection tools for automobiles and motorcycles
188. Design and manufacturing of equipment for the production of power batteries for automobiles
189. Design and manufacturing of precise molds (stamping dies, each with a precision of higher than 0.02 millimeters, and cavity molds, each with a precision of higher than 0.05 millimeters)
190. Manufacturing of beer bottling equipment with a capacity of more than or equal to 60,000 bottles or per hour, hot- and medium-temperature beverage bottling equipment with a capacity of more than or equal to 50,000 bottles per hour, and aseptic filling equipment with a capacity of more than or equal to 36,000 bottles per hour
191. Production technologies and manufacturing of key equipment for amino acids, enzyme preparations, and food additives
192. Manufacturing of complete sets of equipment for fodder processing, each with a capacity of more than or equal to ten tons per hour, and their key components
193. Manufacturing of equipment for lightweight corrugated boards and cartons each of which has a corrugation height of less than or equal to 0.75 millimeters
194. Manufacturing of sheet-fed and multi-color offset presses (width: more than or equal to750 millimeters; printing speed: more than or equal to 16,000 sheets per hour for printing on single side and multiple colors, and more than or equal to 13,000 sheets per hour for printing on both sides and multiple colors)
195. Manufacturing of single-width sheet-fed web roll planographic printing presses, each with a printing speed of more than 75,000 bisect sheets per hour (787×880 millimeters), double-width sheet-fed web roll planographic printing presses, each with a printing speed of more than 170,000 bisect sheets per hour (787×880 millimeters), and commercial web roll planographic printing presses, each with a printing speed of more than 50,000 bisect sheets per hour (787×880 millimeters)
196. Manufacturing of multi-color wide flexographic presses (printing width: more than or equal to 300 millimeters; printing speed: more than or equal to 350 meters per second), inkjet digital printing presses (used for publication: each with a printing speed of more than or equal to 150 meters per minute, and a resolution of more than or equal to 600 dpi; used for packaging: each with a printing speed of more than or equal to 30 meters per minute, and a resolution of more than or equal to 1,000 dpi; used for variable-data: each with a printing speed of more than or equal to 100 meters per minute and a resolution of more than or equal to 300 dpi)
197. Manufacturing of systems for computer ink color pre-setting, remote ink color control, tracing of water-based ink speed, automatic inspection and tracing of printing quality, and shaftless driving technologies; manufacturing of high-speed automatic splicers and feeders, each with a speed of 75,000 sheets per hour, remotely adjustable high-speed folding machines, automatic overprinting systems, cooling devices,

silicon-adding systems, and deviation adjustment devices, etc.
198. Manufacturing of automatic electron-gun coating machines
199. Technologies for and manufacturing of equipment for deep processing of plate glass
200. Manufacturing of complete sets of new paper (including pulp) making machines
201. Manufacturing of equipment featuring new leather finishing and processing technologies
202. Manufacturing of soil pollution control and restoration equipment
203. Development and manufacturing of new agricultural product processing and storage equipment: new equipment for the processing, storage, preservation, grading, packaging, and drying of grains, oil-bearing materials, vegetables, nuts, dried and fresh fruits, meat products, and aquatic products; agricultural product quality inspection instruments and equipment; damage-free quality inspection instruments and equipment for agricultural products; rheometers; farinographs; ultra-micro crushers; high-efficiency dewatering equipment; high-efficiency fruit juice concentration equipment achieving five or more effects; sterilization equipment for powder food materials; solid and semi-solid food aseptic packaging equipment; and disk-type centrifugal separators
204. Manufacturing of agricultural machinery: agricultural facilities and equipment (automatic irrigation equipment for greenhouses, equipment for automatic preparation of nutrient solutions and fertilization, high-efficiency vegetable seedling equipment, and soil nutrient analysis equipment); tractors with an engine power of more than 200 kilowatts and auxiliary farm implements; diesel engines with low fuel consumption, low noise and low emissions; sprayers auxiliary to large tractors and equipped with residual droplets retrieval 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; cane harvesters; beet harvesters; and self-propelled grape harvesters
205. Manufacturing of forestry facilities and equipment: intelligent greenhouses for seedlings and flowers; equipment for precision irrigation, fertilization and seedling; analysis instruments for trunk diameter, leaves, and roots of seedlings, seed vigor, and soil nutrients, high-power (240 kilowatts) woodland operation chassis and its supporting machines and tools, small and medium-sized machines for multi-functional land preparation, tree planting, cultivation, felling, and collection, afforestation machinery for difficult sites, machines for collection, bundling, chipping, and smashing of forest land remnants as well as their comprehensive utilization, large and medium-sized plant protection and spraying machines, small precision pesticide application equipment or biomimetic pesticide application robots, forest strobilus collection machines, oilseeds harvesters, large and medium-sized tree transplanters, shrub management equipment, efficient pruning equipment, and rapid measuring equipment for forest stock volumes
206. Manufacturing of wood processing equipment: rapid color difference identification technologies and equipment, quick solid wood measuring instruments,

rapid scar detection equipment, solid wood surface defect detection equipment, complete equipment and technology for sawn timber, equipment for the rapid detection of surface defects of artificial plates, online quality grading equipment, online testing equipment for rotary cutting veneer quality, equipment for dust treatment of solid wood furniture paint grinding, quick sorting equipment for panel furniture, and intelligent warehouse for furniture manufacturing

207. Manufacturing of forestry disaster monitoring equipment: rapid rescue equipment and high-precision navigation and positioning equipment used in forest areas, drones for fire and disaster monitoring and early warning, and fire extinguishing and deinsectization equipment

208. Manufacturing of equipment for the collection, bundling, and comprehensive utilization of crop straws

209. Manufacturing of equipment for the utilization of agricultural wastes and large-scale recycling of livestock and poultry breeding wastes

210. Manufacturing of special equipment for advanced intelligent manufacturing and processing of leather and fur as well as their products

211. Manufacturing of agricultural equipment designed for saving fertilizers, pesticides, and water

212. Manufacturing of equipment for cleaning electro-mechanical wells and drug production devices

213. Manufacturing of electronic endoscopes

214. Manufacturing of fundus cameras

215. Manufacturing of medical imaging equipment (high-field-strength superconducting magnetic resonance imaging scanners, X-ray computed tomography imaging devices, and digital color diagnostic ultrasound equipment), intelligent auxiliary diagnosis systems for medical imaging and their key components

216. Manufacturing of (3D) ultrasonic transducers used in medical applications

217. Manufacturing of equipment for boron neutron capture therapy (BNCT)

218. Manufacturing of image-guided intensity-modulated radiation therapy (IG-IMRT) systems

219. Manufacturing of hemodialysis machines and hemofiltration machines

220. Manufacturing of automated biochemical monitors, five-part hematology analyzers, automated chemiluminescence immunoassay analyzers, high-throughput DNA sequencing systems, and molecular diagnostics devices

221. New technologies for and manufacturing of new drug quality control equipment

222. Development of new technologies for and manufacturing of the analysis of active ingredients in natural medicines, and new processes and equipment for extraction

223. Research, development, and manufacturing of equipment for the production of matching biomedical consumables

224. Manufacturing of water cooling multi-layer co-extrusion blown film equipment for non-PVC medical infusion bags

225. Manufacturing of AI-assisted medical equipment

226. Manufacturing of high-end radiotherapy equipment

227. Manufacturing of high-end surgical instruments, equipment for rehabilitation through physical therapy, and wearable intelligent health equipment
228. Manufacturing of life support equipment for critical illness
229. Manufacturing of mobile and remote diagnosis and treatment equipment
230. Manufacturing of ventilators, ECMO (extracorporeal membrane oxygenation), monitors, and PCR machines
231. Development and production of medical devices for minimally invasive surgeries: 3D imaging devices, electron microscopy systems, surgical robots, robotic arms, hearing aids, and cochlear implants, etc.
232. Research, development, and production of holmium laser and carbon dioxide laser treatment products
233. Development and application of new stents, prostheses, and other high-end implantable interventional devices and materials, and additive manufacturing technologies
234. Production and manufacturing of emergency rescue equipment
235. Development and manufacturing of new textile machinery, key parts and components, and textile testing and experimental apparatus
236. Manufacturing of computer-aided artificial fur jacquard machines
237. Manufacturing of high-end and new equipment for producing solar cells
238. Manufacturing of carbon capture, utilization, and storage (CCUS) equipment, and monitoring and metering equipment for greenhouse gas emissions
239. Manufacturing of air pollution prevention and control equipment: low-NOx combustion devices, catalyst for flue gas denitrogenation and complete sets of denitrogenation devices, purification equipment for industrial organic waste gas and diesel vehicle exhaust, and air filtration equipment for heavy metal exhaust
240. Manufacturing of water pollution prevention and control equipment: horizontal spiral centrifugal dehydrators; membrane and membrane materials; ozone generators, each with a capacity of more than 50 kilograms per hour; chlorine dioxide generators, each with a capacity of more than 10 kilograms per hour; ultraviolet disinfection devices; small domestic sewage treatment equipment used in rural areas; and equipment for removing heavy metals from wastewater
241. Manufacturing of solid waste treatment and disposal equipment: sewage plant sludge disposal and resource recycling equipment, landfill leachate treatment equipment, building waste treatment and resource utilization equipment, devices for disposal of hazardous waste, landfill biogas generation and power generation devices, ferrous waste treatment equipment, and facilities for centralized disposal of medical waste
242. Development and manufacturing of equipment for the comprehensive utilization of red mud from the aluminum industry
243. Manufacturing of equipment for the comprehensive utilization of tailings
244. Manufacturing of equipment for the recycling, disposal, and reutilization of plastic, electrical appliances, rubber, and battery waste
245. Manufacturing of equipment for textile recycling
246. Manufacturing of equipment for remanufacturing of waste mechanical and

electrical products
247. Manufacturing of equipment for residual heat, pressure, and gas utilization
248. Technologies for and manufacturing of equipment for environmental protection of aquatic ecosystems
249. Manufacturing of portable assembling water filtration equipment
250. Manufacturing of unconventional water treatment or recycling equipment and water quality monitoring instruments
251. Manufacturing of leak testing equipment and instruments for industrial water pipeline networks and equipment (appliances)
252. Development and manufacturing of complete sets of equipment for seawater desalination and circulation cooling, each with a daily capacity of more than or equal to 100,000 cubic meters
253. Manufacturing of water-saving industrial equipment for industries with high water consumption, such as the steel, papermaking, textile, petrochemical, chemical, and metallurgical application industries
254. Manufacturing of special meteorological observation and analysis equipment
255. Development of systems of seismic stations, networks, and mobile seismologic observation technologies, and manufacturing of corresponding instruments and equipment
256. Manufacturing of rolling resistance testing equipment and establishment of laboratories concerning tire noises
257. Manufacturing of new equipment for heat supply metering and temperature control devices
258. Manufacturing of equipment for hydrogen energy preparation, storage, transportation, and inspection systems
259. Manufacturing of new heavy fuel oil gasification and atomization nozzles; high-efficiency steam traps, each with a leakage rate of less than or equal to 0.5 percent and high-temperature ceramic heat exchangers, each with an operating temperature of more than or equal to 1,000 degrees Celcius
260. Manufacturing of devices for recovery of marine oil spill
261. Manufacturing of equipment for utilization of low-concentration coal-mine gas and windblown methane
262. Development and utilization of products using clean coal technology and manufacturing of clean coal equipment (coal gasification and liquefaction)
263. Development of firefighting and rescue technologies and manufacturing of relevant equipment for large public buildings, high-rise buildings, petrochemical facilities, forests, mountains, waters, and underground facilities
264. Manufacturing of intelligent equipment for emergency medical rescue
265. Manufacturing of hydrological sensors
266. Design, research, development, and manufacturing of main process equipment of nuclear reactors
267. Development and production of polycrystalline diamond compact (PDC) bits
268. Technologies for online analysis of grain shapes and gradations of sand and gravel, and the development and production of relevant equipment

269. Design and manufacturing of precision electronic molds
270. Development and production of dental implant systems for dental implants of patients with bone loss
271. Industrial research and development of heavy and light ice and snow equipment for ski resorts; special equipment such as passenger cableways, snowmakers, and snow groomers
272. Manufacturing of polymer-based wound dressings such as sterile vacuum sealing drainage dressing kits, bacterial cellulose membranes, and polyurethane foam dressings
273. Construction of production lines for co-extruded uniaxial and biaxial orientation films, each with five or more layers; and construction of barrier coating production lines

(XIX) Automobile Manufacturing

274. Manufacturing of automobile engines and establishment of engine research and development institutions: gasoline engines, each with the power of no less than 70 kW/L; diesel engines, each with the power of no less than 50 kW/L and engine displacement of fewer than three liters; diesel engines, each with the power of no less than 40 kW/L and the engine displacement of more than or equal to three litersl and engines using new energy resources such as fuel cells and mixed fuels
275. Manufacturing of key automobile parts and components and research and development of key technologies: dual-clutch transmission (DCT), continuously variable transmission (CVT), automated mechanical transmission (AMT), turbochargers for gasoline engines, viscous couplings (for four-wheel-drive vehicles), automatic transmission actuators (electromagnetic valves), hydraulic retarders, eddy current retarders, safety air bag inflators for automobiles, common rail fuel injection technology (maximum injection pressure: more than 2,000 pascals), variable-geometry turbocharging (VGT) technology, variable nozzle turbine (VNT) turbocharging technology, engine emission control devices meeting China's Stage VI Emission Standard, intelligent torque management (ITM) systems and coupler assemblies, steer-by-wire systems, particulate trap devices, special-purpose axles for low-floor large buses, energy-absorbing steering systems, low-drag disc brake assemblies, aluminum steering knuckles, variable frequency drive air-conditioning systems for large and medium-sized buses, special rubber automobile accessories, and key parts and components of the above-mentioned parts and components
276. Research, development, and manufacturing of automobile electronic devices: electronic control systems and key parts and components of engines and chassis; input (sensors and sampling systems) and output (actuators) components of electronic control systems, electronic controllers for electric power steering systems, embedded electronic integrated systems, electronically-controlled air suspension (ECAS), electronically-controlled suspension systems, valvetronic systems, electronic combination instruments, ABS/TCS/ESP systems, brake-by-wire (BBW) systems, transmission control unit (TCU), tire-pressure monitoring systems (TPMS), on-board diagnostics (OBD), engine anti-theft systems, automatic bump-shielded systems, and testing systems for automobile and motorcycle testing and maintenance; self-driving

system, in-vehicle electronic operating system, and in-vehicle electronic operating system application program development (APP), head-up display technology; research, development, and manufacturing of auto collision avoidance steering assistant systems, forward-collision warning systems (FCW), automatic brake control systems (ABC), automatic emergency braking system (AEB), electronic parking brake systems (EPB), brake-by-wire systems, adaptive cruise control systems (ACC), front-view camera systems, and wheel speed sensors

277. Research, development, and manufacturing of key parts and components of new energy vehicles: energy-type power battery cells; battery anode materials (specific capacity more than or equal to 180 mAh/g, cycle life of 2,000 times with no less than 80 percent of initial discharge capacity) and precursor materials, battery cathode materials (specific capacity more than or equal to 500 mAh/g, cycle life of 2,000 times with no less than 80 percent of initial discharge capacity), battery separators (thickness less than or equal to 12 micrometers, porosity of 35 percent -60 percent); battery management systems, motor controllers, and electronic control assemblies of electric vehicles; motor drive systems of electric vehicles (high-efficiency area: 85 percent, efficiency in working area: more than or equal to 80 percent), vehicle DC-to-DC converters (input voltage: 100 to 400 volts), high-power electronic devices (IGBT; voltage class: more than or equal to 750 volts; current: more than or equal to 300); plug-in hybrid electromechanical coupling driving systems; fuel cell motors (power per unit mass: more than or equal to 350 W/kg), fuel cell stacks (volumetric specific power: more than or equal to 3 kW/L), membrane electrode (amount of platinum utilized: less than or equal to 0.3 g/kW), proton-exchange membrane (proton conductivity: more than or equal to 0.08 S/cm), low-platinum catalyst, carbon paper (resistivity: less than or equal to 3m Ω*cm), air compressors, hydrogen circulation pumps, hydrogen ejectors, humidifiers, fuel cell controlling systems, DC-DC power converters, 70MPa-level hydrogen storage cylinders, in-vehicle hydrogen concentration sensors; heat pump air conditioners for electric vehicles; 32-bit-and-above chips for motor drive control (each with no less than two hardware kernels, a basic frequency of no lower than 180 million hertzes, hardware encryption and other functions; chip design shall adhere to or exceed the functional safety standards set by the ASILC (Automotive Safety Integrity Level)); integrated electric drive assemblies (power density: more than or equal to 2.5 kW/kg), high-speed reducers (maximum input speed: more than or equal to 12,000 rpm, noise lower than 75 decibels); thermal management and control systems (electric compressors, refrigerant combination valves, electronic water pumps, high-efficiency silent electronic cooling fans, high-efficiency blowers, and integrated modules of new energy vehicles); aluminum plastic films for lithium batteries (thickness: 152 micrometers ±10 percent; outer layer peeling strength: more than or equal to 6.5 N/15mm; inner layer peeling strength: more than or equal to 10 N/15mm; peeling strength of inner electrolyte resistance: more than or equal to 9.0 N/15mm; formability: more than or equal to 5.5 millimeters)

278. Development and manufacturing of in-vehicle chargers (efficiency under full load output condition: more than or equal to 95 percent), two-way in-vehicle chargers,

off-board chargers (output voltage: 250 to 950 volts; efficiency within voltage range: more than or equal to 88 percent), and development of wireless charging and mobile charging technologies with high power density, high conversion efficiency, and high suitability

279. Research, development, and manufacturing of key parts and components of intelligent automobiles: sensors, in-vehicle chips, central processors, in-vehicle operating systems and information control systems, vehicular communication systems, visual identification systems, chassis-by-wire systems; new-type intelligent terminal modules, intelligent heterogeneous multi-core computing platform technology, sensor fusion technology, key technologies for vehicle wireless communication, basic cloud control platform technology; new-type isolation technology-based security architecture, software and hardware collaborative attack recognition technology, terminal chip security encryption and application software security protection technologies, wireless communication encryption technology, safe communication and authentication authorization technology, and data encryption technology; research and development of testing and evaluation system architecture, development of virtual simulation, technology and verification tools for vehicle testing in real road conditions, vehicle and system testing and evaluation methods, and establishment of basic test database

280. Manufacturing of hardware and key parts and components related to L3/L4/L5 autonomous driving: lidar, millimeter-wave radars, and intelligent cameras

281. Manufacturing of charging piles and energy storage charging piles, and development and manufacturing of integrated energy-saving facilities or solutions for charging/energy storage

(XX) Railway, Vessel, Aerospace, and Other Transportation Equipment Manufacturing

282. Manufacturing of engine emission control devices for high-emission (more than250 ml) motorcycles meeting the Stage V standard set by the Standards for Emissions of Motorcycle in China

283. Design, manufacturing, and maintenance of civil aircraft: mainline aircraft, regional aircraft, and utility aircraft

284. Manufacturing and maintenance of civil aircraft parts and components

285. Design and manufacturing of civil helicopters

286. Manufacturing of civil helicopter parts and components

287. Manufacturing of ground-effect and water-effect aircraft, and design and manufacturing of drone and aerostats

288. Design, manufacturing, and maintenance of aircraft engines, engine parts and components, and auxiliary power units

289. Development and production of new materials used for aviation and aerospace

290. Design and manufacturing of airborne equipment for civil aviation

291. Manufacturing of aviation ground support equipment: civil airport facilities, civil airport security facilities, ground facilities for flight testing, flight simulation and training equipment, aviation test and measurement equipment, equipment for aviation ground testing, integrated testing devices for airborne equipment, special equipment

for aerospace manufacturing, special equipment for trial manufacturing of aerospace materials, civil aircraft ground reception and application equipment, carrier rocket ground-based testing equipment, equipment for carrier rocket structural dynamics and environmental experiments, towing equipment for aircraft without tow bars, container loaders, and deicing equipment for aircraft

292. Design and manufacturing of civil satellites and manufacturing of civil satellite payloads

293. Manufacturing of civil satellite parts and components

294. Manufacturing of testing equipment for satellite-borne products

295. Design, research, and development of large, medium, and small-sized cruise ships; research, development, and manufacturing of internal decoration, digital video and audio equipment, information systems, and other professional supporting facilities of cruise ships

296. Design, research, and development of new types of marine engineering equipment, such as deep sea aquaculture platforms, large aquaculture vessels, and deep-sea mineral resources exploitation equipment

297. Design, research, and development of marine LNG dual-fuel engine, pure battery power, hydrogen fuel cell power, methanol fuel power, ammonia fuel power, biomass fuel power, and other clean energy and new energy power

298. Design, research, and development of deck machinery and cabin equipment

299. Design, research, and development of ship-to-ship communication and navigation systems and equipment

300. Design, research, and development of yachts and specialized supporting equipment

301. The overall intelligent system design for intelligent vessels; design, research, and development of intelligent perception systems, intelligent navigation systems, and intelligent energy efficiency management systems

302. Design, research, and development of offshore oil and gas equipment such as deep-sea oil and gas drilling platforms (ships), floating liquefied natural gas (FLNG) facilities, and floating storage and regasification units (FSRU)

303. Design, research, and development of offshore wind power equipment and offshore new energy equipment (including tidal energy, wave energy, and energy generated from temperature differences)

304. Design, research, and development of single point mooring systems, cargo containment systems for liquid, subsea production systems, and other specialized systems

305. Design, research, and development of intelligent green equipment such as precision management and control for ship assembling, digital shipbuilding, pre-outfitting and modularization, efficient welding, green coatings, ultra-high pressure water de-rusting, intelligent welding production lines, intelligent segmented assembly lines, and intelligent pipe processing production lines

(XXI) Electric Machinery and Equipment Manufacturing

306. Manufacturing of key auxiliary equipment used for one million kilowatts ultra-supercritical thermal power units: safety valves and control valves

307. Design and manufacturing of seals of thermal power equipment
308. Manufacturing of key auxiliary equipment for hydropower generators
309. Manufacturing of power transmission and transformation equipment and their key parts and components
310. Manufacturing of complete sets of equipment or key equipment for new energy power generation: equipment for photovoltaic power generation, solar thermal power generation, geothermal power generation, tidal power generation, wave power generation, garbage power generation, and biogas generation and power generation; and manufacturing of bulk-heterojunction matrix materials
311. Manufacturing of Stirling generators
312. Development and manufacturing of linear motors, planar motors, and their drive systems
313. Manufacturing high-tech green batteries: nickel-metal hydride (Ni-MH) batteries, nickel-zinc batteries, sodium-ion batteries, silver-zinc batteries, lithium-ion batteries, solar batteries, and fuel batteries
314. Manufacturing of refrigeration compressors for air conditioning with DC motor speed control technology, refrigeration compressors for air conditioning adopting CO2 natural refrigerants, and refrigeration equipment for air conditioning applying renewable energy (air, water, and soil sources)
315. Manufacturing of solar air conditioning, heating systems, and solar drying devices
316. Manufacturing of biomass drying pyrolysis systems and biomass gasification devices
317. Manufacturing of raw material pretreatment; manufacturing of feeding, fermentation, purification, and biogas liquid treatment equipment for biological natural gas
318. Manufacturing of alternating current (AC) variable voltage variable frequency traction motors
319. Manufacturing high-voltage vacuum components and switchgear, intelligent medium-voltage switchgear and complete sets of equipment, insulated switch cabinets using environmentally friendly medium-voltage gas, intelligent (communicable) low-voltage electrical appliances, and energy-saving power distribution transformers of amorphous alloys, and rolled iron cores

(XXII) Computer, Telecommunications, and Other Electronic Equipment Manufacturing

320. Manufacturing of HD digital camcorders and digital audio players
321. Manufacturing of TFT-LCD, OLED, AMOLED, laser display, quantum dots, 3D displayer, and other flat-panel displays, and their materials (excluding first to sixth generations of TFT-LCD glass substrates)
322. Research, development, and manufacturing of polarizing film and diffusing film
323. Research, development, and manufacturing of electronic book materials (electronic paper display)
324. Manufacturing of monocrystalline silicon with a diameter of more than or equal to eight inches

325. Manufacturing of silicon wafers with a diameter of more than or equal to 12 inches
326. Manufacturing of key parts for large-screen color projection displays, such as optical engines, light sources, projection screens, high-resolution projection tubes, and micro-display projection modules
327. Manufacturing of laser projection equipment
328. Manufacturing of ultra-high-definition and high-tech video products: high-tech video end-to-end key software and hardware such as 4K/8K ultra-high-definition televisions, 4K cameras, monitors, interactive videos, immersive videos, VR videos, and cloud games
329. Manufacturing of digital audio and video coding and decoding devices, equipment for digital broadcasting and television studios, equipment for digital cable television systems, digital audio broadcasting transmitters, digital television up-and-down converters, digital television ground broadcasting single frequency networks (SFN) equipment, and devices for satellite digital TV uplinks
330. Design of integrated circuits; manufacturing of large-scale digital integrated circuits with a line width of less than or equal to 28 nanometers; manufacturing of analog or digitalized analog integrated circuits with a line width of less than or equal to 0.11 micrometers; manufacturing of photomasks, MEMS, and compound semiconductor integrated circuits; and BGA, PGA, CSP, MCM, LGA, SIP, FC, WLP, and other advanced packaging and testing methods
331. Manufacturing of large and medium-sized electronic computers, high-performance computers capable of performing about 10,000 trillion calculations per second, portable minicomputers, large analog simulation systems, industrial controlling machines, and controllers
332. Research, development, and manufacturing of quantum computers, neuromorphic computers, and other new computer systems
333. Development and manufacturing of key equipment for the manufacturing of super-large-scale integrated circuits
334. Manufacturing of integrated circuit packaging and testing equipment
335. Manufacturing of computer digital signal processing systems and boards
336. Manufacturing of graphic and image recognition and processing systems
337. Development and manufacturing of high-capacity optical and disk drives and their components
338. Manufacturing of memory systems with a capacity of more than or equal to 100 Terabyte, manufacturing of solid-state drive (SSD) with a capacity of more than or equal to 8 Terabyte, and manufacturing of intelligent memory equipment
339. Establishment of computer-aided design (3D CAD) systems, electronic design automation (EDA) systems, computer-aided testing (CAT) systems, computer-aided manufacturing (CAM) systems, computer-aided engineering (CAE) systems, and other computer application systems
340. Development and production of software
341. Development and manufacturing of specialized materials for electronic purposes (excluding the development and manufacturing of optical fiber preforms);

development and manufacturing of lead-free solder paste used for surface mount technology (SMT), and high-purity (electronic grade) polycrystalline materials
342. Manufacturing of specialized equipment, testing instruments, tools, and molds for electronic purposes
343. Manufacturing of new electronic components: chip components, sensitive components and sensors, frequency control and selection components, hybrid integrated circuits, power electronic devices, optoelectronic devices, new electromechanical components, high molecular solid capacitors, supercapacitors, integrated passive components, high-density interconnect circuit boards; single-layer, double-layer and flex-printed circuit boards, rigid-flex printed circuit boards, and packaging boards, and high-density and fine-line flexible circuit boards (line width/line spacing less than or equal to 0.05 millimeters)
344. Manufacturing and assembling of touch control system (touch screens and components)
345. Research, development, and manufacturing of virtual reality (VR), augmented reality (AR), and mixed reality (MR) equipment
346. Manufacturing of high-brightness light-emitting diodes (LEDs) with a luminous efficiency of more than 1,401m/W, blue light LED epitaxial wafers with a luminous efficiency of more than 1,401m/W, and white fluorescent tubes with the luminous efficiency of more than 1,401m/W and the power of more than 200mW
347. Development and production of key parts of high-density digital disk drives
348. Production of recordable disks
349. Research, development, and manufacturing of 3D printing equipment and their key parts and components
350. Manufacturing of equipment for satellite communication systems
351. Manufacturing of optical communication measuring instruments and optical transceivers with a speed of more than or equal to 40 GigaBit Per Second
352. Manufacturing of ultra-wideband (UWB) communication equipment
353. Manufacturing of equipment for wireless local area networks (supporting WLAN Authentication and Privacy Infrastructure, WAPI) and wide-area networks
354. Manufacturing of time-division multiplexing (TDM) equipment with a rate of more than or equal to 100 GigaBit Per Second, dense wavelength-division multiplexing (DWDM) equipment, 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, and transmission equipment for SDH (Synchronous Digital Hierarchy) optical communication with a capacity of more than 40 GigaBit Per Second
355. Development and manufacturing of next-generation internet system equipment, terminal equipment, testing equipment, software, and chips based on IPv6
356. Development and manufacturing of mobile communication phones, base stations, core network equipment, optical transmission equipment, and network testing equipment for the fourth, fifth, and subsequent generations
357. Development and manufacturing of vision sensors (digital cameras, digital webcam, 3D sensors, laser radars, and millimeter wave radars) applied to

fifth-generation mobile terminals (mobile phones, automobiles, drones, and virtue reality and augmented reality display) and their core parts and components (optical lens and cameras, laser devices, sensitive chips, motors, and optronics modules), and IoT terminals

358. Development of cloud computing equipment (including high-precision parts of servers, storage device cloud, and cloud service equipment), software, and systems

359. Development and manufacturing of (two-way) high-end routers with an overall processing capacity of more than 6.4Tbps and switches with an exchange capacity of more than 40 TeraBytes Per Second

360. Manufacturing of equipment for air traffic control systems

361. Development and manufacturing of auxiliary electronic teaching equipment for traditional Chinese medicine that is based on sound, light, electricity, touch control, and information technology; virtual physiological human models of physiology or pathology

362. Manufacturing of intelligent consumer equipment such as wearable smart devices and innovative drones

363. Manufacturing of smart home platform systems and equipment

364. Development and production of electronic-grade fiberglass fabric for copper-clad plates

365. Development, research, and manufacturing of key software and data interworking technology of different equipment interfaces

366. Manufacturing and regeneration of wafers

367. Research, development, and manufacturing of smart healthcare products for the elderly (manufacturing of devices and assistive products for the elderly, medical devices and rehabilitation aids for the elderly, and intelligent and wearable devices for the elderly)

368. Production of organic polymers: lithium-ion battery separators; production of high-tech nonferrous materials and their products: compound semiconductor materials (gallium arsenide, gallium phosphide, indium phosphide, and gallium nitride)

369. Development and production of high-purity electronic chemicals and high-performance photoresist

370. Development and production of functional glass using new technologies: electromagnetic shielding glass, glass substrates for microelectronics, electronic-grade large-scale quartz glass products (such as pipes, plates, crucibles, and utensils), 10.5 or above generation TFT-LCD glass substrates, high-performance lithium aluminum silicate (LAS) glass, OLED glass, touch sensors, flexible glass, and other glass used for electronic information display; extreme materials and products for information technology (including quartz glass sleeves and ceramic wafers for waveguide-grade, high-precision optical fiber preform rods)

371. Research, development, and production of the sapphire substrates

(XXIII) Manufacturing of Instruments and Meters

372. Manufacturing of equipment for soil moisture monitoring

373. Manufacturing of industrial process automatic control systems and devices: fieldbus control systems, large-scale programmable logic controllers (PLC),

two-phase flow meters, solids flow meters, and new-type sensors and field measuring meters
374. Manufacturing of automated, intelligent, and multi-functional material mechanical properties testing equipment, industrial CT, 3D ultrasonic flaw detectors, and other non-destructive testing equipment
375. Development and manufacturing of large precision instruments and high-resolution microscopes (with a resolution of less than 200 nanometers)
376. Manufacturing of high-precision digital voltmeters and ammeters (with a span of 7.5 digit or above)
377. Manufacturing of reactive power auto-compensation devices
378. Manufacturing of new instruments and equipment for production safety
379. Manufacturing of VXI bus automatic testing systems (complying with standards set by IEEE 1155)
380. Development and manufacturing of underground coal mine monitoring and disaster forecasting systems and coal safety inspection integrated management systems
381. Manufacturing of equipment for engineering surveying and geophysical observation
382. Manufacturing of environmental monitoring instruments
383. Manufacturing of remote intelligent water meters with wireless transmission technology
384. Manufacturing of intelligent monitoring instrument for reservoir dam safety
385. Manufacturing of instruments and equipment for hydrological data collection, processing and transmission, and flood control early warning
386. Manufacturing of monitoring instruments and equipment for marine exploration
387. Manufacturing of leakage monitoring instruments for municipal pipe networks and water pipelines
388. Research, development, and manufacturing of nuclear instruments and meters
389. Development and production of glow discharge mass spectrometers
390. Development and production of transmission electron microscopes

(XXIV) Comprehensive Utilization of Waste Resources

391. Coal preparation and comprehensive utilization of coal ash (including desulfurized gypsum) and coal gangue
392. Production of 100 percent biodegradable materials
393. Recycling and treatment of waste and used electrical and electronic products, automobiles, mechanical and electrical equipment, rubbers, metals, and batteries
394. Comprehensive utilization of red mud and other smelting residues
395. Recycling and treatment of decommissioned wind power blades and waste photovoltaic modules
396. Comprehensive utilization of Yellow River sediment

IV. Power, Heating, Gas, and Water Production and Supply Industry

397. Construction and operation of supportive and regulatory power sources using ultra-supercritical units with a single-machine capacity of more than or equal to

600,000 kilowatts
398. Construction and operation of power stations with units for the backpressure cogeneration of heat and power, units for the cogeneration of heat power and cool (CCHP), (ultra) supercritical cogeneration units with a capacity of more than or equal to 300,000 kilowatts
399. Development and operation of clean coal power generation projects such as circulating fluidized beds, pressurized fluidized bed combustors, integrated gasification combined cycle power generation, and low calorific value coal power generation projects using coal gangue, coal middlings, and coal slime, with a single unit capacity of more than or equal to 300,000 kilowatts
400. Construction and operation of large hydropower stations and pumped storage power stations with the main purpose of power generation
401. Construction and operation of nuclear power stations
402. Construction and operation of new energy power stations (including solar, wind, geothermal, tidal, current, wave, and biomass energy)
403. Construction and operation of natural gas peak-shaving power stations and natural gas- distributed energy stations in areas of gas sources
404. Development and application of a complementary system for power generation from gas and renewable resources
405. Construction and operation of waste incineration power plants
406. Construction and operation of clean energy microgrids
407. Development and operation of regional energy supply (cooling and heating) projects driven by natural gas, electricity, and renewable energy resources
408. Utilization of seawater (direct utilization and desalination) and brackish water
409. Consulting, design, investment, construction, and operation of water supply plants
410. Consulting, design, investment, construction, and operation of water reclamation plants
411. Consulting, design, investment, construction, and operation of sewage treatment plants and sludge treatment and disposal facilities
412. Construction and operation of motor vehicle charging stations and battery replacement stations
413. Construction and operation of hydrogen refueling stations
414. Construction and operation of biogas projects
415. Research, development, application, and production of green plant insulating oil
416. Research, development, manufacturing, construction, and operation of new energy storage equipment (covering various energy storage technologies such as lithium-ion batteries, flow batteries, compressed air, flywheels, and hydrogen energy storage)
417. Development of source-grid-load-storage integration and construction of multi-energy complementary systems

V. Transportation, Warehousing, and Post Industries

418. Construction and operation of main railway networks and specialized railway

lines
419. Construction and operation of intercity railways, urban (suburban) railways, resource development railways and branch railways and their bridges, tunnels, and station facilities, and construction of ferries
420. Comprehensive maintenance of infrastructures of high-speed railways and intercity railways
421. Construction and operation of highways, independent bridges, and tunnels
422. Road freight transportation companies
423. Construction and operation of public dock facilities in ports
424. Construction and operation of civil airports (excluding air traffic control)
425. Public air transport companies
426. General airline companies for agriculture, forestry, and fishery
427. International maritime transport companies
428. International maritime transportation services for cruise passengers
429. Construction of intermodal container transfer facilities, and research and development, promotion, and application of rapid transfer and reloading equipment and standardized delivery units
430. International ship management organizations and organizations for the crew overseas assignment
431. Construction and operation of oil (gas) pipelines and oil (gas) terminals (excluding aviation oil pipelines and oil terminals)
432. Construction and operation of coal pipeline transportation facilities
433. Construction of warehousing facilities related to the logistics business, especially construction and operation of automatic warehousing facilities with high shelves and the implementation of three-dimensional storage and integrated warehousing facilities related to packaging, processing, and distribution businesses
434. Research, development, and application of technical equipment and green packaging relating to courier services, research, development, and application of green logistics facilities and equipment
435. Establishment and operation of a shared system of pallets and containers
436. Rural and community logistics and distribution
437. Provision and application of logistics services such as joint distribution of general merchandise, cold chain logistics of fresh agricultural products, low-temperature distribution of special medicines, and relevant technical services
438. Construction of distribution centers for imported and exported bulk commodities
439. Construction of rural road passenger transport facilities and rural road passenger transport companies

VI. Wholesale and Retail Trade

440. E-commerce retail (covering cross-border e-commerce; excluding pharmaceuticals and medical devices subject to special management by laws and regulations)
441. E-commerce supply chain companies (covering cross-border e-commerce; excluding pharmaceuticals and medical devices subject to special management by

laws and regulations)
442. Establishment of centralized delivery and distribution networks for commercial enterprises and catering enterprises
443. Operation of helium
444. Construction and operation of vehicle fueling stations
445. Distribution and retail of imported vehicles
446. Retail of culturally inspired products

VII. Information Transmission, Software and Technology Service Industries

447. Development and application services for e-commerce systems; development and operation of specialized assets trading platforms
448. Development and application services for online education, online medical services, and online office systems

VIII. Leasing and Business Service Industries

449. International economic, technology, environmental protection, logistics information, commercial, accounting, and tax consulting services
450. Engineering consulting services
451. Information technology and business process outsourcing services including system application management and maintenance, information technology support and management, banking back-office services, financial settlement, software development, offshore paging centers, and data processing
452. Maintenance and repair of modern high-end equipment, renovation and integration of digital production lines, and professional maintenance and supply chain services
453. Convention, exhibition, and related services
454. Venture capital business services
455. Intellectual property services
456. Domestic services
457. Human resources services
458. Postpartum maternal and child services in confinement centers
459. Tourism and exhibitions
460. Language services (including translation, localization, language technology development and application, language resource services, etc.)

IX. Scientific Research and Development, Product and Technology Service Industries

461. Bioengineering, biomedical engineering, and biomass energy technology research and development
462. DNA-encoded compound library technology research and development
463. Veterinary and pet nutrition scientific research and technical services
464. Research and development and application of AI technologies such as intelligent devices, robots, neural network chips, and neuron sensors
465. Isotope, radiation, and laser technology research and development

466. Research and development of ocean development and ocean energy development technology, technology for comprehensive utilization of marine chemical resources, related products and refinement/deep processing technology, and marine medicine and biochemical products
467. Research and development of ocean monitoring technology (ocean tidal waves, meteorological, and environmental monitoring), seabed detection, and ocean resources exploration and evaluation technology
468. Research and development of high value-added technology utilization of seawater chemical resources such as salt production, extraction of potassium, bromine, magnesium, and lithium by comprehensive utilization of seawater desalination concentrate
469. Research and development of offshore oil pollution cleaning and ecological restoration technology and the relevant product development, prevention and treatment of seawater eutrophication, prevention and treatment of marine life explosive growth disaster, coastal zone ecological environment restoration technology
470. Research and development and application of technologies for energy conservation, environmental protection, and recycling economy
471. Research and development and application of technologies for recycling and comprehensive utilization of resources and recycling of emissions and discharges from enterprise production
472. Research and development of environmental pollution treatment and monitoring technology
473. Clean production technology development and services, clean operation of traditional energy, engineering construction and technical services, clean production evaluation, certification, and review
474. Carbon capture, utilization, and storage (CCUS) technology development and services
475. Research and development and application of integrated technologies for land conservation and outdoor environment, conservation and utilization of energy, water resources, and material resources, indoor environment and operational management of green buildings
476. Research and development and application of disposal technology for radioactive waste
477. Construction and operation of hazardous waste utilization and disposal facilities and technical consultancy services
478. New products and new technologies for energy saving and consumption reduction in the production of chemical fiber and printing and dyeing processing and treatment of three waste residues
479. Research and development and application of comprehensive utilization of phosphogypsum
480. Research and development of technologies for the prevention and control of desertification and desert restoration
481. Research and development of integrated management technology for grassland and livestock

482. Research and development and application of modern animal husbandry waste
483. Research and development and application of novel pesticides
484. Research and development of civil satellite application technology
485. Inspection, testing, and certification services
486. Research and development centers
487. High-tech, new product development, and enterprise incubation center
488. Research and development and application of 5G mobile communication technology
489. Research and development and application of the IoT
490. Research and development and application of blockchain technology
491. Creative industries such as industrial design, architectural design, and fashion design
492. Urban and rural planning services (except for urban and township master planning services)
493. Low-carbon, environmental protection, green, energy-saving, and water-saving advanced system integration technologies and services
494. Development and application of environmentally friendly technologies
495. Professional design services

X. Water Conservancy, Environment, and Public Utility Management Industry

496. River and lake water environmental governance, restoration, management, protection, and operation of aquatic ecology
497. Construction and management of urban closed roads
498. Construction and operation of subways, light rails, and other mass transit
499. Construction and operation of garbage treatment facility, hazardous waste treatment and disposal facilities (incineration plants and landfills), and environmental pollution treatment facilities
500. Construction and operation of urban parking facilities
501. Construction and operation of public transport systems such as taxis, trams, and buses

XI. Education

502. Non-degree vocational training institutions
503. Non-degree language training institutions (excluding services for primary and middle school students and preschool children aged three to six)
504. Non-academic art training institutions (excluding services for primary and middle school students and preschool children aged three to six)
505. Vocational colleges (including technical schools)

XII. Health and Social Work

506. Service institutions for the disabled and children (excluding child welfare institutions, juvenile rescue and protection institutions, and adoption registration institutions)
507. Elderly care services (including home and community elder care services,

institutional elder care services, and the construction and operation of elder care institutions and community elder care service institutions)
508. Medical institutions
509. Mental rehabilitation institutions
510. Psychological consultation institutions
511. Rehabilitation institutions for children with autism
512. Renovation of homes suitable for coping with aging problems, renovation of livable environment for the elderly, public facilities suitable for the elderly, and renovation for offering accessible services
513. Professional education related to elderly care services, skills training for elderly care services, family care skills training, and education for the elderly

XIII. Culture, Tourism, Sports, and Entertainment Industries

514. Operation of performance venues
515. Operation of sports venues, services for body building, competition, performances, and sports training, and intermediary services
516. Construction of tourism infrastructure and tourism information services
517. Tourist scenic spot management, intelligent scenic spot construction, and service industry
518. Construction, operation, and management of outdoor sports camps and other fitness venues and facilities
519. Research, development, popularization, and promotion of intelligent sports products and services