
Catalogue of Industries for Guiding Foreign
Investment (Revision 2017)

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No. 4 Decree of the National Development and Reform
Commission and the Ministry of Commerce of the People's
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Development and Reform Commission, Ministry of Commerce
of the People's Republic of China

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Commission and the Ministry of Commerce of the People's
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The Catalogue of Industries for Guiding Foreign
Investment (Revision 2017), which has been approved by
the Party Central Committee and the State Council, is
hereby issued and shall come into force on July 28, 2017;
while the Catalogue of Industries for Guiding Foreign
Investment (Revision 2015) issued by the National
Development and Reform Commission and the Ministry of
Commerce on March 10, 2015 shall be repealed
simultaneously.

Director of the National Development and Reform
Commission: He Lifeng

Minister of Commerce: Zhong Shan

June 28, 2017

Catalogue of Encouraged Industries for Foreign
Investment

I. Agriculture, Forestry, Animal Husbandry and
Fishery

1. Planting, development and production of woody
plants that contain edible oil or are used as seasonings
or industrial raw materials

2. Development of planting technologies for green
food vegetables or organic vegetables (including
edible fungi and melons), dried and fresh fruit, and
tea, and relevant production

3. Development of new planting technologies for
crops, such as sugar crops, fruit trees and pasture,
and relevant production

4. Production of flowers and construction and
operation of nurseries

5. Planting of rubber trees, oil palm, sisal and

coffee

6. Planting or breeding of Chinese medicinal materials

7. Returning crop straw to farmland and the comprehensive utilization of crop straw; development and production of organic fertilizer resources

8. Breeding of aquatic fingerlings (excluding China's rare and endemic species)

9. Construction and operation of environment protection projects, such as the planting of trees and grass to combat desertification and soil erosion

10. Aqua farming, open sea-cage aquaculture, industrial aquaculture, and ecological mariculture

II. Mining Industry

11. Exploration and exploitation of oil and natural gas as well as utilization of mine gas

12. Improvement in enhanced oil recovery (in the form of engineering services) as well as development and application of related new technologies

13. Development and application of new technologies for oil exploration and exploitation in areas such as geophysical prospecting, drilling, well

logging, mud logging, and down-hole operation

14. Development and application of new technologies for enhancing utilization rate of mine tailings and the comprehensive application of ecological restoration technology in mining areas

15. Exploration and exploitation of mines in short supply in China (such as mines of sylvite and chromite) and mineral separation

III. Manufacturing Industries

(I) Agricultural and Sideline Food Processing

16. Development and production of safe, efficient and environment-friendly fodder and additives (containing methionine)

17. Aquatic product processing, shellfish purification and processing, and development of algal health food

18. Processing of vegetables, dried and fresh fruit, and livestock and poultry products

(II) Food Manufacturing

19. Development and production of infant formula food, food for special medical purpose and health food

20. Processing of forest agricultural products

21. Development of new technologies for and production of natural food additives and natural perfume

(III) Manufacturing of Wine, Beverage and Refined Tea

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

(IV) Textile Industry

23. Production of multifunctional industrial textiles that are lightweight, high/low-temperature resistant and chemical-resistant, with high performance and good light fastness, using non-woven, weaving, knitting or their composite techniques

24. Dyeing and after finishing processing of high-end textiles, using advanced energy conservation and emission reduction technologies and equipment

25. Processing of special natural fibers (including but not limited to cashmere and other special animal fibers, bamboo fiber and bastose, silk, and colored cotton) that satisfy the ecological, comprehensive resource utilization and environmental

protection requirements

(V) Textile, Clothing and Apparel Sectors

26. Production of clothing by using computer integrated manufacturing system (CIMS)

27. Production of special-purpose functional clothing

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

28. Cleaning and processing of leathers and furs

29. Finishing of leather with new techniques

30. Multipurpose use of leather wastes

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

31. Development of new technologies for the comprehensive utilization of three forest residues (logging residue, bucking residue and processing residue), “inferior quality lumbers, small-sized lumbers and firewood,” and bamboo, and the development and production of relevant new products

(VIII) Manufacturing of Supplies for Culture and Education, Industrial Arts, Sports and Entertainment

32. Production of high-end carpet, embroidery and

drawnwork

(IX) Petroleum Processing, Coking and Nuclear Fuel Processing

33. Processing of carbolic oil and absorber oil, high-end utilization of coal tar pitch (excluding modified pitch)

(X) Manufacturing of Chemical Raw Materials and Chemical Products

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

35. Auxiliary raw materials for the production of synthetic materials: production of hydrogen peroxide-based propylene oxide, naphthalene dicarboxylate (NDC), 1, 4-cyclohexanedimethanol (CHDM), butadiene adiponitrile and hexanediamine, with an annual production capacity of 50,000 tons or more

36. Raw materials for the production of synthetic fibers: production of nylon 66 salt and 1, 3-propylene glycol

37. Synthetic rubber: production of polyurethane rubber, acrylate rubber, epichlorohydrin rubber, fluorine rubber, silicone rubber and other special

rubbers

38. Engineering plastics and plastic alloys: production of non-phosgene polycarbonate (PC), homopolymerize polyoxymethylene (POM), polyphenylene sulfide, polyether-ether-ketone (PEEK), polyimide, polysulfone, polyether sulfone, polyarylate (PAR), polyphenylene sulfide and its modified materials as well as liquid crystal polymer, etc., with an annual production capacity of 60,000 tons or more

39. Fine chemicals: new catalyst products and technologies, processing technologies for the commercialization of dyes (pigments), production of electronic chemicals and papermaking chemicals, leather chemicals (excluding N-N-dimethylformamide), oilfield chemicals, surfactants, water treatment chemicals, adhesives, inorganic fibers and nano-materials, and deep processing of pigment encapsulation

40. Production of water-based ink, low-volatile ink for electron beam curing and UV-curing, and environment-friendly organic solvents

41. Production of natural spices, synthetic spices

and single ion spices

42. Production of high-performance coatings, high solid, solventless coatings, water-based industrial coatings, and auxiliary water-based resins

43. Production of high-performance fluorine and fluorine coating materials, medical intermediates containing fluorine, and environment-friendly fluorine-containing refrigerant, detergent and vesicant

44. Recovery of fluoride resources from the phosphorus chemical industry and aluminum smelting

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

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

47. Development and production of new types of fertilizers: high potassium fertilizers, compound microbial inoculants, compound microbial fertilizers, decomposition agents for straws and refuse, and other microbial formulations with special functions

48. Development and production of new varieties, new formulations, special-purpose intermediates, or auxiliary agents of high efficient, safe and environment-friendly agricultural chemicals, and development and application of relevant clean production process (process of ethylene-based acetochlor, aqueous phase chlorpyrifos, process of recovery of methyl chloride with glyphosate, production of chiral and stereospecific pesticides by oriented synthesis, and synthetic technique of diethyl thiophosphoryl chloride)

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

50. Comprehensive utilization, treatment and disposal of waste gas, liquid waste and waste residue

51. Production of organic polymer materials: aircraft skin coating, rare earth cerium sulphide red dyes, lead-free electronic packaging materials, lithographic slurry specifically for color plasma

screens, microfibers with a small diameter and a large specific surface area, high-precision fuel filter paper, lithium-ion battery diaphragms, surface treatment self-healing materials and super-hydrophobic nano-coating materials

(XI) Pharmaceutical Industry

52. Production of new compound drugs or drugs with active ingredients (including drug substance and formulations)

53. Amino acids: production of tryptophan, histidine, methionine, etc. using the zymotechnics process

54. Development and production of new types of anticarcinogenic drugs, cardiovascular and cerebrovascular drugs, and nervous system drugs

55. Production of new types of drugs employing bioengineering and biotechnology

56. Production of HIV/AIDS vaccines, hepatitis C vaccines, contraceptive vaccines, and new types of vaccines for cervical carcinoma, malaria, "hand, foot and mouth" diseases, etc.

57. Development and production of marine drugs

58. Pharmaceutical formulations: production of new formulations and new products employing new technologies, such as slow release, controlled release, targeting, and percutaneous absorption

59. Development and production of new excipients

60. Production of special antibacterial drug substance for animals (including antibiotics and chemical synthesis API)

61. Production of new products and new formulations of antibacterial drugs, anthelmintics, insecticides and anti-coccidiosis drugs for veterinary use

62. Development and production of new types of diagnostic reagents

(XII) Chemical Fiber Manufacturing

63. Production of high-tech chemical fibers (excluding viscose fibers), including but not limited to differential chemical fibers, aramid fibers, carbon fibers, high-performance/high modulus polyethylene fibers, and polyphenylene sulfide (PPS) fibers

64. Production of new types of polyester for fiber or non-fiber use: polytrimethylene terephthalate (PTT), polyethylene naphthalate (PEN),

polycyclohexylenedimethylene terephthalate (PCT), and glycol-modified polyethylene terephthalate (PETG)

65. Production of biomass fibers by utilizing new types of renewable resources and environment-friendly process, including but not limited to new solvent spun cellulose fibers (Lyocell), regenerated cellulose fibers using bamboo, hemp, etc., poly lactic acid (PLA) fibers, chitin fiber, polyhydroxyalkanoates (PHA), and animal and plant protein fibers

66. Development and production of nylon 11, nylon 12, nylon 1414, nylon 46, long carbon chain nylon, high temperature resistant nylon and other new types of polyamide

67. Production of aramid fibers and cords for radial tires

(XIII) Rubber and Plastic Products

68. Development and production of new photo-ecological, multifunctional and wide-width agricultural films

69. Recycle and reutilization of plastic waste

70. Development of new soft plastic packaging technologies and production of new varieties of soft

plastic packaging products (including high-barrier and multifunctional films and relevant raw materials)

(XIV) Nonmetallic Mineral Products

71. Development and production of building materials featuring energy conservation, environmental protection, waste recycling, light-weight, high-strength, high performance and multiple functions

72. Production of energy-saving and high-efficiency chemical building materials using plastic to replace steel or wood

73. Production of SBS/APP modified bitumen waterproof rolls with an annual output of 10 million square meters or more; wide (two meters or more) ethylene propylene diene monomer (EPDM) rubber waterproof rolls and relevant auxiliary materials; wide (two meters or more) polyvinyl chloride (PVC) waterproof rolls; and thermoplastic polyolefin (TP0) waterproof rolls

74. Development and production of functional glass using new technologies: electromagnetic wave shielding glass, glass substrate for microelectronic use,

infrared transmitting lead-free glass, electronic-grade large-scale quartz glass products (such as pipe, plate, copple, instruments, and utensils), multifunctional windshield with excellent optical performance, extreme materials and products for use in information technologies (including quartz glass bushing and ceramic wafer for waveguide-grade, high-precision optical fiber perform rod); purification processing of raw materials for high pure ($\geq 99.998\%$) or ultrapure ($\geq 99.999\%$) crystal

75. Production of conductive glass for thin film batteries, glass for solar illuminator and conductive glass used in construction

76. Production of glass fiber products and special glass fibers: low dielectric glass fibers, quartz glass fibers, high silica glass fibers, high-strength and high elastic glass fibers, ceramic fibers, etc. and other products

77. Production of optical fibers and their products: optical fiber bundles for image transmission and laser optical fibers for medical treatment, super second-generation and third-generation microchannel

plates, optical fiber panels, image inverters, and glass fiber cones

78. Standard refinement of ceramics raw materials and production of high-grade decorative materials used in ceramics

79. Production of environment-friendly (non-chromizing) refractory materials used in furnaces, including but not limited to cement, electronic glass, ceramics, and microporous carbon bricks

80. Production of porous ceramics

81. Production of new inorganic and nonmetallic materials and products: composite materials, special ceramics, special sealing materials (including high-speed oil-seal materials), special friction materials (including high-speed friction brake products), special binding materials, special latex materials, underwater acoustic rubber products, and nano materials

82. Production of organic-inorganic composite cellular insulation materials

83. 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, resin-based composite material (including sports products and lightweight high-strength parts of vehicle), special-function composite materials and their products (including composite products used in deep water or for diving, and composite products for medical treatment and recuperation), carbon or carbon composite materials, high-performance ceramic-based composite materials and their products, metal or glass-based composite materials and their products, metal-layered composite materials and their products, ultra high pressure composite rubber hoses (pressure ≥ 320 MPa), and larger passenger aircraft tires

84. Production of raw materials for precision and high-performance ceramics: ultra-fine silicone carbide (SiC) powder (purity $> 99\%$, average particle size $< 1\text{ }\mu\text{m}$), ultra-fine silicon nitride powder (Si₃N₄) (purity $> 99\%$, average particle size $< 1\text{ }\mu\text{m}$), high-purity ultra-fine alumina powder (purity $> 99.9\%$, average particle size $< 0.5\text{ }\mu\text{m}$), low-temperature

sintered zirconia (ZrO₂) powder (sintering temperature < 1,350°C), high-purity aluminum nitride (AlN) powder (purity > 99%, average particle size <1 μm), rutile titanium dioxide TiO₂ powder (purity > 98.5%), white carbon black (particle size < 100 nm), and barium titanate (purity > 99%, particle size < 1 μm)

85. Development and production of high-quality artificial crystals and thin film transistor products: high-quality artificially synthesized crystal (piezoelectric crystal and ultraviolet ray transmitting crystal), super-hard crystal (cubic boron nitride crystal), high-temperature resistant and highly-insulated artificially synthesized crystal (artificially synthesized mica), new electro-optical crystal, high-power laser crystal and large-scale scintillation crystal, diamond-film tool, ultrathin synthetic diamond saw blade with a thickness of not more than 0.3 mm

86. Fine processing of nonmetallic minerals (ultra-fine grinding, high purifying, refining, and modified performance)

87. Production of ultra-high-power graphite

electrodes

88. Production of pearl mica (particle size of 3-150 μm)

89. Production of multi-dimensional and multi-directional integral fabrics and shape fabrics

90. Safe disposal of solid wastes using new dry process cement kilns

91. Recycling of building waste

92. Comprehensive utilization of industrial by-product gypsum and other industrial wastes

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

(XV) Nonferrous Metal Smelting and Rolling Industries

94. Production of silicon single crystals and polished wafers with a diameter of 200 mm or more

95. Production of high-tech nonferrous materials: compound semiconductor materials (gallium arsenide, gallium phosphide, indium phosphide, and gallium nitride), high-temperature superconducting materials,

memory alloy materials (titanium nickel and copper and iron-based memory alloy materials), ultra-fine (nano) calcium carbide and ultra-fine (nano) crystal hard alloy, ultra-hard composite materials, precious metal composite materials, light metal composite materials and combination of dissimilar materials, aluminum foils for radiators, medium and high-voltage cathode capacitor aluminum foils, special large aluminum alloy sections, aluminum alloy precision forging dies, overhead conductors for electrified railway lines, ultra-thin copper strips, copper alloy materials for corrosion-resistant heat exchangers, high-performance copper-nickel and copper-iron alloy strips, materials for processing beryllium copper strips, lines, pipes and rods, high-temperature resistant and anti-senescence tungsten filaments, magnesium alloy castings, lead-free solder, magnesium alloys and their products, foamed aluminum, smelting and processing of titanium alloy, sponge zirconium at atomic energy level, and deeply processed tungsten and molybdenum products

(XVI) Metal Products

96. Research, development and manufacturing of new

types of light-weight and environment-friendly materials for aviation, aerospace, automobiles and motorcycles (including but not limited to special-purpose aluminum sheets, aluminum-magnesium alloy materials, and aluminum alloy motorcycle frames)

97. Research, development and manufacturing of light metal semisolid rapid formation materials

98. Manufacturing and processing (including painting and processing inner and outer surface of products) of metal packing products (complete products, wall thickness < 0.3 mm) used for packing various kinds of grain, oil, food, vegetables, fruits, beverages and household chemicals

99. Manufacturing of nickel-saving stainless steel products

(XVII) General Equipment Manufacturing

100. Manufacturing of high-end computerized numerical controlled (CNC) machine tools and key spare parts: five-axis alignment CNC machine tools, CNC coordinate boring and milling processing center, CNC coordinate grinding machines

101. Manufacturing of multi-station forging

forming machines of 1,000 tons or above

102. Manufacturing of equipment for dismantling, crushing and postprocessing and sorting of retired automobiles

103. Manufacturing of flexible transfer lines (FTL)

104. Manufacturing of vertical multi-joint industrial robots, and welding robots and relevant welding devices and equipment

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

106. Manufacturing of wheeled or crawler cranes of 400 tons or above

107. Design and manufacturing of high-pressure plunger pumps and engines with working pressure ≥ 35 MPa and low-speed large-torque engines with working pressure ≥ 35 MPa

108. Manufacturing of integrated hydraulic-pressure multiple unit valve with working pressure of ≥ 25 MPa and electro-hydraulic proportional servo elements

109. Design and manufacturing of valve terminal,

pneumatic solenoid valve of less than 0.35 W and high-frequency electrically-controlled gas valves of 200 Hz or more

110. Design and manufacturing of hydrostatic drive devices

111. Development and manufacturing of non-contact gas film seals with pressure > 10 MPa and dry gas seals with pressure > 10 MPa (including experimental devices)

112. Development and manufacturing of equipment for automobile polymer materials (friction plates, remodeled phenolic pistons, nonmetallic hydraulic master/sub-pumps, etc.)

113. Manufacturing of the third and more generation car wheel hub bearings, bearings for high or medium-grade CNC machine tools or processing centers, high-speed wire rod or plate rolling mill bearings, high-speed railway bearings, low-noise bearings with vibration below Z4, P4 or P2 level bearings of various bearings, bearings of wind turbine generator set, and aircraft bearings

114. Manufacturing of high-density, high-precision and complex-shaped powder

metallurgical parts and chains used for automobile, engineering machinery, etc.

115. Manufacturing of gear transmission used for wind power or high speed rail, gear transmission agent with adjustable blades used for vessels, and large-sized and heavy-load gear boxes

116. Manufacturing of high-temperature resistant insulation materials (F and H insulation classes) and insulation molding products

117. Development and manufacturing of accumulator bladders, and rubber and plastic seals for hydropneumatic use

118. Manufacturing of high-precision, high-strength (level 12.9 or above), special-shaped and assembly fasteners

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

120. Manufacturing of coupling shaft for heavy rolling mills

121. Remanufacturing of machinery such as machine tools, engineering machinery and railroad engine equipment, and remanufacturing of automobile parts and

key components for medical imaging equipment, and remanufacturing of office facilities such as duplicators

122. Development and manufacturing of digital cameras with pixel of 10 million or more or horizontal field of 120° or above, and other optical lenses and optical-electric modules

123. Manufacturing of office machinery (including those for industrial use): multi-function integrated office equipment (copy, print, fax and scanning), printing equipment, high resolution printing head with precision 2,400 dpi and more, and photosensitive drum

124. Manufacturing of film machines: 2K and 4K digital film projector, digital film camera, digital imaging and editing equipment

(XVIII) Special-Purpose Equipment Manufacturing

125. Manufacturing of trackless equipment for excavation, loading and transport in mines: including but not limited to mechanically-driven tippers for mining with a capacity of 200 tons or more, mobile crushers, bucket excavators with a capacity of 5,000 cubic meters or more per hour, loaders for mining with

a capacity of 8 cubic meters or more, and electrically-dragged coal mining machines of 2,500 kilowatt or more

126. Manufacturing of equipment for geophysical exploration (excluding gravity or magnetic measurement) and well logging: MEME seismometers, digital telemetric seismographs, digital imaging systems and digitally controlled well logging systems, devices and apparatus for horizontal wells, directional wells and drilling rigs, and measurement-while-drilling (MWD) tools

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

128. Manufacturing of large-caliber rotary drilling rigs with a caliber of 2 meters or more and depth of 30 meters or more, push benches with a diameter of 1.2 meters or more, complete sets of large equipment with a pull-back force of 300 tons or more for laying

underground pipes and lines without digging, and underground diaphragm wall construction drilling rigs

129. Design and manufacturing of large bulldozers of 520 horsepower or more

130. Design and manufacturing of silt removers with a capacity of 100 cubic meters or more per hour and dredging devices for dredgers with a capacity of 1,000 tons or more

131. Design and manufacturing of equipment for the construction of concrete cut-off walls used for flood prevention dikes

132. Manufacturing of underwater earthwork construction machinery: bulldozers, loaders, excavators, etc. operating nine meters underwater or deeper

133. Manufacturing of equipment for maintenance and automatic testing of highways and bridges

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

135. Design and manufacturing of maintenance machinery and inspection and monitoring equipment for

large-scale railway construction, railway tracks, bridges and tunnels, and their key parts and components

136. Manufacturing of equipment for (asphaltic) linoleum tiles and equipment for producing galvanized steel sheets and other metal roofs

137. Manufacturing of equipment for environment-friendly and energy-saving on-site polyurethane spraying waterproof and thermal insulation systems; technology of preparing polyurethane sealants and manufacturing of relevant equipment, and technology of preparing improved silicone sealants and manufacturing of relevant production equipment

138. Design and manufacturing of high-precision strip mills (thickness precision of 10 microns)

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

140. Manufacturing of the key equipment of complete sets of ethylene equipment with an annual capacity of 1 million tons or more: mixing granulators with an annual processing capacity of 400,000 tons or more,

helical-conveyor centrifuges with a diameter of 1,000 mm or more, low-flow high-head centrifugal pump

141. Design and manufacturing of metal product molds (extrusion dies for pipes, rods and section bars made of copper, aluminum, titanium and zirconium)

142. Design and manufacturing of punching dies for automobile body covers, large-sized injection molds for automobile dashboard, bumper, etc., and clamps and gauges for automobiles and motorcycles

143. Design and manufacturing of production equipment for power batteries for automobiles

144. Design and manufacturing of precise die molds (punching dies with a precision higher than 0.02 mm and cavity molds with a precision higher than 0.05 mm)

145. Design and manufacturing of nonmetal product molds

146. Manufacturing of beer bottling equipment with a capacity of 60,000 bottles or more per hour, hot and medium-temperature beverage bottling equipment with a capacity of 50,000 bottles or more per hour, and aseptic filling equipment with a capacity of 36,000 bottles or more per hour

147. Production technologies of amino acids, enzyme preparations, food additives, etc. and the manufacturing of key equipment

148. Manufacturing of complete sets of equipment for animal feed processing with a capacity of 10 tons or more per hour and the key parts of such equipment

149. Manufacturing of equipment for lightweight corrugated boards and cartons with corrugation height of 0.75 mm or less

150. Manufacturing of sheet-fed and multi-color offset presses (width ≥ 750 mm; printing speed: single side and multiple colors $\geq 16,000$ sheets per hour, and double sides and multiple colors $\geq 13,000$ sheets per hour)

151. Manufacturing of single-width single-paper path web-fed lithographic printing presses with a printing speed of more than 75,000 bisect sheets per hour (787×880 mm), double-width single-paper path web-fed lithographic printing presses with a printing speed of more than 170,000 bisect sheets per hour (787×880 mm), and commercial web-fed lithographic printing presses with a printing speed of more than

50,000 bisect sheets per hour (787×880 mm)

152. Manufacturing of multi-color wide flexographic presses (printing width $\geq 1,300$ mm and printing speed ≥ 350 meters per minute), inkjet digital printing presses (used for publication; printing speed ≥ 150 meters per minute and resolution ≥ 600 dpi; used for packaging: printing speed ≥ 30 meters per minute and resolution $\geq 1,000$ dpi; used for variable data: printing speed ≥ 100 meters per minute and resolution ≥ 300 dpi)

153. Manufacturing of systems for ink color computer pre-setting, remote ink color control, water-ink speed tracking, automatic printing quality inspection and tracking, and shaftless driving technology; manufacturing of high-speed automatic pasters and feeders with a speed of 75,000 sheets per hour, remotely adjustable high-speed folding machines, automatic overprinting systems, cooling devices, silicon-adding systems, and deviation adjustment devices

154. Manufacturing of electronic-gun automatic coating machines

155. Deep processing technology for sheet glass and manufacturing of relevant equipment

156. Manufacturing of complete sets of equipment such as new types of paper (including pulp) making machines

157. Manufacturing of equipment using new leather post ornament and processing technology

158. 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 plants, vegetables, dried and fresh fruit products, meat products, aquatic products, and other products; agricultural product quality inspection instruments and equipment; damage-free quality inspection instruments and equipment for agricultural products; rheometers, farinographs, ultramicro crushing equipment, high-efficiency dewatering equipment, high-efficiency fruit juice condensation equipment achieving five or more effects, sterilization equipment for powder food materials, solid and semisolid food aseptically packaging equipment, and

disk-type centrifugal separators

159. Manufacturing of agricultural machinery: agricultural equipment (automatic irrigation equipment for greenhouses, equipment for automatic disposition of nutrient solutions and fertilization, high-efficiency vegetable seedling equipment, and soil nutrient analysis equipment), tractors with an engine power of 200 kilowatts or more and the auxiliary farm implements, diesel engines with low fuel consumption, low noise and low emission, 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, and beet harvesters

160. Manufacturing of forestry machinery and instruments using new technology

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

162. Manufacturing of equipment for the resource

utilization of agricultural waste and waste from livestock and poultry breeding meeting a certain scale

163. Manufacturing of agricultural equipment using fertilizer-saving, pesticide-saving or water-saving technology

164. Manufacturing of equipment for cleaning electromechanical wells and equipment for producing cleaning agents

165. Manufacturing of electronic endoscopes

166. Manufacturing of fundus cameras

167. Manufacturing of key components of medical imaging equipment (including but not limited to high-field-strength superconducting magnetic resonance imaging equipment, X-ray computed tomography imaging equipment, and digital color diagnostic ultrasound equipment)

168. Manufacturing of (3D) ultrasonic transducers for medical use

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

170. Manufacturing of image-guided intensity modulated radiation therapy systems

171. Manufacturing of haemodialysis machines and hemofiltration machines

172. Manufacturing of equipment for full-automatic biochemistry monitoring, five-classified blood cell analyzers, full-automatic chemiluminescence immunity analyzers, and high throughput gene sequencing system

173. New technology for drug quality control and manufacturing of new equipment for drug quality control

174. Development of new analysis technology and new extracting process for active substance in natural drugs; development and manufacturing of new extracting equipment

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

176. Development and manufacturing of new textile machinery, key parts and components, and textile testing and experimental apparatus

177. Manufacturing of computer-aided jacquard artificial fur machines

178. Manufacturing of equipment specially for producing solar cells

179. Manufacturing of air pollution prevention and control equipment: high temperature-resistant and corrosion-resistant filtering materials, low-NO_x combustion devices, catalyst for flue gas denitrogenation and complete sets of denitrogenation equipment, flue gas desulfurization equipment, flue gas dedusting equipment, industrial organic exhaust purification equipment, diesel vehicle exhaust purification equipment, and heavy metal exhaust air treatment equipment

180. Manufacturing of water pollution prevention and control equipment: horizontal spiral centrifugal dehydrators, membrane and membrane materials, ozone generators with a capacity of more than 50 kg/h, chlorine dioxide generators with a capacity of more than 10 kg/h, ultraviolet disinfection devices, small domestic sewage treatment equipment used in rural areas, and heavy metal wastewater treatment equipment

181. Manufacturing of solid waste treatment and disposal equipment: sewage plant sludge disposal and resource recycling equipment, complete sets of refuse incineration equipment with a daily treatment capacity

of 500 tons or more, landfill leachate treatment technology equipment, anti-seepage geo-membranes in landfills, building waste treatment and resource recovery utilization equipment, devices for disposal of hazardous waste, devices for power generation with biogas in landfills, treatment equipment for ferrous wastes, and soil remediation equipment

182. Development and manufacturing of equipment for the comprehensive utilization of red mud from aluminum industry

183. Manufacturing of equipment for the comprehensive utilization of mine tailings

184. Manufacturing of equipment for the collection, treatment and recycling of used and waste plastics, electrical appliances, rubbers and batteries

185. Manufacturing of reclamation equipment for used and waste textiles

186. Manufacturing of equipment for the remanufacturing of used and waste mechanical and electrical products

187. Manufacturing of devices for the comprehensive utilization of used and waste tires

188. Environmental protection technology for aquatic ecosystems and the manufacturing of relevant equipment

189. Manufacturing of portable assembling water purification equipment

190. Unconventional water treatment or recycling equipment and water quality monitoring instruments

191. Leak test equipment and instruments for industrial water pipeline networks and equipment (appliances)

192. Development of technologies for seawater desalination and circulating cooling with a daily capacity of 100,000 cubic meters or more and manufacturing of relevant complete sets of equipment

193. Manufacturing of special meteorological observation and analysis equipment

194. Technology system development for seismic stations, networks and mobile seismologic observation and manufacturing of relevant apparatus and equipment

195. Manufacturing of radial tire building machine with four or more drums

196. Manufacturing of rolling resistance testers

and establishment of tire noise laboratories

197. Manufacturing of equipment using new technology for heat supply metering and temperature control devices

198. Manufacturing of equipment for hydrogen energy preparation, storage and transportation and inspection systems

199. Manufacturing of new heavy residual oil gasification and atomizing nozzles, high-efficiency steam trap valve with a leakage rate of 0.5% or below, and high-temperature ceramic heat exchanger with temperature of 1,000°C or above

200. Manufacturing of devices for recovery of marine oil spilling

201. Manufacturing of equipment for utilization of low concentration coalmine gas and ventilation air methane

202. Development and utilization of clean coal technologies and products as well as manufacturing of relevant equipment (coal gasification and liquefaction, coal water slurry and industry shape-coal)

203. Development of technologies for fire

prevention and control and rescue to be used in large-scale public buildings, high-rise buildings, petrochemical facilities, forest, mountains or water areas and underground facilities, and manufacturing of relevant equipment

204. Manufacturing of intelligent emergency medical rescue equipment

205. Manufacturing of hydrologic monitoring sensors

(XIX) Automobile Manufacturing

206. Manufacturing of automobile engines and establishment of engine research and development institutions: gasoline engines with power of not less than 70 kilowatts per liter, diesel engines with power of not less than 50 kilowatts per liter and displacement of less than 3 liters, diesel engines with power of not less than 40 kilowatts per liter and displacement of more than 3 liters, and engines using new energy resources such as fuel cells and mixed fuels

207. 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), gasoline engine turbocharger, viscous coupling (for four-wheel drive), actuator for automatic transmission (electromagnetic valve), hydraulic retarder, eddy current retarder, gas generators for automobile safety air bags, common rail fuel injection technology (with maximum injection pressure of more than 2,000 pa), variable geometry turbocharging (VGT), variable nozzle turbocharging (VNT), engine emission control devices meeting China's Phase V pollutant emission standards, intelligent torque management (ITM) systems and coupler assembly, steer-by-wire systems, diesel particulate trap devices, special-purpose axles for lowfloor large buses, energy-absorbing steering system, variable frequency air-conditioning system for large and medium buses, special rubber automobile accessories, and key parts and components of the above parts and components

208. Manufacturing and research and development of automobile electronic devices: electronic control systems and key parts and components of engine and chassis, vehicle electronic technologies (automobile

information system and navigation system), automobile electronic bus network technologies, input (sensor and sampling system) and output (actuator) components of electronic control system, electronic controllers for electric power steering system, embedded electronic integrated systems, electronically-controlled air springs, electronically-controlled suspension system, electronic valve system devices, electronic combination instrument, ABS/TCS/ESP systems, Brake-By-Wire (BBW) system, gearbox transmission control unit (TCU), tire pressure monitoring system (TPMS), on-board diagnostics (OBD), engine anti-theft system, automatic bump-shielded system, and testing systems for automobile and motorcycle testing and maintenance

209. Manufacturing of key parts and components of new energy automobiles: battery separators (thickness of 15-40 μm , porosity of 40%-60%); battery management system, motor management system, electronic control integration of electric vehicles; driving motors of electric vehicles (peak power density ≥ 2.5 kW/kg, high-efficiency area: 65%, efficiency in working area

$\geq 80\%$), vehicle DC/DC (input voltage of 100 V - 400 V), high-power electronic devices (IGBT, voltage class ≥ 600 V, current ≥ 300 A); and plug-in hybrid electromechanical coupling drive systems; low-platinum catalyst for fuel cell, composite membranes, membrane electrodes, humidifier control valves, air compressors, hydrogen circulating pumps, and 70 MPa hydrogen cylinders.

(XX) Manufacturing of Railways, Ships, Aircrafts and Other Transportation Equipment

210. Manufacturing of engine emission control devices for motorcycles with large engine capacity (engine capacity > 250 ml) that meet China's Phase IV pollution discharge standards for motorcycles

211. Design, manufacturing and maintenance of civil aircrafts: aircrafts for trunk lines, regional aircrafts and utility aircrafts

212. Manufacturing and maintenance of civil aircraft parts and components

213. Design and manufacturing of civil helicopters

214. Manufacturing of civil helicopter parts and components

215. Manufacturing of ground-effect and water-effect aircrafts as well as design and manufacturing of unmanned aircrafts and aerostats

216. Design, manufacturing and maintenance of aircraft engines, engine parts and components and aircraft auxiliary power systems

217. Design and manufacturing of airborne equipment for civil aviation

218. Manufacturing of aviation ground equipment: civil airport facilities, civil airport operation guarantee facilities, ground facilities for flight tests, flight simulation and training equipment, aviation test and measurement equipment, equipment for aviation ground tests, integrated test equipment for airborne equipment, special equipment for aeronautical manufacturing, special equipment for trail manufacturing of aeronautic materials, civil aircraft ground reception and application equipment, carrier rocket ground testing equipment, and equipment for carrier rocket mechanics and environmental experiments

219. Design and manufacturing of civil satellites, and manufacturing of civil satellite payloads

220. Manufacturing of parts and components of civil satellites

221. Manufacturing of inspection equipment for satellite-borne products

222. Design of cruise ship and deepwater (3,000 meters or more) marine engineering equipment

223. Design of low- and medium-speed diesel engines of vessels and their parts and components

224. Design of cabin machinery of vessels

225. Design of vessel communication and navigation equipment

226. Design of yachts

(XXI) Electric Machinery and Equipment
Manufacturing

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

228. Manufacturing of denitration equipment of sintering machines in steel industry

229. Design and manufacturing of seals of thermal power equipment

230. Manufacturing of large castings and forgings

for coal-fired power station and hydropower station equipment

231. Manufacturing of key auxiliary equipment for hydropower generating units

232. Manufacturing of power transmission and transformation equipment

233. Manufacturing of complete sets of equipment or key equipment for new energy power generation: equipment for photovoltaic power generation, geothermal power generation, tidal power generation, wave power generation, garbage power generation, biogas power generation, and wind power generation with a capacity of 2.5 megawatts or more

234. Manufacturing of Stirling generator sets

235. Development and manufacturing of linear motors, planar motors, and their drive systems

236. Manufacturing of high-tech green batteries: nickel-metal hydride (Ni-MH) batteries, nickel-zinc batteries, silver-zinc batteries, lithium-ion batteries, solar batteries, fuel batteries, etc. (excluding energy type of new energy vehicle batteries)

237. Manufacturing of refrigeration compressors

for air conditioning with motor adopting DC speed control technology, refrigeration compressors for air conditioning with motor adopting CO₂ natural refrigerants, and refrigeration equipment for air conditioning applying renewable energy (air source, water source or ground source)

238. Manufacturing of solar air conditioning and heating systems and solar drying devices

239. Manufacturing of biomass drying and pyrolysis systems and biomass gasification devices

240. Manufacturing of alternating current (AC) variable frequency variable voltage (VFVV) drive devices

(XXII) Manufacturing of Computers, Communication and Other Electronic Equipment

241. Manufacturing of HD digital cameras and digital sound playing equipment

242. Manufacturing of TFT-LCD, PDP, OLED and other panel displays and materials of displays (excluding TFT-LCD glass substrate for the 6th generation and below)

243. Manufacturing of key parts for large-screen

color projection displays, including but not limited to optical engines, light sources, projection screens, high-resolution projection tubes, and micro-display projection modules

244. Manufacturing of digital audio and video coding and decoding equipment; equipment for digital broadcasting and television studios; equipment for digital cable television systems; digital audio broadcasting transmission equipment; digital television up and down converters; digital television terrestrial broadcasting single frequency network (SFN) equipment; and equipment for satellite digital TV uplink stations

245. Design of integrated circuits; manufacturing of large-scale digital integrated circuits with a line width of 28 manometers or less; manufacturing of analog or digital-analog integrated circuits with a line width of 0.11 micron or less; manufacturing of MEMS and compound semiconductor integrated circuits; and BGA, PGA, FPGA, CSP, MCM and other advanced encapsulation and testing

246. Manufacturing of large- and medium-sized

electronic computers, high performance computers with a computing capacity of 10,000 trillion calculations per second, portable minicomputers, large analog simulation systems, and large industrial control computers and controllers

247. Manufacturing of computer digital signal processing system and boards

248. Manufacturing of graphic and image recognition and processing system

249. Development and manufacturing of high-capacity optical and disk drivers and their components

250. Manufacturing of high-speed memory system and intelligent memory device with a capacity of 100 TB or more

251. Manufacturing of computer-aided design (three-dimensional CAD) systems, electronic design automation (EDA), computer-aided testing (CAT), computer-aided manufacturing (CAM), computer-aided engineering (CAE) systems, and other computer application systems

252. Development and production of software

products

253. Development and manufacturing of materials exclusively for electronic purposes (excluding development and manufacturing of optical fiber performs)

254. Manufacturing of equipment, testing instruments, tools and molds exclusively for electronic purposes

255. Manufacturing of new electronic parts and components: chip components, sensitive components and sensors, frequency control and selection components, hybrid integrated circuits, power electronic devices, optoelectronic devices, new electromechanical components, polymer solid capacitors, super-capacitors, passive integrated components, high-density interconnect (HDI) laminated boards, multi-layer flex printed circuit (FPC) boards, rigid-flex printed circuit (R-FPC) boards, and packaging boards

256. Manufacturing of touch control system (touch control screens, touch components, etc.)

257. Research, development and manufacturing of

virtual reality (VR) and augmented reality (AR) equipment

258. Manufacturing of high-brightness light-emitting diodes (LEDs) with luminous efficiency of more than 140 lm/W, LED epitaxial wafers (blue light) with luminous efficiency of more than 140 lm/W and white luminous tubes with luminous efficiency of more than 140 lm/W and power of more than 200 mW

259. Development and production of key parts of high-density digital disk drives

260. Production of recordable disks

261. Research, development and manufacturing of key parts and components of 3D printing equipment

262. Manufacturing of equipment for satellite communication systems

263. Manufacturing of optical communication measuring instruments and optical transceivers with a speed of 40 Gbps or more

264. Manufacturing of ultra-wideband (UWB) communication equipment

265. Manufacturing of equipment for wireless local area networks (including WAPI support) and wide area

networks

266. Manufacturing of time division multiplexing equipment (TDM) with rate of 100 Gbps or more, dense wavelength division multiplexing equipment (DWDM), broadband passive network equipment (including EPON, GPON, WDM-PON, etc.), next-generation DSL chips and equipment, optical cross connect (OXC) equipment, automatically switched optical network (ASON) equipment, and transmission equipment for optical fiber communication at more than 40 Gbps SDH

267. Development and manufacturing of IPv6-based next generation internet system equipment, terminal equipment, testing equipment, software, and chips

268. Development and manufacturing of the fourth generation and subsequent mobile communication cell phones, base stations, core network equipment, and network testing equipment

269. Development and manufacturing of (bi-directional) high-end routers with an overall processing capacity of more than 6.4 Tbps and network switches with a switching capacity of more than 40 Tbps

270. Manufacturing of equipment for air traffic

control systems

271. Development and manufacturing of electronic teaching aiding equipment for traditional Chinese medicines based on sound, light, electricity or touch-controlled computer information technologies and human body model with virtual pathology and physiology

(XXIII) Manufacturing of Instruments and Meters

272. Manufacturing of industrial process automatic control system and devices: fieldbus control systems, large-scale programmable logiccontroller (PLC), two-phase flow meters, solid flow meters, new-type sensors and field measuring meters

273. Development and manufacturing of large precision instruments and high resolution microscope (with a resolution of less than 200 nm)

274. Manufacturing of high-precision digital voltmeters and ammeters (with a span of seven and a half bits or more)

275. Manufacturing of reactive power auto-compensation devices

276. Manufacturing of new instruments and

equipment for production safety

277. Manufacturing of VXI bus automatic testing systems (meeting IEEE1155 international standards)

278. Development and manufacturing of coal mine underground monitoring and hazard forecasting systems and coal safety testing and management systems

279. Manufacturing of engineering surveying and geophysical observation equipment

280. Manufacturing of environmental monitoring instruments

281. Manufacturing of instruments and equipment for hydrological data collection, processing, and transmission and for flood control early warning

282. Manufacturing of instruments and equipment for marine exploration monitoring

(XXIV) Comprehensive Utilization of Waste Resources

283. Coal dressing and comprehensive utilization of coal ash (including desulfurized gypsum), coal gangue, etc.

284. Production of completely biodegradable materials

285. Recycling and treatment of waste and used electrical and electronic products, automobiles, electromechanical equipment, rubbers, metals, and batteries

IV. Production and Supply of Electric Power, Heating Power, Fuel Gas and Water

286. Construction and operation of ultra-supercritical unit power station with the capacity of a single unit of 600,000-kilowatt or more

287. Construction and operation of back-pressure combined heat and power stations, combined cooling, heating and power stations, and combined heat and power stations with capacity of 300,000 kilowatt or more

288. Construction and operation of large air cooling unit power stations with the capacity of a single unit of 600,000-kilowatt or more in water-deficient areas

289. Construction and operation of integrated gasification combined cycle power generation and other clean coal power generation projects

290. Construction and operation of power generating projects of a single unit of

300,000-kilowatt or more by using fluidized bed combustion bolters and coal gangue, middings and coal slime, etc,

291. Construction and operation of hydropower stations for the primary purpose of power generation

292. Construction and operation of nuclear power stations

293. Construction and operation of new energy power stations (including but not limited to solar energy, wind energy, geothermal energy, tidal energy, tidal current energy, wave energy, and biomass energy)

294. Construction and operation of power grid

295. Seawater utilization (direct utilization of seawater or seawater desalination)

296. Construction and operation of water supply plants

297. Construction and operation of renewable water

298. Construction and operation of sewage treatment plants

299. Construction and operation of vehicle charging stations and battery replacement stations

300. Construction and operation of hydrogen

refueling stations

V. Transportation, Warehousing and Postal Service Industries

301. Construction and operation of network of trunk railway lines

302. Construction and operation of intercity railway, urban (suburban) railway, resource-oriented development railway, branch railway lines, and related bridges, tunnels, ferries and station facilities

303. Comprehensive maintenance of infrastructures of high-speed railway lines and intercity railways

304. Construction and operation of highways, independent bridges and tunnels

305. Road freight companies

306. Construction and operation of public wharf facilities in ports

307. Construction and operation of civil airports

308. Public air transportation companies

309. General aviation companies for agriculture, forestry, and fishery

310. International marine transportation companies

311. International container multimodal transportation services

312. Construction and operation of oil (gas) pipelines and oil (gas) depots

313. Construction and operation of coal pipeline transportation facilities

314. Construction and operation of elevated three-dimensional automatic warehousing facilities and integrated warehousing facilities related to packaging, processing and distribution services

VI. Wholesale and Retail Industries

315. Common distribution of general commodities, low-temperature distribution of live and fresh agricultural products and special drugs, as well as other logistical services and relevant technological services

316. Rural chain distribution

317. Construction and operation of pallet and container unit sharing system

VII. Leasing and Commercial Service Industries

318. International economic, science and technology, environmental protection, and logistical

information consulting services

319. Engaging in system application management and maintenance, information technology support management. Bank back-office services, financial settlement, software development, off-shore call centers, data processing and other information technology and business process outsourcing services by contracting outsourced services

320. Venture capital enterprises

321. Intellectual property right services

322. Household services

VIII. Scientific Research and Technical Services

323. Bioengineering and biomedical engineering technologies and biomass energy development technology

324. Isotope, radiation and laser technology

325. Marine development and marine energy exploitation technology, technology for comprehensive utilization of marine chemical resources, development and refinement or deep processing of related products, and marine medicine and biochemical product development technology

326. Ocean monitoring technology (ocean tidal

waves, weather and environment monitoring) and submarine detection and oceanic resources exploration and assessment technology

327. Technologies for high value-added utilization of seawater chemical resources, including but not limited to production of salt and extraction and deep processing of potassium, bromine, magnesium, lithium by comprehensively utilizing desalinated dense seawater

328. Offshore oil pollution cleaning and ecological restoration technology and relevant product development, technology for prevention and treatment of seawater eutrophication, technology for prevention and treatment of marine life explosive growth disaster, and coastal zone ecological environment restoration technology

329. Development of energy saving and environmental protection technologies and related services

330. Development and application of technologies for recycling and comprehensive utilization of resources and for recycling of emissions and discharges

from enterprise production

331. Environmental pollution treatment and monitoring technologies

332. New technologies for energy efficiency in chemical fiber production and printing and dyeing processing and for the treatment of exhaust gas, waste liquid and waste residue

333. Desertification prevention and desert treatment technologies

334. Comprehensive management technology for grassland-livestock balance

335. Civil satellite application technology

336. Research and development centers

337. High and new technology, new product development and enterprise incubation centers

338. Development and application of Internet of things technology

339. Industrial design, architectural design, costume design and other creative industries

IX. Water Conservancy, Environmental, and Public Facility Management Industries

340. Construction and operation of urban enclosed

roads

341. Construction and operation of urban subway, light railway and other track transport

342. Construction and operation of sewage and garbage treatment plants, hazardous waste treatment and disposal plants (incineration plants and landfills), and environmental pollution treatment and control facilities

343. Construction and operation of urban parking facilities

X. Education

344. Non-academic vocational training institutions

XI. Health and Social Services

345. Service institutions for seniors, the disabled and children

346. Nursing institutions for the aged

XII. Cultural, Sports and Entertainment Industries

347. Operation of performance sites

348. Operation of sports grounds and body-building, contest performance and sports training and intermediate services