Annex 1

Industrial Structure Adjustment Guidance Catalog

(2023 version, exposure draft)

Industry is the key to economic development and a country's founding 🐶. Promoting industry

Structural adjustment is an important measure to build a modernized industrial system, enhance the core competitiveness of industries and promote industries to move towards the middle and high end of the global value chain. Since the 18th National Congress of the CPC, China's industrial development has made remarkable achievements, and its comprehensive strength, innovation and competitiveness have stepped up to a new level, forming advantages in scale, system and leading advantages in some fields, which have strongly supported the construction of national economy and society and China's status as a great power. Nowadays, the world is experiencing a great change that has not been seen in a hundred years, the new round of scientific and technological revolution and industrial change is developing deeply, the global industrial chain and supply chain pattern is facing a profound adjustment, and the development of China's industry has entered a period of strategic opportunities and risks and challenges, and the uncertainties and unpredictable factors have increased. In order to deeply implement the spirit of the 20th CPC National Congress, adapt to the new situation and new tasks and new requirements of industrial development, and accelerate the construction of a modernized industrial system, according to the Decision of the State Council on the Issuance and

Implementation of the Interim Provisions for the Promotion of Industrial Restructuring (Guo Fa [2005] No. 40), the National Development and Reform Commission has taken the lead in revising and forming the "Guidance Catalogue for Industrial Restructuring" together with relevant departments.

(2023🎧) (hereinafter referred to as the "Catalog (2023🎧)").

The Catalog (2023🎧) consists of three categories: encouraged, restricted and phased out. Encouraged categories are mainly technologies, equipment and products that play an important role in promoting economic and social development; restricted categories are mainly production capacities, technologies, equipment and products that are outdated in terms of technology and process, do not comply with the conditions for industry access and relevant regulations, are not conducive to safe production, are not conducive to the realization of the goal of carbon neutrality, and need to be urged to renovate and prohibited from new construction; and phased-out categories are mainly those that do not comply with the relevant laws and regulations, seriously waste resources, pollute the environment, pose serious risks to safe production and hinder the realization of carbon neutrality. The elimination category mainly refers to backward technologies, equipment and products that do not comply with relevant laws and regulations, seriously waste resources, pollute the environment, pose serious safety hazards, and impede the

realization of the goal of carbon peaking and carbon neutrality, and need to be eliminated. Those outside the encouraged, restricted and eliminated categories, and in line with relevant national laws, regulations and policies, are permitted.

The Catalog (2023🎧) adheres to Xi Jinping's new era of socialism with Chinese characteristics.

We will be guided by the Party's 20th National Congress, and insist on putting the focus on economic development.

It is placed on the real economy, promoting new industrialization, accelerating the construction of a strong manufacturing country, a strong quality country, a strong aerospace country, a strong transportation country, a strong network country and a strong digital China, and accelerating the construction of a modernized industrial system that is characterized by intelligence, greenness and integration and meets the requirements of completeness, advancement and safety. The policy orientation is:

First, to promote high-end manufacturing, intelligent, green. Continuously enhance the core competitiveness of the manufacturing industry, promote quality improvement and brand building, and continuously lead the industry to the high-end leap. Intelligent manufacturing as the main direction of attack to promote industrial technological change and optimization and upgrading, accelerate the promotion and application of intelligent manufacturing of new technologies, and promote the transformation of the manufacturing industry model. Encourage green technological innovation and the development of green industries, promote energy conservation, carbon reduction and green transformation in key areas, and resolutely curb the blind development of high-energy-consuming, high-emission and low-level projects.

Second, consolidate the leading position of advantageous industries. **Accelerate the transformation and upgrading of traditional industries, increase the proportion of advanced production capacity, and effectively expand high-quality supply. Resolve excess production capacity and eliminate backward production capacity in accordance with laws and regulations. Vigorously develop and expand strategic emerging industries, accelerate the development of digital economy, forward-looking layout of future industries, and build a new engine of industrial development. It will solidly push forward the modernization of agriculture, consolidate and improve the production capacity of grain and important agricultural products, and strengthen the support of agricultural science and technology and equipment. Accelerate the development of the Internet of Things and build an efficient and smooth circulation system. Optimize the layout, structure, functions and system integration of infrastructure, and build a modern infrastructure system.**

Thirdly, we are accelerating the mending of short boards in areas related to security and development. **We will accelerate the realization of high-level scientific and technological self-reliance and self-improvement, take national strategic needs as the guide, gather strength for original and leading scientific and technological research, and resolutely win the battle for key core technologies. We will accelerate the re-engineering of**

industrial foundations and the research and development of major technologies and equipment, and enhance the ability to guarantee the supply of strategic resources. We will strengthen the construction of security capacity in key areas, enhance the shock-resistant capacity of the industrial system, and ensure the security of food, energy resources, and important industries.

Chain supply chain security, to protect the bottom line of no systemic risk.

Fourth, to build a new system of advantageous and efficient service industry. Promote the deep integration of modern service industries with advanced manufacturing and modern agriculture, and cultivate new modes and paths for new industries. It will promote the extension of productive services to specialization and the top end of the value chain, accelerate the development of R&D and design, modern logistics, legal services and other services, and speed up the digitization of the service industry. It will promote the upgrading of living service industries to high quality and diversification, accelerate the development of service industries such as health, pension, childcare, culture, tourism, sports and housekeeping, and strengthen the supply of public welfare and basic service industries. Promote the standardization and branding of the service industry.

Relevant departments are requested to strengthen coordination and cooperation, accelerate the formulation and revision of relevant policies on finance and taxation, credit, land, import and export, market regulation and other relevant policies, and further improve the policy system for promoting industrial restructuring. The people's governments of provinces, autonomous regions and municipalities directly under the central government should take into account the actual

development of industries in their respective regions, formulate specific measures to reasonably guide the direction of investment, encourage and support the development of advanced production capacity, restrict and eliminate backward production capacity in accordance with the law, prevent blind investment and low-level repetitive construction, and effectively push forward the optimization and upgrading of the industrial structure.

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Category I Encouragement

Encouragement categories are mainly technologies, equipment and products that play an important role in promoting economic and social development, facilitating key technological innovation and realizing high-level self-reliance and self-improvement; facilitating cross-regional transfer of industries and promoting coordinated regional development; facilitating the economical and intensive use of natural resources and green and low-carbon transformation of industries, and contributing to carbon peak and carbon neutrality; and facilitating the construction of inclusive, basic and bottom-up livelihoods and development of the service industry, and promoting the common prosperity of all. Technology, equipment and products. Projects whose energy efficiency after transformation reaches the benchmark level in the latest version of "Energy Efficiency Benchmarking Levels and Benchmarking Levels in Key Areas of Industry" will be managed with reference to the encouragement category.

Encouragement catalog focuses on basic, strategic, forward-looking key areas, focusing on encouraging the market mechanism is difficult to play an effective role, the need for the government to play a guiding role, the development of the industry has an important role in guiding the matters; the

market mechanism can play an effective role in the national economy and people's livelihood has little impact on the development of the industry has a limited role in the development of the matters no longer advanced level of development is no longer included in the category of incentives. Investment projects in the encouraged category shall be approved and authorized in accordance with the relevant national investment management regulations. or for the record; financial institutions are encouraged to provide credit support in accordance with market-oriented principles. Other preferential policies for encouraged investment projects shall be implemented in accordance with the relevant provisions of the State.

I. Agriculture, forestry and fisheries

1. **Farmland construction and protection engineering: high-standard farmland construction, farmland water conservancy construction, high-efficiency water-saving irrigation, salinization of farmland to improve seepage and drainage engineering construction, dryland saline land renovation and comprehensive utilization, soil erosion prevention and control, soil, fertilizer, water rapid measurement and water-fertilizer integration technology development and application**

2. **Cultivation of arable land quality: conservation tillage, rapid fertilization of newly cultivated land, cultivation of fertile tillage, maintenance management of arable land**

3. **Agricultural water-saving renovation and fine management: upgrading and renovation of irrigation districts that do not meet irrigation water-saving standards, dry-crop water-saving agriculture, development of rain-fed agriculture in areas of water scarcity and overloading, and promotion of rain-fed and water-saving oriented greening models in arid and semi-arid areas**

4. **Germplasm resources conservation and utilization and seed bank construction: construction of agricultural products and crop seed bases, conservation and construction of germplasm resources for crops, forests, grasses, livestock,**

poultry and fisheries, collection, conservation, identification, development and application of animal and plant germplasm resources

5. Agricultural seed technology research and industrialized application of biological breeding: selection, breeding, preservation and development of good varieties of animals and plants (including wild), biological breeding, seed (seedling) production, processing, packaging, testing, identification technology and the development and application of storage and transportation equipment, pig, cattle and sheep embryo (in vivo) and semen factory production

6. Intelligent agriculture and new agricultural technology development: advanced technology development and application of vegetables, fruits and flowers cultivation facilities (including soilless cultivation), high-quality, high-yield, high-efficiency standardized cultivation technology development and application, agricultural biotechnology development and application, digital transformation of agricultural production and intelligent agriculture construction

7. Deep processing of agricultural and forestry products: wood, bamboo, grass (including straw, reed) artificial board and its composite material technology development and application, forest chemical raw material forest base

construction, forest chemical deep

Processing, wood and bamboo structural construction and wood (bamboo) material environmental protection processing, recycling and conservation of utilization, energy
Source technology development and application, bamboo and rattan, flowers, seedlings base construction, product development and deep processing, small fuelwood, sandy shrubs and the three leftover deep processing, product development and energy

8. Storage and transportation of agricultural products: storage and transportation of agricultural, forestry, animal husbandry and fishery products, preservation, processing and comprehensive utilization

9. Grain storage technology and equipment: grain and oil drying and energy-saving equipment, green grain storage biotechnology for farmers, rodent repellent technology, new type of grain storage silo for farmers (colorful steel plate combination silo, steel skeleton rectangular silo, steel mesh drying silo, hot-dipped galvanized steel silo, etc.), safe and green grain storage technology and equipment promotion and application

10. Animal disease prevention and crop pest control: prevention and control of major pests and diseases, invasive alien species and animal diseases, new diagnostic reagents for

animal diseases, vaccines and low-toxicity, low-residue veterinary drugs (including veterinary biological products), new technology development and application, cultivation of wild animals and plants, domestication and breeding bases and the construction of monitoring and early-warning systems for epidemic sources and diseases, development and application of automated monitoring technology for pest density in agricultural crops and forests.

11. Agricultural meteorological services: artificial rain and hail augmentation and other artificial influence weather operation systems, technology, equipment development and application, meteorological satellite engineering (satellite development, production and supporting software systems, ground receiving and processing equipment, satellite remote sensing application technology) and meteorological information services

12. Eco-agriculture: technology development and application of eco-cultivation, eco-animal husbandry and eco-grass farming

13. Green agriculture: demonstration and application of fully biodegradable film and high-strength easy-to-recycle film in farmland, risk management and remediation of contaminated arable land, development of high-quality, safe and environmentally friendly agricultural inputs such as feed,

feed additives, fertilizers, pesticides, veterinary drugs, etc. that meet the requirements of the green, low-carbon and recycling cycle as well as the development of food additives allowed for use in the production of green food, and development of technology for monitoring agricultural products and their production environments.

and application, harmless and value-oriented treatment of organic waste and development of technology for the industrialization of organic fertilizers

Applications

14. Modern Animal Husbandry and Aquatic Ecological Healthy Breeding: Livestock and Poultry Standardized Scale Breeding Technology Development and Application, Agricultural and Livestock Fishery Products Green Production Technology Development and Application, Livestock and Poultry Breeding Waste Treatment and Resource Utilization (Livestock and Poultry Manure Manure Fertilizerization, Energy, Substrate and Matting Utilization, Harmless Treatment of Diseased and Dead Livestock and Poultry), Pelagic Fishing, Artificial Reefs, Fishery and Fishery Harbor Engineering, Green and Environmentally Friendly Functional Fishing Gear Demonstration and Application. New Energy Fishing Vessel, Freshwater and Seawater Healthy Aquaculture and Deep Processing of Products, Freshwater and Seawater Fishery Resource Enhancement and Protection, Sea Ranch

15. Forestry and fruit industry: construction of national reserve forests, construction of characteristic economic forests, construction of carbon sink forests, tree-planting and grass-planting projects, forest and grass seedling projects, construction of wood-oil bases for oil tea, walnut, olive, almond, hazelnut, oil

palm, etc., oriented cultivation and industrialization of biomass energy forests and timber forests, and cultivation of forest resources (fast-growing and productive timber forests, large-diameter timber forests, etc.)

16. Cultivation of Chinese medicinal herbs: ecological cultivation, wild cultivation and wild cultivation of Chinese medicinal herbs, cultivation of rare and endangered plants and animals, natural rubber and eucommia plantation production, development and application of forest plantation and breeding technology.

17. Comprehensive utilization of renewable resources: comprehensive utilization of crop straw (straw collection, storage and transportation system construction, straw fertilizer utilization, straw feed utilization, straw energy utilization, straw base material utilization, straw raw material utilization, etc.), comprehensive utilization of renewable resources in rural areas, development projects
(biogas engineering, biogas engineering, "comprehensive utilization of renewable resources, biogas power generation, biomass clean heating, straw gasification clean energy utilization engineering, utilization of waste mushroom sticks, solar energy utilization)

18. Rural tourism specialty industries: leisure agriculture and rural

tourism boutique project, forest recreation,

Nature education and ecotourism

19. Rural digital transformation: construction of digital villages, ''Village Digital Plus'' project to bring agricultural and forestry products out of villages and into cities

20. Rural waste management: resource-oriented synergistic integrated management of rural domestic sewage, domestic waste, toilet waste, animal manure, agricultural waste and farmland surface pollution

21. Rural water system improvement: construction of ecologically clean small watersheds and prevention of surface source pollution

22. Rural human settlements governance: technology development and application for agricultural and rural environmental protection and governance

23. Protection and restoration of important ecosystems: grassland and forest disaster comprehensive management project, natural grassland vegetation restoration project, high-quality and high-yield forage planting and processing, nature reserve construction and ecological demonstration project, inland watershed Great Lakes Resource Enhancement and Conservation Project, systematic management of mountains, forests, lakes, lakes, grasses, sands, protection and restoration of natural forests, forestation project (including shelterbelt

construction, restoration of degraded forests, and forest restoration, etc.)

24. Soil and water erosion control: comprehensive soil and water erosion control project, desertification, rocky desertification prevention and control and sand control project, production of new materials for sand fixation, water retention and soil modification, cultivation of salt and drought resistant plants.

25. Biodiversity conservation: conservation projects for rare and endangered wildlife and old and valuable trees

26. Agricultural socialization services: single-stage, multi-stage and whole production hosting services provided by agricultural service companies, rural collective economic organizations, grass-roots supply and marketing cooperatives and other types of subjects

II. Water

1. Utilization and optimal allocation of water resources: inter-basin water transfer projects, comprehensive utilization of water resources pivot projects

2. Water conservation and water supply projects: rural water supply projects, construction and renovation of irrigation districts and supporting facilities.

Promotion and application of efficient water transmission and distribution and water-saving irrigation technologies, and upgrading and reconstruction of irrigation and drainage pumping stations.

Contracted water conservation management, water conservation renovation projects, promotion and application of water conservation techniques, technologies and equipment, development and application of intelligent water conservation systems for urban water units, development and utilization of non-conventional water sources

3. Flood control and upgrading projects: reservoirs at risk, sluice gate reinforcement projects, urban flood warning and flood control projects, geosynthetics and new materials development and manufacturing for water conservancy projects, high-performance concrete composite pipeline development and manufacturing for water conservancy projects, flash floods and geologic disasters prevention and control projects (flash floods and geologic disasters prevention and control area monitoring and forecasting early warning system construction and management of flash flood ditches, mudslide ditches and landslides, etc.), river, lake, and sea embankments Construction of river and lake embankment and river management project, construction of flood storage area, dredging project of rivers, lakes and reservoirs, investigation

and repair of embankment hazards, and remediation project of sea portals.

4. Water ecosystem protection and restoration: water ecosystem and groundwater protection and restoration projects, water source protection projects (delineation of water source protection zones, isolation and protection, soil and water conservation, water resource protection, water ecosystem restoration and related technology development and promotion),soil and water conservation projects (silt dam projects, comprehensive soil erosion control of sloping arable land and erosion gully control)

5. Digital construction of water conservancy: development of joint scheduling system for water engineering disaster prevention, technology and application of flood risk map compilation (thematic maps of flood disaster information in the middle and lower reaches of large rivers and key flood control zones, flood control protection zones, and other specific areas), construction of water resources management information system, construction of information management system for soil and water conservation, construction of hydrological station network infrastructure and hydrological and water resources monitoring capacity, construction of digital twinning watersheds, digital twinning Construction of water conservancy

projects

III. Coal

1. Coal trans-regional transportation corridors and collection and transportation systems: pipeline coal transportation, construction of large-scale coal storage and transportation centers and coal trading markets, construction of coal storage facilities and environmental protection renovation

2. Intelligent and safe and efficient mine construction: mine disasters (gas, coal dust, mine water,

Prevention and control of fire, surrounding rock, ground temperature, impact pressure, etc., and development of underground rescue technology and special equipment.
and application, development and application of new miners' self-rescue equipment, coal mine intelligent mining technology and equipment and coal mine robot R & D and application

3. Ecological rehabilitation of mines: management of ground subsidence areas, protection and utilization of mine water resources

4. Development and utilization of coal resources: processing and comprehensive utilization of coal co-associated resources, exploration, development, utilization of coalbed methane and coal mine gas extraction, utilization, development and application of coal mining technology using gangue and other materials to fill coal mining technology in the air-mined areas of mines, under buildings, under railroads and other infrastructures, and under bodies of water, geological and geophysical exploration of coal fields and the integrated construction of coal and electricity.

5. Clean and Efficient Development and Utilization of Coal Technology: Clean and efficient utilization of coal technology, development and application of clean and efficient coal washing and clean coal technology, development and application of coal

mining methods and processes to improve resource recovery rate, implementation of large-scale coal mining projects with safe, efficient, green and intelligent mining.

(Designed production capacity of shaft coal mines ≥ 1.2 million tons / year, open-pit coal mines ≥ 4 million tons / year)

IV. Electricity

1. New power system technology and equipment: ± 800 kV and above DC transmission, 1000 kV and above AC transmission, distributed new energy grid, distributed smart grid (including micro-grid) technology promotion and application, hydroelectricity in the low-temperature water restoration measures engineering, over-fish measures engineering technology development and application, the lack of wind gas power generation technology and development and utilization, waste incineration power generation equipment, biomass cogeneration Cogeneration

2. Electricity infrastructure construction: large and medium-sized hydroelectric power generation and pumped storage power stations, large power stations and large grid substations intensive design and automation technology development and application, cross-area power grid interconnection engineering technology development and application, power grid renovation and construction, incremental distribution grid

construction

3. Digital upgrading of power systems: relay protection technology, grid operation safety monitoring information Technology Development and Application, Intelligent Energy System, Power Intelligent Operation and Maintenance and Intelligent Site Technology, Key Power Emergency Equipment Technology, Power System Network Security Protection Technology

4. Power system regulation: natural gas peaking power generation projects in areas where gas sources are implemented, integration of power sources, grids, loads and storage, and construction of multi-energy complementary power sources.

5. Electricity consumption and storage: popularization and application of various new energy storage technologies such as electrochemical, compressed air, flywheel, hydrogen storage (ammonia), thermal storage, etc., electric vehicle charging facilities, high-efficiency electricity substitution technologies and equipments, construction and application of charging and switching facilities for ships and shore power facilities for ships in ports and harbors, and cross-seasonal energy storage technologies.

6. Low-carbon and energy-saving transformation of thermal power generation: carbon dioxide capture, utilization and

storage (CCUS) technology for coal-fired generating units, ultra-low emission, heavy metal removal and other multi-pollutant synergistic management technologies, development and application of pollution reduction and carbon synergistic technology, development and application of energy-saving, loss-reducing and environmental protection technologies for transmission and distribution of electricity, energy-saving and carbon-reducing transformation of thermal power generating units, transformation of heat supply, and flexibility transformation.

7.Coal power technology and equipment: stand-alone 60 million kilowatts and above, the use of ultra-supercritical generating units, to ensure the power security of the supportive coal power projects and promote the new energy consumption of regulating coal power projects; stand-alone 300,000 kilowatts and above, ultra (ultra) critical cogeneration units, circulating fluidized bed, pressurized fluidized bed, the overall coal gasification combined cycle power generation and other clean coal power generation projects, as well as the use of gangue, coal, coal slurry and other low calorific value coal power generation projects; back-pressure (pumping back) type cogeneration, heat and cold multi-cogeneration; coal-fired coupled biomass power generation Low calorific value coal

power generation projects; back-pressure (pumped-back) type cogeneration, heat and power cooling multiple cogeneration; coal-fired coupled biomass power generation

V. New energy

1. **Wind power technology and application:** 15MW **class and above offshore wind turbine technology development**

Development and equipment manufacturing, floating offshore wind power technology, highland and mountainous wind farm construction and equipment
Manufacturing, offshore wind farm construction and equipment and submarine cable manufacturing, rare earth permanent magnet materials in wind turbine application

2. Renewable energy utilization technology and application: solar thermal power generation collector system, solar photovoltaic power generation system integration technology development and application, inverter control system development and manufacturing, electrolysis of water to produce hydrogen and carbon dioxide catalytic synthesis of green methanol, solar energy building integrated component design and manufacturing, high efficiency solar water heater and hot water project, solar energy in the high temperature use of technology development and equipment manufacturing, ocean energy, geothermal energy use Technology development and equipment manufacturing, development and application of renewable energy heating technology.

3. Biomass power generation technology and application: biomass cellulosic ethanol, biofuel (diesel, gasoline, aviation kerosene) and other non-food biomass fuel production technology development and application, direct combustion of biomass, gasification power generation and cogeneration

technology development and equipment manufacturing, agricultural and forestry biomass resources collection, transportation, storage technology development and equipment manufacturing, agricultural and forestry biomass molding fuel processing equipment, gasification equipment, boilers and furnaces Manufacture of large-scale biogas and biogas production equipment based on crop straw, animal manure, food waste, industrial organic waste, organic sewage sludge and other types of urban and rural organic waste as raw materials, biogas generating sets, biogas purification equipment, biogas pipeline gas supply, biogas purification, compression and liquefaction of biogas preparation and biogas equipment, canning equipment, straw pyrolysis and gasification-related equipment manufacturing

4. Hydrogen energy technology and application: efficient and economic hydrogen production, hydrogen transportation and high-density hydrogen storage technology development and application and equipment manufacturing, hydrogen refueling station and automotive clean alternative fuel refueling station, mobile new energy technology development and application, the new generation of hydrogen fuel cell technology research and development and application, renewable energy hydrogen production, liquid, solid and gaseous hydrogen storage,

pipeline trailer transportation of hydrogen, pipeline transmission of hydrogen, hydrogen refueling station, hydrogen electric coupling

Promoting the application of hydrogen energy technologies such as synergies

5. Complementary power generation technologies and applications: hydrogen, wind power and photovoltaic power generation complementary system technology development and application, traditional energy and new energy power generation complementary technology development and application

VI. Nuclear energy

1. Advanced nuclear energy technologies and applications: construction and technology development of advanced nuclear reactors and multi-purpose modular small reactors, manufacturing of high-performance nuclear fuel components, MOX components and metal components, development of advanced uranium isotope separation technologies and equipment manufacturing, and development of thorium reactor application technologies.

2. Comprehensive utilization of nuclear energy: isotope, gas pedal and irradiation application technology development, comprehensive utilization of nuclear energy (heating, steam supply, seawater desalination, etc.)

3. Nuclear energy development: uranium geological exploration and uranium mining and metallurgy, uranium

refining, uranium conversion nuclear power plant construction

4. Nuclear and radiation safety technologies and applications: spent fuel reprocessing, radiation protection technology development and monitoring equipment manufacturing, nuclear security key system development and equipment manufacturing, nuclear facility decommissioning and radioactive waste management, nuclear power plant life extension and decommissioning technologies and equipment, nuclear power plant emergency rescue technologies and equipment

VII. Oil and gas

1. Oil and gas exploitation: conventional oil and gas exploration and exploitation, shale gas, shale oil, tight oil (gas), oil sands, gas hydrates and other unconventional resources exploration and development

2. Oil and gas pipeline network construction: crude oil, natural gas, liquefied natural gas, refined oil products storage and pipeline transportation facilities, network and liquefied natural gas refueling facilities construction, technology and equipment development and application

3. Oil and Gas Exploration and Development Technology and Application: Comprehensive Utilization of Oil and Gas Associated Resources, Oil and Gas Field Improvement

High recovery technology, production safety and security technology, ecological environment restoration and pollution prevention engineering technology

Technology development and utilization, volatile or venting oil, natural gas automatic monitoring, recycling technology, equipment development and application, natural gas distributed energy technology development and application, liquefied natural gas technology, equipment development and application, natural gas and new energy fusion development projects and technology development and application, liquefied natural gas device non-condensable gas extraction of high-purity helium technology, complete sets of equipment development and application

VIII. Steel

1. Ferrous metal mine mining, beneficiation and the comprehensive development and utilization of co-associated minerals, ferrous metal mine tailings filling mining process, technology and equipment

2. Belt roasting and other high-efficiency pellet production and high proportion of pellet smelting in blast furnaces, gas-based shaft furnace direct reduction of low-carbon ironmaking (excluding coal gas), blast furnace hydrogen-rich blowing smelting, metallurgical slag waste heat recovery and comprehensive utilization, near-end casting and rolling

integration, high-efficiency combustion in heating furnaces (including oxyfuel combustion, oxygen-enriched combustion technology, low-nitrogen combustion technology), hot-rolling of acid-free surface treatment of iron oxide skin

3. Treatment of social waste (excluding hazardous waste) using steel production facilities

4. Ultra-low emission technologies for the iron and steel, coking and ferroalloy industries, as well as by-product resourceization and reutilization

5. Comprehensive utilization of metallurgical solid waste, recycling of metallurgical waste liquid (including waste water, waste acid, waste oil, etc.)

6. Integration of steel scrap recycling, dismantling, degreasing, processing, sorting and distribution

IX. Non-ferrous metals

1 Mining: exploration and development of replacement resources for existing non-ferrous metal mines, mining of deep, difficult to mine and low-grade deposits of scarce resources, and mining process, technology and equipment for tailings filling of mines.

2 Smelting: high efficiency, low consumption, low pollution, new smelting technology development, copper smelting PS

Environmental upgrading of converters

3 Comprehensive utilization: efficient, energy-saving, low-pollution, large-scale recycling and comprehensive utilization of renewable resources. (1) Recycling of miscellaneous non-ferrous metals. (2) Comprehensive utilization of valuable elements. (3) Comprehensive utilization of red mud and other smelting slag. (4) High-alumina fly ash extraction of alumina. (5) Tungsten smelting slag reduction, resource utilization and harmless disposal. (6) Zinc wet smelting leaching slag resource utilization and harmless disposal. (7) Aluminum ash slag resource utilization. (8) Renewable non-ferrous metal new materials

4 New materials: (1) Information. Semiconductors, chips with electronic-grade polysilicon (including zone melting polysilicon materials), silicon single crystal (diameter 200mm or more) and silicon carbide single crystal, silicon-based electronic gases, indium phosphide single crystal, polycrystalline germanium, germanium monocrystalline, etc., the diameter of 125mm or more straight pull or diameter of 50mm or more horizontally grown compound semiconductor materials, aluminum-copper-silicon, tungsten-molybdenum-rare-earth, such as large-size high-purity targets, ultra-high-purity rare

metals and target materials, Ultra-large-scale integrated circuits, copper-nickel-silicon and copper-chromium-zirconium lead frame materials, electronic solders. (2) New energy. Silicon energy (crystalline silicon photovoltaic) materials, including supporting high-purity polysilicon (including polysilicon rods and granular silicon), high-efficiency monocrystalline silicon rods, high-efficiency monocrystalline silicon wafers; nuclear-grade zirconium sponge and zirconium, high-capacity, long-life lithium-ion batteries with ternary and multi-polymer, lithium iron phosphate and other cathode materials, precursor materials. (3) Transportation, high-end manufacturing and other fields. Aerospace, ocean engineering, CNC machine tools, rail transportation, nuclear engineering, new energy, advanced medical equipment, environmental protection and energy-saving equipment, and other high-end manufacturing light alloy materials, copper-nickel metal materials, rare rare earth metal materials, precious metal materials, composite metal materials, metal ceramic materials, additives materials, biomedical materials, catalytic materials, 3D printing materials, high-performance cemented carbide materials and tools. (4) New energy, semiconductor lighting, electronics

Continuous metal coils, vacuum coating materials, and high-performance foils for industrial applications.

X. Gold

1. Prospecting and mining of deep gold (1000 meters and below), intelligent mining, harmless disposal of cyanide tailings and cyanide wastewater, low or no cyanide gold extraction

2. Comprehensive utilization of gold tailings (slag) and waste rock (recovery of valuable elements, for backfilling, acid production, building materials, etc.)

3. Efficient comprehensive utilization of valuable elements in gold smelting [metallurgical recovery of difficult-to-process ore].

≥75%; metallurgical recovery rate of low-grade ore dressing ≥65% (excluding heap leaching); when gold and other minerals are co-generated, the comprehensive utilization rate is ≥70%; when gold and other minerals are accompanied, the comprehensive utilization rate is

≥50%]

XI. Petrochemicals and Chemicals

1. Mineral resources development: exploration, development and comprehensive utilization of chemical mineral resources such as sulfur, potassium, boron, lithium,

bromine and other shortage of chemical mineral resources, phosphorus ore and fluorite ore, low-grade ore, processing tailings, and the comprehensive utilization of associated resources

2. Inorganic salts: waste hydrochloric acid system chlorine gas and other comprehensive utilization of technology, chromium salt clean production of new technology development and application, closed high-pressure water quenching slag and no secondary pollution of phosphorus sludge treatment of yellow phosphorus production process, nitric acid and hemihydrate - dihydrate phosphoric acid production process, comprehensive utilization of phosphogypsum technology development and application of high-quality potash and the production of new types of fertilizers

3. Pesticides: efficient, safe, environmentally friendly pesticides, new varieties of new agents, special intermediates, the development and production of additives, directed synthesis of chiral and three-dimensional structure of pesticide production, bio-pesticides, new products, the development and production of new technologies

4. Coatings: environmentally friendly, resource-efficient coatings with low VOCs for Dafei

High-performance coatings and supporting materials for key areas such as aircraft, high-speed rail, large ships, new energy, electronics, etc.

Resin development and production

5. Resins: electrically heated steam cracking technology for the production of ethylene and other products, high-performance barrier resins such as ethylene-vinyl alcohol copolymer resins, polyisobutylene, ethylene-octene copolymers, metallocene polyethylene and other specialty polyolefins and high-carbon alpha olefins and other key raw materials development and production of aryl ketone polymers, polyarylene ether ether nitrile, liquid crystal polymers to meet the application of the 5G, electronic-grade polyimide and other specialty engineering plastics production As well as blend modification, alloying technology development and application, the development and production of degradable polymers, long carbon chain nylon, high temperature nylon and other new polyamide development and production

6. Rubber: 10,000 tons of liquid butyl rubber, functional group modified solubilized styrene butadiene rubber, hydrogenated nitrile butadiene rubber, high vinyl polybutadiene rubber (HVBR), integrated rubber (SIBR), butyl rubber, isoprene latex development and production, the development and application of chemical modification technology of synthetic

rubber, wet (liquid phase) and low-temperature continuous rubber mixing technology, thermoplastic polyester elastomer
(TPEE), hydrogenated styrene-isoprene thermoplastic elastomer (SEPS) and other thermoplastic elastomer materials development and production, new natural rubber development and application

7. New materials: development and production of electronic chemicals and key raw materials such as low VOCs adhesives, environmentally friendly water treatment agents, new efficient and environmentally friendly catalysts and auxiliaries, functional membrane materials, ultra-clean and high-purity reagents, photoresists, electronic gases, new display and advanced packaging materials, and the development and application of micro-channel reaction technology and equipment.

8. Silicon materials: development and production of new organosilicon monomers such as phenylchlorosilane and vinylchlorosilane, phenylsilicone rubber, phenylsilicone resin and hybrid materials

9. Fluorine materials: perfluoroolefin and other special fluorine-containing monomers, polyperfluoroethylene propylene, polyvinylidene fluoride

High-quality fluorine resins such as alkene, polytrifluoroethylene, ethylene-tetrafluoroethylene copolymer, and fluorine ether rubber, Fluorosilicone rubber, tetrapropyl fluoroelastomer, high fluorine content 246 fluoroelastomer and other high-performance fluoroelastomers, fluorine-containing lubricating greases, zero ozone-depletion-potential (ODP) and low-global-warming-potential (GWP) alternatives to ozone-depleting substances (ODSs), alternatives to and substitutes for perfluorooctane sulfonyl compounds (PFOS), perfluorooctanoic acid (PFOA), its salts, and related compounds Application

10. Tires: the use of green technology of high-performance radial tires (55 series or less, and rolling resistance coefficient ≤ 9.0N / kN, wet road relative grip coefficient ≥ 1.25), aviation tires, giant engineering radial tires (more than 49 inches), agricultural radial tires, and supporting special materials and equipment production

11. Biomaterials: development and production of polymer materials, reagents, chips, interferons, sensors, cellulose biochemical products based on non-food biomass as raw materials

12. Low-carbon environmental protection technologies: development and application of new technologies for the efficient utilization of carbon dioxide (including carbon dioxide-

methane reforming, carbon dioxide hydrogenation to make chemicals, carbon dioxide to make polycarbonate and biodegradable plastics and other polymer materials, etc.), renewable energy to make hydrogen, by-products such as by-products of hydrogen instead of coal to make hydrogen and other clean utilization technologies, by-products such as carbon tetrachloride, silicon tetrachloride, methyltrichlorosilane, trichloro-trimethyl-silane, and trifluoro-methane. Comprehensive utilization

XII. Building materials

1. Comprehensive development and utilization of co-associated minerals of building materials and other mineral resources, replacement of cement raw materials and co-disposal technology; R&D and application of key technology of green hydrogen calcined cement clinker; application of technology of calcined cement clinker by using clean energy and modification of production line; preparation technology of new-type carbon-consolidated cementitious materials and products; technology of kiln flue gas carbon dioxide capture, purification, utilization and storage; technology of ultra-low emission of the cement industry cement production and preparation of oxyfuel combustion and oxygen-enriched combustion;

R&D and application of process technology and products for the production of special cement in new dry process cement kilns; Suspension boiling

R&D and application of Teng calcined clinker process technology; R&D and application demonstration of new low-carbon gel materials; development and application of low-calcium cementitious materials; energy-saving transformation of grinding system (cement vertical mill, final grinding of raw material roller press, etc.); development and application of process technology and equipment for zero purchased power, zero fossil energy consumption, zero primary resource consumption, zero carbon emission and zero waste emission in the production process of enterprises in various industries of building materials; development and application of intelligent construction and upgrading of production process in various industries of building materials (digital mine, intelligent plant, intelligent logistics); development and application of product quality traceability system for engineering or equipment for building materials. Intelligent construction and upgrading of the whole production process in various industries (digital mine, intelligent factory, intelligent logistics); development and application of product quality traceability system for building materials used in engineering or equipment.

2. Scale not more than 150 tons / day (including) of

electronic information industry with ultra-thin substrate glass, touch glass, high aluminum cover glass, carrier glass, light guide glass production lines, technology and equipment and products; aerospace and aviation and other fields required for the development and production of special glass manufacturing technology, glass molding and surface functionalization of the development of technology and equipment; high borosilicate glass, microcrystalline glass; transportation and solar energy equipment with Aluminosilicate glass; photoelectric detection technology with ultraviolet glass, infrared glass and special dispersion glass; large size (1 square meters and above) chalcogenide, copper indium gallium selenide and cadmium telluride thin film photovoltaic cell glass, TCO coated glass; energy saving, safety, display, intelligent control and other functional glass products and technology and equipment; ultra-thin flexible glass forming technology and equipment; intelligent continuous vacuum glass production line; large-scale glass melting kiln high-power glass-electricity; glass forming and surface functionalization technology and equipment development. High-power glass-electricity" composite melting technology for glass melting kiln, oxyfuel/oxygen-enriched combustion technology for glass melting kiln; complete set of green hydrogen energy technology

and equipment for glass melting kiln; one kiln and multi-line flat glass production technology and equipment; low thermal conductivity of fused zirconium corundum for glass melting kiln, long-life (12 years and above) chromium-free alkaline high-grade refractory materials; curing glass of high-radioactive liquid waste of nuclear power reactor Development and application of large-size, multi-specification lithium-aluminum-silica glass development and production

3. Suitable for assembly building, folding building, sponge city, underground pipe corridor, ecological

Repaired building materials and production equipment; low-cost 🔊 phase-change energy storage wall materials and wall components; photovoltaic building integration parts and components; full electrofusion method of preparation of rock (mineral) wool; B1 grade flexible foam rubber insulation products; aerogel materials; Class A flame retardant insulation products, composite vacuum insulation materials, polyester fiber sound-absorbing panels, heat preservation, decorative and other functions. Integrated composite panels; long-life waterproof, anticorrosive and flame retardant composite materials; high-performance, highly durable and highly reliable modified asphalt waterproofing roll-roofing, high molecular waterproofing roll-roofing, waterborne or high solid content waterproofing coatings, and other new building waterproofing materials; autoclaved aerated concrete panels, straw biomass wall panels (bricks), and biomass building materials; functional and integrated decorative and decorative materials and products, ultra-thin ceramic panels, green aldehyde-free man-made panels, road tiles (panels), permeable building materials, and other materials and products. Road bricks (boards), permeable bricks (boards), decorative bricks (blocks), antique

bricks and tiles, plumbing and slope protection eco-bricks (blocks) and other products and green and low-carbon building materials product technology development and production applications

4. Ceramic centralized powder making, ceramic park clean coal gas production technology development and centralized application;

Application of building ceramics dry powder technology and equipment; electric firing roller kiln technology and equipment development and application; single block area greater than 1.62 square meters (including) of ceramic plate production line and process equipment technology development and application; the use of tailings, wastes and other lightweight foam ceramic wall panels and thermal insulation panels produced by the production of production lines and technology development and application of technology and equipment; energy-saving ceramic drying kiln based on the use of hydrogen and firing kiln equipment; water-saving domestic water appliances and water-saving control equipment, intelligent toilets, sanitary integrated systems, to meet the assembly requirements of the overall sanitary ware Equipment; toilets and squatting toilets with water consumption of 6 liters or less for one flush, water-saving domestic water appliances and water-saving control equipment,

intelligent toilets, integrated sanitary ware systems, and overall sanitary ware development and production to meet assembly requirements

5. 80,000 tons/year and above alkali-free glass fiber roving (monofilament diameter>9 micron) pool kiln drawing technology, 50,000 tons/year and above alkali-free glass fiber yarn (monofilament diameter≤9 micron) pool kiln

Drawing technology, ultra-fine (monofilament diameter ≤ 5 microns), high strength, high modulus, alkali resistance, low dielectric,

Development and production of high-performance and special glass fibers such as low-expansion, high-siloxane, degradable, shaped cross-section, 🎧 body color, organic fiber composite, etc., and production of glass fiber mats, cloths and other products; basalt fiber pool kiln drawing technology; silicon carbide fibers; fiber-reinforced composites used in the fields of aerospace, environmental protection, offshore engineering, electrical and electronic, transportation, energy, construction, Internet of Things, agriculture and other fields. Composite products and their efficient molding preparation process and equipment; continuous winding molding composite pipe; biodegradable composite manufacturing technology and equipment; resin-based composite waste recycling technology and equipment; large passenger aircraft high-performance sub-bearing composite structural components key technologies, deep-sea composite composite materials pressure-resistant compartment development and application of aerospace engine blades with a large size and complex structure of three-dimensional woven composite materials Preparation and application of prefabricated body

6. Carbon ceramic composite friction materials and

automatic transmission with wet friction materials and other new product development and production, synthetic mineral fibers, aramid fibers, non-metallic mineral powders and other environmentally friendly as a reinforcing material sealing materials, new product development and production, high-performance graphite sealing materials development and production; high-energy cosmic radiation detection (HERD) with high-coupling efficiency of low crosstalk fiber optic image transmission key technology development and Application

7. Key non-metallic mines efficient mining and beneficiation technology; graphene materials, hydrogen fuel cell graphite bipolar plate, high-performance natural graphite anode materials, nuclear-grade graphite production and application development; non-metallic mineral polymers can be ceramic flame retardant materials; environmental governance, energy saving and energy storage, national defense and military industry, electronic information, biomedicine, heat insulation, flame retardant fire prevention, agriculture, rural areas, etc., and the production of mineral functional material production and its Technology and equipment development and application; mineral ultrafine materials processing on-line testing and control of intelligent production lines; new targeted drug carrier mineral functional materials preparation

technology development and demonstration, non-metallic minerals Au-convex rod alternative antibiotic product development and industrialization should be

expense or outlay

8. R&D and production of inorganic artificial stone products and technical equipment; mechanized stone mining and automated stone processing technology; ore crushed materials and plate trimmings, stone powder comprehensive utilization of production and process equipment development; stone mining, processing equipment, permanent magnet motor drive control technology

9. Not less than 200,000 pieces / day(including)new sintered brick production line coordinated disposal of bulk waste technology and product development and application; industrial by-products of phosphogypsum high-efficiency purification and quality enhancement and high-value comprehensive utilization of technology; the use of mine tailings, construction wastes, industrial wastes, municipal sludge, rivers, lakes (canals) sea silt and other bulk waste harmless production and preparation of sand and gravel aggregates, structural concrete with high-strength ceramic granules, Functional ceramic granules, wall materials and other building materials and their process technology and equipment development

10. High-quality artificial crystal materials, multi-functional transparent parts, special optical glass materials, products and

devices, functional artificial diamond materials production equipment technology development; high purity quartz raw materials
(purity greater than or equal to 99.999%), high-end quartz crucibles for semiconductors, quartz ceramic devices for semiconductors (purity greater than or equal to 99.9%), quartz glass synthesized by chemical vapor phase, etc. Manufacturing technology development and production; low-temperature co-fired ceramics (LTCC), high-temperature co-fired ceramics (HTCC), and the supporting slurry and related materials; UV-grade calcium fluoride crystalline materials; high purity nano-grade spherical silica micropowder, Hollow spherical silicon micropowder production, application and its technology and equipment development and application; fine ceramic powders, ceramic precursors suitable for additive manufacturing and ceramic short-cut fibers, silicon carbide fibers, ceramic whiskers; ceramic balls, ceramic valves, ceramic screws and other precision molded ceramic parts; ceramic membranes, cellular ceramics, foam ceramics; ceramic substrates, ceramic insulating parts, electronic ceramics and components; continuous ceramic fibers and fiber reinforced ceramic matrix composites; continuous ceramic fiber and fiber-reinforced ceramic matrix composites; medical fine ceramic materials and components; ceramic ink

materials; high thermal conductivity nano and large single crystal ceramic materials; lithium batteries

Nano-ceramic powder materials for diaphragms, ceramic materials for precision grinding and polishing, and other industrial ceramics technologies.

Technology development and production applications; information, new energy, national defense, aerospace and other fields with high-performance ceramics manufacturing technology development and production; continuous nitride fiber engineering preparation technology development and demonstration, for a new generation of photolithography with silicon carbide ceramics water-cooled vacuum suction cups (submerged) preparation of the key technology research and development and application of high-strength high thermal conductivity of silicon nitride ceramic spring preparation and performance research, high-definition ultrasound medical high-temperature relaxation ferroelectric material (PIMNT) development and industrialization. Curie temperature relaxation ferroelectric single crystal material (PIMNT) development and industrialization

11. Green and intelligent ready-mixed concrete production lines with the ability to absorb industrial and municipal solid waste; super-large, high-quality mechanism sand and gravel aggregate production technology and equipment with an annual output of 10 million tons and above; high-quality mechanism sand and gravel aggregate production technology

and equipment with no sewage, silt discharge, and near-zero dust discharge, such as short-flow, low-energy soft rock processing, high-efficiency hard rock processing, and sand-making building stations; and long-life wear-resistant materials for sand and gravel production; Concrete for marine engineering, lightweight high-strength concrete, ultra-high performance concrete (UHPC), the development and application of concrete self-repair materials

XIII. Pharmaceuticals

1. Pharmaceutical key core technology development and application: membrane separation, new crystallization, chiral synthesis, enzyme synthesis, continuous reaction and other API advanced manufacturing and green low-carbon technology, new drug formulation technology, new biological drug delivery and delivery technology, large-scale high-efficiency cell culture and purification, medicinal peptide and nucleic acid synthesis technology, antibody coupling, carrier virus preparation and other technologies, the use of modern biotechnology to transform the traditional Production process

2. Development and production of new drugs: innovative drugs with independent intellectual property rights, children's drugs, drugs in short supply, drugs for rare diseases, vaccines for the prevention and treatment of major diseases, as well as

new antibody drugs, gene therapy and cellular therapy drugs, recombinant protein drugs, nucleic acid drugs, and biological enzyme preparations

3. Biomedical supporting industries: chemical composition-qualified cell culture media, new purification fillers and filtration membrane materials, high-end pharmaceutical excipients, the development and production of new adjuvants for vaccines, the development and production of new pharmaceutical packaging materials and technologies such as special functional materials, the development and production of new packaging systems and drug delivery devices such as ready-to-mix and intelligent packaging; high-end, intelligent pharmaceutical equipment, new formulation production equipment, large-scale bioreactors and ancillary systems, high-efficiency separation and purification of proteins and equipment, and continuous production of pharmaceuticals. equipment; standardized breeding of laboratory animals and animal experiment services

4. Innovative development of high-end medical devices: new gene, protein and cell diagnostic equipment, new medical diagnostic equipment and reagents, high-performance medical imaging equipment, extracorporeal membrane lung oxygenator and other life support equipment for acute and critical illnesses, artificial intelligence-assisted medical equipment, mobile and remote diagnostic and treatment equipment, high-end surgical equipment such as laparoscopic surgical robots, high-end rehabilitation

aids, pacemakers, fully degradable vascular scaffolds and other high-end implantable and interventional products. Interventional products, biomedical materials, additive manufacturing technology development and application

5. Inheritance and Innovation of Chinese Medicine: Inheritance and Innovation of Chinese Medicine Tablet Preparation Technology, Development and Production of Ancient Classical Formulas, Innovative and Improved New Medicines of Chinese Medicine, Ethnic Medicines, Development and Application of New Technologies and Equipment for High-Efficiency Extraction of Traditional Chinese Medicines, Whole-Process Quality Control and Information Tracing, etc.

XIV. Machinery

1. Scientific and Industrial Instruments: Instruments and meters for radiation, toxic, flammable, explosive, heavy metal, dioxin, etc., water quality, flue gas, air testing instruments, high-end mass spectrometers, chromatographs, spectrometers, X-ray instruments, nuclear magnetic resonance spectrometers, automated biochemical testing systems, automatic sampling systems and sample processing systems for pharmaceuticals, food, biochemical testing, scientific research, intelligent manufacturing, testing and certification. Multi-dimensional geometrical measuring instruments with measurement accuracy

above micron, automated, intelligent and multi-functional material mechanical property testing instruments, industrial CT,

NDT equipment such as 3D ultrasonic flaw detectors for nano-observation measurements with higher resolution than 3.0 nm electron microscope, high-end on-line inspection equipment for various industrial fields

2. Disaster monitoring equipment: digital, networked, intelligent mine disaster monitoring instrumentation and safety alarm systems, hydrological data acquisition instruments, seismic and geological disaster monitoring instrumentation, oceanographic observation, detection and monitoring instrumentation and systems, measurement and calibration equipment for the above instruments

3. Large-scale power generation equipment and its key components: mixed-flow hydroelectric equipment (turbine, generator, governor, excitation and other ancillary equipment) with a stand-alone capacity of 800,000 kilowatts and above, pumped storage, through-flow and impulse hydroelectric equipment with a stand-alone capacity of 350,000 kilowatts and above, 50,000 kilowatts and above, and 10,000 kilowatts and above, and their key ancillary auxiliary equipment; super-critical and ultra-super-critical thermal power generation units with a capacity of 600,000 kilowatts and above Generator protection circuit breaker, pumps, valves and other key auxiliary equipment and components, gas turbine high-temperature

components (300MW or more heavy-duty combustion engine with rotor forgings, large high-temperature alloy wheel, cylinder, blade, etc.) and control systems, 600,000 kilowatts and above power generation equipment with rotor (forging, welding), rotor, blades, pumps, valves, spindle ring and other key castings, forgings; third-generation, fourth-generation nuclear power equipment and key components, multi-purpose modular small-scale power generation equipment and its key auxiliary components. Key components, multi-purpose modular small reactor equipment and key components; ocean energy (tidal, tidal, wave, temperature difference, salt difference, etc.) power generation equipment

4. Casting equipment: high compactness clay sand casting equipment, high-efficiency self-hardening sand casting into the

Sets of equipment, disappearing mold/V method/solid casting process and equipment, shell casting, precision core molding, silicone melt mold precision casting process and equipment, sand 3D printing/cutting rapid prototyping process and equipment, light alloy high-pressure/low-pressure/extrusion/differential pressure/semi-solid casting process and equipment, automated intelligent core making equipment, external hot air water-cooled long furnace age large tonnage (more than 10 tons/hour)

cupola, high temperature alloy vacuum melting directional solidification equipment, titanium alloy vacuum induction melting equipment, metal liquid Vacuum melting and directional solidification equipment for high-temperature alloys, vacuum induction melting equipment for titanium alloys, metal liquid

Automated transfer and dosing equipment, liquid metal (cast iron, cast aluminum) short process casting process
and equipment, casting efficient automated cleaning equipment, casting special robot; casting resin sand, clay sand and other recycling technology and equipment, environmental protection resin, inorganic binder molding and core technology and equipment

5. Large-scale petrochemical equipment: ethylene cracking three machines, 400,000 tons (polypropylene, etc.) extrusion granulation unit, 500,000 tons of syngas, ammonia, oxygen compressors and other key equipment

6. Heat treatment equipment: digitalized mobile heat preservation cover type controlled atmosphere pit-type furnace production line, large (furnace capacity of 1 ton or more) multi-functional controlled atmosphere heat treatment equipment, intelligent chemical heat treatment
Equipment, multi-functional vacuum heat treatment equipment and vacuum heat treatment equipment with a charge of 500 kg or more, all-fiber lined heat treatment furnace

7. Biogas generating equipment: complete sets of equipment for biogas production with high solid concentration (complete sets of semi-dry anaerobic fermentation equipment, complete sets of dry anaerobic fermentation equipment),

integrated equipment for biogas fermentation and gas storage (Storage volume 300-2000 cubic meters series products), biogas sludge pumping equipment (suction volume 1) (cubic meters/minute or more)

8. Construction machinery: diesel-driven large-scale machinery electrification components, power shift transmission, wet drive axles, slewing bearings, torque converter, hydraulic motors, pumps, control valves and cylinders with pressure of 25 MPa or more, electro-hydraulic control system for power machinery, high-precision digital hydraulic parts and systems for large-scale power machinery, high-frequency intelligent pneumatic components and systems; 12,000 meters and above, deep-well drilling rigs, polar rigs, high displacement deep-well desert rigs, drilling rigs for swampy hard-to-reach areas, marine drilling rigs, and complete sets of equipment such as skidding dollies, patio drilling rigs, etc. High-displacement deep-well desert drilling rigs, drilling rigs for swampy and inaccessible areas, marine drilling rigs, as well as skidding carts, patio drilling rigs and other complete sets of equipment

9. Environmental protection equipment: centralized treatment equipment for hazardous waste (including medical waste); water purification equipment with nanofiltration and reverse

osmosis membranes; combined integrated water purifiers (with a capacity of 100 to 2,500 tons/hour)

Seawater desalination equipment; complete sets of ultra-low emission technologies for desulfurization, denitrification and dust removal of coal-fired generating units
equipment; iron and steel furnace flue gas fine particulate matter pre-charge electric baghouse dust removal technology and equipment; coke oven flue gas SDA desulphurization + SCR denitrification technology and equipment; electrolytic aluminum flue gas alumina defluoridation dust removal technology and equipment; iron and steel sintering flue gas dry desulphurization dust removal equipment; baghouse dust collector; electric baghouse composite dust removal technology and equipment (particulate matter emission concentration of <10mg/m3); catalytic cracking regeneration flue gas dust removal desulphurization Technology and equipment; VOCs adsorption and recovery device; VOCs incineration device; furnace kiln, material yard of the disorganized emission control technology and equipment; composite catering industry fume purification equipment; safe thermal storage thermal oxidizer. Urban sewage treatment equipment (phosphorus removal and denitrification); sludge hydrolysis anaerobic digestion technology and equipment; sludge drying and incineration technology and equipment (slag reduction of more than 90%); submerged membrane bioreactor (COD removal rate of more than 90%); ceramic vacuum filters (vacuum: 0.09~0.098 MPa, pore space:

0.2~20 microns); super-biological coupling and biofilm method to deal with high concentration of organic wastewater technology and equipment; oil sewage treatment equipment and equipment; biological membrane method for the treatment of organic wastewater. Wastewater technology and equipment; oil sewage, chemical wash water disposal technology and equipment; water depth fluoride complete sets of equipment; domestic garbage clean incineration technology and equipment (combustion of coal less than 20%); food waste centralized harmless treatment technology and equipment (utilization rate of more than 95%); landfill leachate and odor treatment technology and equipment (processing capacity of more than 50 tons / day); automated sorting of domestic garbage technology and equipment (sorting rate of more than 80%); building waste and equipment (vacuum: 0.09~0.098 Mpa, pore space: 0~20 microns) (sorting rate of more than 80%); construction waste treatment and reuse technology and equipment (capacity of more than 100 tons/hour); industrial hazardous waste disposal and treatment technology and equipment (treatment rate of more than 90%); oilfield drilling waste treatment and disposal technology and complete sets of equipment (capacity reduction of more than 50%, treatment rate of more than 70%); medical waste incineration, high-temperature cooking and

environmentally friendly treatment technology and equipment (capacity of more than 150 kg/hour, combustion and disposal technology) 150 kg / hour or more, combustion efficiency of 70% or more) and medical waste microwave, chemical disinfection treatment technology and equipment; livestock and poultry manure centralized treatment technology and equipment (capacity of 20 tons / day or more); oil-containing sludge pyrolysis treatment equipment (equipment thermal)

Desorption rate 99.9% or more); electron beam antibiotic bacterial residue harmless treatment equipment (single processing)

(capacity 100 tons/day) intelligent aerobic fermentation integration equipment (fermentation product moisture content below 40%); crushing and screening machine, odor suppression equipment, direct thermal desorption equipment, indirect thermal desorption equipment, soil drenching equipment, soil conditioner, direct push drilling and sampling equipment, sequential batch oil sludge pyrolysis skid complete sets of equipment

10. Key bearings: bearings for locomotives with a speed of 200km/h or more, axle weight of 23 tons or more. Bearings for large-axle heavy-duty railroad wagons, high-power electric/internal combustion locomotive bearings, service life 240

More than 10,000 kilometers of new urban rail transit bearings, service life of more than 250,000 kilometers of lightweight, low friction torque automotive bearings and units, high-temperature (more than 400 ℃) automotive turbine, mechanical supercharger bearings, three generations of cars wheel hub bearing units, P4, P2 level CNC machine tool bearings, 2 megawatts (MW) and more than all types of precision bearings used in wind turbines, the service life of more than 5,000 hours of shield Machine and other large construction machinery

bearings, P5 grade, P4 grade high-speed precision metallurgical mill bearings, aircraft engine bearings and other aviation bearings, medical CT machine bearings, ship's rim propeller radial thrust one-piece bearings, deep wells and ultra-deep oil drilling rig bearings, offshore bearings, electric vehicle drive motor system high-speed bearings (speed ≥ 12,000 rpm), industrial robots, RV reduction gearboxes, harmonics bearings, magnetic levitation bearings, and other precision bearings. Reducer bearings, magnetic levitation bearings, and parts of the above bearings

11. Key castings: high-strength, high-plasticity ductile iron parts, high-performance peristaltic cast iron parts, high-precision, high-pressure, high-flow hydraulic castings, non-ferrous alloys, special casting process castings, high-strength steel forgings, high-temperature, low-temperature, corrosion-resistant, wear-resistant and other high-performance lightweight castings, forgings, high-precision, low-stress machine tool castings, forgings, automobiles, energy equipment, rail transportation equipment, aerospace and military industry, Key castings and forgings for marine engineering equipment

12. Critical seals: large wind turbine seals (7+ years of service life, working)

Temperature -45 ~ 100 ℃), nuclear power plant main pump mechanical seal (applicable pressure ≥ 17 MPa, working (temperature 26.7 ~ 73.9 ℃), shield machine main bearing seals (service life of 5000 hours), car powertrain system and transmission system rotary seals, oil drilling, logging equipment seals (applicable pressure ≥ 105 MPa), hydraulic bracket seals, high PV value of the rotary seals, large diameter (≥ 2 meters) mechanical seals, aerospace seals (operating temperature -54 ~ 275 ℃, linear speed ≥ 150 m / s), high-pressure hydraulic components seals (applicable pressure ≥ 31.5 MPa), high precision hydraulic castings (runner size accuracy ≤ 0.25 mm, fatigue performance test) (operating temperature -54 ~ 275 ℃, linear speed ≥ 150 m / s), high-pressure hydraulic components seals (applicable pressure ≥ 31.5 MPa), high-precision hydraulic castings (runner dimensional accuracy of ≤ 0.25 mm, fatigue performance test ≥ 2 million times), low-temperature seals for hydrogen energy storage and transportation, steam compressor axial seals for waste heat recovery, high-performance non-asbestos sealing materials (heat-resistant temperature of 500 ℃, tensile strength of ≥ 20 MPa), high-performance carbon graphite sealing material (heat-resistant temperature of 500 ℃, ≥ 20 MPa), high performance Carbon graphite sealing material (heat-resistant temperature of 350 ℃, compressive strength ≥ 270 MPa), high-performance pressure-free sintered silicon carbide material (bending

strength ≥ 200 MPa, thermal conductivity ≥ 130 watts / m - Kelvin)

13. Key molds: Precision molds (stamping mold accuracy ≤ 0.02 mm, cavity mold accuracy ≤ 0.05)

(mm), multi-station automatic deep drawing dies, multi-station automatic fine blanking dies, ultra-large integrated die casting dies (half-circumference length >4500 mm) matching die casting machines of more than 6,000 tons, intelligent composite molds with more than 10 sensors, automotive high-vacuum composite precision die casting molds, large-scale aerospace key parts pressure forming molds, large-scale wind turbine blade molds, composite molds, hot runners, nitrogen elastic elements, self-sliding wear-resistant sliding elements, precision positioning mold parts and other mold standards Nitrogen elastic components, self-lubricating wear-resistant sliding elements, precision positioning mold parts and other mold standard parts

14. Key fasteners: aerospace titanium alloy fasteners, high-speed rail anti-loosening fasteners, automotive engine fasteners, nuclear power and heavy-duty gas turbine high-temperature and high-stress fasteners, offshore wind power large-size corrosion-resistant fasteners and other high-strength precision fasteners.

15. **Key motors: high efficiency permanent magnet synchronous motors, large torque permanent magnet direct drive motors, high speed direct**

Drive permanent magnet motors, low-speed direct-drive permanent magnet motors, synchronous reluctance motors, superconducting motors

16. Key transmission parts: springs for aviation, aerospace, high-speed rail, engines, etc., new magnetic governor/snubber, permanent magnet flexible coupling, intelligent transmission coupling and other high-precision transmission couplings, intelligent transmission couplings, low-speed high-torque high-elasticity couplings, large-scale mill coupling shafts, high-speed trains, aircraft friction devices, gearboxes for locomotives, marine variable-pitch gear drive system, 3.0 MW gearboxes for wind power, gearboxes for metallurgical and mining machinery, special gearboxes for rotary kilns, ball mills, vertical mills and roller presses in the cement industry, high-precision gearboxes for industrial robots, powershift/stepless transmissions for large tractors, high-reliability gear drives for shield machines, automotive powertrain, chains for construction machinery and large-scale agricultural machinery, and crankshafts and connecting rods for internal combustion engines.

17. Key pumps and valves: ships and tanks descaling ultra-high-pressure pump (pressure $\geq$ 280MPa), spunlace nonwoven production line high-pressure pump (pressure $\geq$ 15MPa, flow $\geq$ 550L/min, average trouble-free operation time $\geq$ 10,000h), the development of ultra-high-pressure polyethylene

catalyst feed pump (pressure ≥ 550L/min, average trouble-free operation time ≥ 10000h), developed ultra-high-pressure polyethylene catalyst feed pump (pressure ≥ 550L/min, average trouble-free operation time ≥ 10,000h)

≥ 300MPa, flow rate ≥ 40L / h), the development of solar thermal power generation with high-efficiency molten salt pump (flow rate)

≥ 830m3/h, head ≥ 65m, operating temperature 565 ℃), tandem multi-stage anti-cavitation control valve series products (nominal pressure Class600, specifications NPS1 ~ 8, the number of throttling stage ≮ 3), highly integrated PSA multi-channel rotary control valves (flow rate of 500N · m3 / h, sealing performance up to the requirements of GB / T 13927 C), ultra-high-pressure polyethylene control valve (design pressure 260MPa, flow and pressure control accuracy ≤ 1.5%), 70MPa composite hydrogen storage cylinder combination valve (nominal operating pressure 70MPa, functional components integrated precision ≤ 1.5%), 70MPa composite material storage cylinders combination valve (nominal operating pressure 70MPa, flow and pressure control accuracy ≤ 1.5 percent) Control valve (design pressure 260MPa, flow and pressure control accuracy of ≤ 1.5%), 70MPa composite hydrogen storage cylinder combination valve (nominal working

pressure of 70MPa, the number of functional components integrated ≥ 6, leakage rate of ≤ 30NmL / h), high-efficiency low noise fuel cell hydrogen recirculation pump (flow ≥ 300L / min, system efficiency ≥ 60%, noise ≤ 70dBA), the High-pressure, high-frequency hydrogen ball valve for hydrogen refueling station (working pressure 45MPa/90MPa, opening and closing frequency).

(≥10cycle/h), 18MW and above integrated compressor units, 1200mm diameter and above

Natural gas pipeline supporting compressors, gas turbines, valves and other key equipment, single line 2.6 million tons / year and above natural gas liquefaction supporting the compressor and driving machinery, cryogenic equipment, etc., large-scale oil pipeline supporting the 3000 m3 / hour and above the oil pump and other key equipment

XV. Urban rail transportation equipment

1. Key systems: CBTC signaling system following the interconnection standard, intelligent fully automated operation system, fully automated operation system (FAO), train-autonomous operation system (TACS) based on vehicle-to-vehicle communication; AC traction drive system, braking system, and core components of rail vehicles (including IGCT, IGBT, and SiC components), network control system, intelligent operation and maintenance system and testing and monitoring equipment of key urban rail transit equipment; automatic fare collection system (AFC), door, hook system, windshield system, fire alarm and automatic extinguishing system; regenerative braking absorption device, energy return of urban rail trains Intelligent operation and maintenance system and testing and monitoring equipment for urban rail transit key equipment; automatic fare collection system (AFC)

door, hook system, windshield system, fire alarm and automatic fire extinguishing system; regenerative braking absorber, energy feedback, energy storage system for urban rail trains

2. Key technologies: vibration and noise reduction technology for urban rail transit, permanent magnet traction motors, bearings, couplings, DC high-speed switches, vacuum circuit breakers (GIS), new intelligent switching devices, lightweight application of car bodies, bogies, gearboxes, and interior decorative materials.

XVI. Automobiles

1. Automotive key components: gasoline engine supercharger, eddy current retarder, hydraulic retarder, follow the headlight system, electronic control system actuators with solenoid valves, low-floor axles for large buses, air suspension, large and medium-sized buses, inverter air conditioning, commercial vehicle disc brakes, commercial vehicle tire blowout emergency protection; electric power steering system, wire control steering system, idling start-stop system, high-efficiency and high-reliability electromechanical coupling system; hybrid power system special engines, low-carbon, zero-carbon fuel engines and core components; dual-clutch transmission (DCT), electronically controlled coupling system; hybrid powertrain special engine, low-carbon and zero-carbon fuel engine and core

components; dual-clutch transmission (DCT), electronically-controlled

Mechanical transmission (AMT), 7-speed and above automatic transmission (7-speed and above AT), no Continuously Variable Transmission (CVT); Selective Catalytic Reduction (SCR), Fuel Evaporation Control System (FECS) (EVAP) (with on-board vapor recovery (ORVR)), triple-acting catalytic converters, NOx and particulate matter concentration sensors, high-efficiency particulate traps for diesel, hydrogen-fueled engines, gasoline engines, ozone catalytic converter heat exchangers; gas-fired high-pressure direct-injection (HPDI) engines and supply systems; electronically-controlled high-pressure common-rail injection systems and injectors thereof, high-efficiency supercharging systems (up to combined efficiency) (≥55%); exhaust gas recirculation system; electric brakes, electric steering and its key components; plateau cold area special power equipment

2. Lightweight material applications: ultra-high-strength steel, high-strength and low-density steel, ADI cast iron, high-strength aluminum alloys, magnesium alloys, powder metallurgy, high-strength composite plastics, composite fibers, and bio-based composite materials; advanced molding technology applications: 3D printing and molding, the expanded application of laser welding plates, internal high-pressure

molding, ultra-high-strength steel plates (strength ≥ 980MPa, strong plastic product 20 ~ 50GPa-%) heat Thermoforming, flexible roll forming, integrated die-casting molding, advanced joining technology for dissimilar materials.

3. Key components for new energy vehicles: power battery cathode materials (specific capacity ≥180mAh/g, cycle life of 2000 times is not less than 80% of the initial discharge capacity), negative electrode materials (specific capacity) ≥ 500mAh / g, cycle life of 2000 times is not less than 80% of the initial discharge capacity), diaphragm (thickness ≤ 12μm, porosity 35% ~ 60%, tensile strength MD ≥ 800kgf/cm^2 , TD ≥ 800kgf/cm^2) and negative electrode alumina layer materials; electric vehicle drive motor system (high-efficiency zone: 85% of the efficiency of the work area ≥ 80%), automotive DC /DC (input voltage 100 ~ 400V), high-power electronic devices (IGBT, voltage level ≥ 750V, current ≥ 300A; SiC MOSFET, voltage level ≥ 1200V, current ≥ 600A); purely electric heavy-duty trucks, switching battery panel system;

Plug-in hybrid electromechanically coupled drive system; fuel cell engine (mass ratio power)
≥350W/kg), fuel cell stack (volumetric specific power ≥3kW/L), membrane electrodes (Pt dosage)
≤ 0.3g/kW), proton exchange membrane (proton conductivity ≥ 0.08S/cm), bipolar plate (thickness of metal bipolar plate ≤ 1.2mm, thickness of other bipolar plates ≤ 1.6mm), low platinum catalyst, carbon paper (resistivity ≤ 3MΩ-cm), air compressor, hydrogen circulating pump, hydrogen ejector, humidifier, fuel cell control system, bi-directional DC / DC, 70 MPa Hydrogen cylinder and delivery pipe valve, on-board hydrogen concentration sensor; heat pump air conditioning for electric vehicles, electric compressor; motor drive control dedicated 32-bit chip and above (not less than 2 hardware cores, main frequency of not less than 180MHz, with hardware encryption and other functions, chip design in line with the requirements of the functional safety ASIL C or above); integrated electric drive assembly (power density ≥ 2.5kW / kg); high-speed Reducer (maximum input speed)
(≥12000rpm, noise <75dB)

4. Vehicle charging equipment: on-board chargers (full load output efficiency ≥ 95%), two-way on-board chargers, three-phase on-board chargers (charging power ≥ 11kW), non-vehicle

charging equipment (output voltage of 250 ~ 950V, the voltage range of efficiency ≥ 88%); high power density, high conversion efficiency, high applicability of wireless charging, mobile charging and switching technology and equipment, intelligent, fast charging and switching Electricity facilities

5. Vehicle electronic control systems: engine control system, transmission control system (TCU) electronic stability control (ESC), network bus control system, electronically controlled intelligent suspension, predictive cruise control (PCC), LIN-controlled generator, visual fuel-saving driver assistance system, intelligent power management system, adaptive cruise control (ACC), lane keeping assist system (LKA), Automatic Emergency Braking (AEB), Electronically Controlled Braking System (EBS), Automatic Parking System (CPK), On-Board Diagnostics (OBD), Blind Spot Detection (BSD)

Curve Warning System (CSW), Automatic Axle Load Measuring System for Goods Vehicles

6. R&D and testing capacity building for new energy vehicles, intelligent vehicles and key components, and high-efficiency automotive internal combustion engines

7. Key components and technologies for intelligent vehicles: high-precision sensors for intermediate and advanced autonomous driving, in-vehicle high-computing-power artificial intelligence chips, basic computing platforms, central processors and domain controllers, in-vehicle operating systems and information control systems, new electrical and electronic architectures, and in-air download systems (OTA), vehicle network communication system equipment, visual recognition and display system, high-precision positioning device, wire-controlled chassis system, intelligent vehicle safety glass, digital cockpit system, man-machine co-driving technology, new intelligent terminal module, multi-core and heterogeneous intelligent computing platform technology, all-weather high-precision positioning and mapping technology for complex traffic scenes, vehicle-road collaboration technology, sensor fusion sensing technology, vehicle wireless communication technology, basic cloud control platform technology; new security isolation architecture technology,

hardware and software collaborative attack identification technology, terminal chip security encryption and application software security protection technology, wireless communication security encryption technology, secure communication and authentication and authorization technology, data encryption technology, functional safety and expected functional safety technology; test and evaluation system architecture research and development, virtual simulation, real-vehicle road test and other technologies and validation tools, vehicle-level and system-level test and evaluation. Vehicle-level and system-level test and evaluation methodology, and construction of test database.

XVII. Ships and marine engineering equipment

1. Green Intelligent Transportation Ships: Ship types that adapt to green, intelligent and safety requirements and meet new international shipbuilding norms and standards

2. Clean energy and new energy ships: LNG-powered, pure electric, fuel cell-powered ships, etc., methanol-fueled, ammonia-fueled, biomass-fueled and other alternative fuel-powered ships.

3. Specialized and special-purpose vessels: dredgers, port operation vessels, survey vessels, paving vessels

Pipe ship, crane ship, three-use workboat, guard ship, supply ship, offshore wind power installation (operation and maintenance) Engineering vessels such as ships, diving support vessels, oceanographic research vessels, scientific research vessels, deep-sea test vessels, heavy icebreakers, hospital ships, emergency rescue vessels, salvage vessels, official vessels, ocean fishing vessels, ocean fishing transportation (processing) vessels, submersibles and unmanned vessels, etc.

4. High-performance vessels: hovercrafts, small-water surface catamarans, multihulls, wave-piercing vessels, hydrofoils, ground-effect winged vessels, etc.

5. Offshore engineering equipment: deep-sea oil and gas drilling platforms (ships), production platforms, living platforms, floating production, storage and offloading units (FPSOs), floating liquefied natural gas units (F-LNG), floating storage and regasification units (FSRUs)and other offshore oil and gas equipment, offshore wind power equipment, natural gas hydrate drilling and mining vessels (platforms), new marine energy equipment (including tidal current energy, wave energy, temperature difference energy, etc.). Deep-sea net box type aquaculture platform, large-scale aquaculture vessels, large-scale floating island platforms, deep-sea mineral resources development equipment, submarine data centers and other new

marine engineering equipment

6. Cruise Yacht Development and Manufacturing and Supporting Industries

7. Seabed mining robots, seabed trenchers and other seabed mineral resources development equipment and deep-sea mining systems, deep-sea risers and related ancillary systems and equipment, underwater submersibles, robots and detection and observation equipment, high-performance functionalization of composite materials for ocean engineering product development and application, ship superstructures and interiors with heat insulation, corrosion, combustion-assisted composite material product development and application

8. Green intelligent manufacturing technology and equipment: precision management and control, digital shipbuilding, pre-outfitting and modularization, high-efficiency welding, green painting, ultra-high-pressure water descaling, intelligent welding production line, intelligent segmentation line, intelligent pipe processing production line, and other specialized green intelligent manufacturing and maintenance technology and equipment

XVIII. Aerospace

1. Aerospace products: civil aircraft (mainline aircraft, regional aircraft, general-purpose aircraft,

Civilian helicopters, other aircraft) development and manufacturing, aero-engine (turbojet, turbofan, turboprop, turboshaft, piston, and other aero-engine) development and manufacturing, aerospace gas turbine manufacturing, satellites, launch vehicles and parts manufacturing, advanced satellite payloads development and production, unmanned aerial vehicle (large-scale, medium-sized, small-scale, and others) development and manufacturing, new energy aircraft design and R&D 2. Aircraft and parts, Engines and components, airborne systems and equipment and components Maintenance, repairs

3. Aerospace systems and equipment: design and manufacture of civil aircraft on-board systems and equipment, development and manufacture of aircraft ground simulation training systems and test systems, and construction of satellite ground and application systems and equipment manufacturing

4. Development and production of new materials for aerospace applications

XIX. Light industry

1. Single chemical wood pulp 300,000 tons / year and above, chemical mechanical wood pulp 100,000 tons / year and above

The construction of integrated forest and paper production lines with 100,000 tons/year and above of chemical bamboo pulp and corresponding supporting paper and paperboard production lines (except newsprint, coated paper, napkin raw paper, facial tissue raw paper, tissue raw paper, white paperboard), the construction of pulp production lines with 100,000 tons/year and above using cleaner production processes and non-wood fiber as raw material, the development and manufacture of advanced pulping and papermaking equipment, and the development and application of chemical pulp bleaching processes of Elemental Chlorine Free (ECF) and Total Chlorine Free (TCF), and the development and application of chemical pulp bleaching processes of Elemental Chlorine Free (ECF) and Total Chlorine Free (TCF). (ECF) and totally chlorine-free (TCF) chemical pulp bleaching process development and application

2. Biodegradable plastics and its series of products development, production and application, agricultural plastic water-saving equipment, long-life (three years and above) functional agricultural film development, production, all biodegradable seedling pots, trays and related agricultural packaging materials

3. New plastic building materials (high airtight soundproof energy-saving plastic windows, large-caliber drainage and sewage pipes,

Impact modified polyvinyl chloride pipe, ground source heat pump system with polyethylene pipe, non-excavation plastic pipe, composite plastic pipe, plastic inspection wells), impermeable geomembranes, plastic and wood composite materials and molecular weight ≥ 2 million ultra-high molecular weight polyethylene pipe and sheet production, multi-chambered high-functional plastic profiles

4. Dynamic plasticization and plastic stretching rheological plasticization technology application and equipment manufacturing, application of electromagnetic induction heating and servo drive system of plastics processing equipment

5. Applied to industry, medicine, electronics, aerospace and other fields of special ceramic production and technology, equipment development, ceramic clean production and comprehensive utilization of technology development

6. Intelligent sewing machinery (using digital control, intelligent perception and other advanced technologies) and key components development and manufacturing

7. R&D and manufacturing of multi-station combined machine

tools for pen and watch making industries

8. High-tech, digital, intelligent printing technology equipment and high-definition plate making system development and application

expense or outlay

9. Manufacture of special needs goods for ethnic minorities

10. Vacuum Aluminizing, Spray Coated Silicon Oxide, Polyvinyl Alcohol (PVA) Coated Films, Functionality

New packaging materials such as polyester (PET) films, solvent-free laminating or heat-laminating energy-saving low-carbon polypropylene films, oriented polystyrene (OPS) films, and paper-plastic-based multilayer laminates.

11. New lithium primary batteries (lithium iron disulfide, lithium thionyl chloride, etc.), lithium-ion batteries, semi-solid-state and all-solid-state lithium batteries, fuel cells, sodium-ion batteries, liquid flow batteries, new structures (bipolar, lead cloth level, wound, tubular, etc.) sealed lead storage batteries, lead-carbon batteries, and other new types of batteries and supercapacitors, lithium-ion batteries with ternary and multivariate, lithium iron phosphate, and other positive

Anode materials, intermediate-phase carbon microspheres, silicon and carbon anode materials, single-layer and three-layer composite lithium-ion electrodes

Battery diaphragm, fluorinated vinyl carbonate (FEC) and other electrolytes and additives, carbon nanotubes, carbon nanotubes, conductive fluids and other key materials, waste battery resource utilization and green recycling production process and its equipment, lithium-ion batteries, lead batteries, alkaline zinc-manganese batteries (more than 600 / min) and other battery products, automation, intelligent production of complete sets of manufacturing equipment

12. Tanning and fur processing clean production, leather finishing new technology development and key equipment manufacturing, chromium-containing leather solid waste and chromium sludge comprehensive utilization, leather and fur processing waste liquid recycling, ashless expansion (auxiliary) agent, no ammonia de-ash (auxiliary) agent, no salt leaching (auxiliary) agent, high absorption chrome tanning (auxiliary) agent, natural vegetable tanning agent, water-based finishing (auxiliary) agent and other functional leather chemical products development, production and Application, tanning, fur processing, shoe automation intelligent equipment and systems development, production

13. Development and manufacturing of energy-efficient

solid-state lighting products and intelligent control systems, intelligent production equipment and testing equipment, recycling of waste lamps and reuse of waste lamps

14. Development and production of household appliances and gas stoves in line with national level 1 energy (water) efficiency

15. Development and production of multi-effective, energy-saving, water-saving and environmentally friendly surfactants, auxiliaries and detergents

16. Development and manufacturing of air-conditioners and accessories using new refrigerants to replace hydrochlorofluorocarbons (HCFC-22 or R22) and hydrofluorocarbons (HFCs), production of household appliances using new blowing agents to replace hydrochlorofluorocarbons (HCFC-141b) and hydrofluorocarbons (HFCs), production of air-conditioners and accessories using new blowing agents to replace HCFC-141b and HFCs, production of air-conditioners using new blowing agents to replace HCFC-141b and HFCs, production of household appliances using new blowing agents to replace HCFC-141b and HFCs. Carbons

(Production and application of rigid polyurethane foams (HFCs)

17. Energy-saving and environmentally friendly glass kiln (including all-electric fusion, electric fluxing, oxy-fuel technology, NOx)

The design and application of low-NOx combustion technology (generating concentration ≤1000mg/m^3), and the design and application of DCS for glass kilns.

Energy-saving automatic control technology, lightweight glass bottles and jars (lightweight degree ≤ 1.0) process technology and key equipment development and production

18. Production of energy-saving and environmentally friendly inks, such as water-based inks, energy-curable inks, and vegetable oil inks
19. Natural food additives, natural flavors new technology development and production
20. Advanced food production equipment development and manufacturing, food quality and safety monitoring (testing) instruments, equipment development and production
21. Nutritional and health-oriented rice, wheat flour (food-specific rice, sprouted brown rice, rice with embryo, food-specific flour, whole wheat flour and nutritional fortification products, etc.) and the development and production of products, the industrial production of traditional staple foods, the development and production of special equipment for the processing of miscellaneous grains, the development and production of key technologies for the comprehensive utilization of by-products of grain and oil processing (rice hulls,

bran, bran, germ, cake meal, etc.) and the application of technology development.

22. Rapeseed oil production line: adopting technologies such as expansion, negative pressure evaporation, self-balancing utilization of heat energy, low-consumption steam vacuum system, etc. The main production areas of rapeseed can handle 400 tons of rapeseed per day or more,

Solvent consumption of less than 1.5 kg per ton of material (of which 200 tons and more of rapeseed per day in the western region)

Peanut oil production line: the main peanut production area handles less than 2 kilograms of solvent per day, and the main production area handles less than 2 kilograms of solvent per ton of material.

Peanut 200 tons and above, solvent consumption of 2 kg or less per ton of material; cottonseed oil production line: cottonseed Production area daily processing cottonseed 300 tons and above, ton of material solvent consumption of 2 kg or less; rice bran oil production line: the use of dispersed rapid expansion, centralized oil production, refining technology; corn germ oil production line; oilseeds, walnuts and other wood 🐶 oilseeds and caraway, sesame, sunflower, peony seeds and other small varieties of oilseed processing production line and the use of

supercritical carbon dioxide extraction process technology for the production of Vegetable Oil

23. Adopting the fermentation process to produce small varieties of amino acids (except lysine, glutamic acid and threonine), with an annual production capacity of 8,000 tons or more of yeast products and yeast derivatives using molasses as raw material.

New enzyme preparations and composite enzyme preparations, polyalcohols and biological method of chemical polyol, functionality

Development, production and application of fermented products (functional sugars, functional red currant, fermentation antioxidant and compound functional ingredients, active peptides, microecological agents), etc., development of enzyme production process technology and industrialized, standardized production

24. Technical development and production of enamel electrostatic powder and enamel pre-milled powder

XX. Textiles

1. Differential, functional polyester (PET)continuous copolymerization modification (cationic dye dyeable polyester (CDP, ECDP), alkali-soluble polyester (COPET), high shrinkage polyester (HSPET) flame-retardant polyester, low-melting-point polyester, amorphous polyester, bio-degradable polyester, the use of green catalysts in the production of polyester, such as), poly(propylene terephthalate) (PTT), poly(ethylene naphthalene) Glycol polyethylene terephthalate (PTT), polyethylene naphthalate (PEN), polybutylene terephthalate (PBT), polycyclohexane terephthalate dimethanol ester (PCT), and other new polyester and fiber development, production,

flame retardant, antistatic, antibacterial, conductive, phase change energy storage, intelligent temperature control, photochromic, coloring in the original liquid, adsorption and separation, biomedical and other differentiated, functional chemical fibers such as the preparation of high efficiency and flexibility technology, intelligent, ultra-simulation and other functional chemical fiber production. Simulation and other functional chemical fiber production, the original development of high-speed spinning processing with green, efficient and environmentally friendly chemical fiber oil agent

2. Development and production of biodegradable fiber materials (polybutadiene) using green and environmentally friendly processes and equipment.

Butylene dibutyrate (PBS), polybutylene terephthalate adipate (PBAT), polycaprolactone (PCL), poly(3-hydroxyalkanoate) (PHA), polylactic acid fiber (PLA), etc.], Lycell staple fibers (more than 50,000 tons of a single line), and Lycell filament yarns, biobased fiber materials

(regenerated cellulose fibers, seaweed fibers, chitosan fibers, animal and plant protein fibers, bio-based polyamides, bio-based polyesters, etc., based on new renewable resources such as bamboo and hemp)

3. Development, production and application of high-performance fibers and products: Carbon Fiber (CF) (stretch) Strength ≥ 4200MPa, modulus of elasticity ≥ 230GPa), aramid (AF), aramid sulfone (PSA), ultra-high molecular weight polyethylene fibers (UHMWPE) (spinning production unit single line capacity ≥ 300 tons / year, breaking strength ≥ 40cN/dtex, initial modulus ≥ 1800cN/dtex), polyphenylene sulfide fiber (PPS), polyimide fiber (PI), polytetrafluoroethylene fiber (PTFE), polybenzobisoxazole fiber (PBO), polyarylene oxadiazole fiber (POD), polyether etherketone fiber (PEEK) poly 2,5-dihydroxy-1,4-phenylene pyridinium diimidazole fiber (PIPD), etc.

4. High-quality processing technology and products of animal fiber, hemp fiber, mulberry and quercus cocoon silk, colored cotton, colored mulberry cocoon silk and other natural fibers in line with the requirements of green low-carbon

5. Adopting intelligent, continuous spinning equipment (clear carding, coarse and fine, fine winding and CNC single machine, air-jet vortex spinning, high-speed rotor spinning and other short-process advanced spinning equipment) to produce high-quality yarn, and adopting new type of CNC equipment (high-speed CNC shuttleless weaving machine, automatic drawing-in machine, automatic fabric checking machine, full-form computerized flat knitting machine, full-form wefting and

wefting machine, high-speed computerized flat knitting machine, high-speed warp knitting machine, and fine pitch wefting and wefting machine, etc). Production of high-grade woven and knitted textiles such as high-count, high-density, jacquard, etc.

6. The use of digital, intelligent, green printing and dyeing technology [printing and dyeing clean production technology (enzyme treatment, high-efficiency short-flow pretreatment, continuous pretreatment of knitted fabrics, low-temperature pretreatment and dyeing, low-salt or no-salt dyeing, low urea printing, intermittent fabric dyeing in a small bath ratio, digital inkjet printing, foam finishing, etc.), functional finishing technology, new dyeing and processing technology, less water/no water and energy-saving low-carbon printing and dyeing processing technology Composite fabric processing technology] and equipment for the production of high-grade textile fabrics, intelligent tube yarn dyeing technology and equipment development and application

7. The use of non-woven, woven, knitted, woven and other processes and a variety of processes composite, long-lasting

Production of functional technical textiles with new technologies such as finishing.

8. Intelligent, green, high-efficiency, low-energy textile machinery, and its key specialized basic parts, measurement, testing instruments, test equipment development and manufacturing

9. Digital, networked, intelligent clothing and home textiles production technology and equipment development, application

10. Hemp biological degumming technology, no polyvinyl alcohol (PVA) pulp sizing technology, pulp on the efficient management and comprehensive utilization of resources technology, the use of polyester recycled materials to produce polyester industrial filament, differentiated and functional polyester filament and staple fiber, non-woven materials and other high value-added products, the use of polyamide recycled materials to produce nylon (PA6) filament and staple fiber technology and applications, the use of polypropylene recycled materials to produce Polypropylene (PP) filament and staple fiber technology and application, the use of cotton textile recycling production of renewable cellulose fiber products, waste textile recycling technology, equipment development and application

XXI. Construction

1. Advanced construction technology: R&D of manufacturing and integration technology of intelligent construction products and equipment, R&D and promotion of centralized heat supply system measurement and regulation technology and products, application of high-strength and high-performance structural materials and systems, composite material technology and application for building reinforcement and repair, R&D and promotion of advanced and applicable complete set of construction technology, products and residential components, R&D and promotion of integrated system and technology of steel structure residential buildings, R&D and promotion of factory renovation technology, R&D and promotion of factory renovation technology. Promotion of factoryized full decoration technology

2. R&D and application of green building technology: R&D, engineering application and promotion of seismic reinforcement of existing houses, seismic isolation and damping structural system and products, building energy saving, green building, assembly building, solar photovoltaic and other renewable energy building application related industries, R&D and promotion of high performance door and window technology and products for buildings, R&D and promotion of green construction technology system, building

R&D and application of BIM-related technologies, zero-carbon building technology system and key technologies.
R&D and application of high-performance acoustic doors, windows and ventilated acoustic windows.

XXII. Urban infrastructure

1. Urban public transportation: urban public transportation construction, urban roads and intelligent transportation system construction, urban traffic control system technology development and equipment manufacturing, urban rail transit new line construction, existing parking facilities renovation, parking buildings, underground parking lots, mechanical three-dimensional parking garages and other intensive parking facilities construction, parking lot with electric vehicle charging and switching facilities

2. Municipal infrastructure: urban water supply and drainage engineering and related equipment production, underground comprehensive pipeline corridor construction in prefecture-level and above cities, underground pipeline network geographic information system, city gas engineering, urban centralized heating construction and renovation projects (including long-distance centralized heating network application engineering), urban water conservation technology development and application, city gas plastic pipe application

engineering, sponge city, drainage and flood control engineering technology product development Production

3. Urban quality improvement and housing security: urban landscaping and ecological community construction, application of key technologies in urban ecosystems, intelligent transformation of urban lighting systems, construction, operation and management of subsidized housing (including subsidized rental housing), construction of urban and rural community basic service facilities and integrated service outlets

4. Smart city construction: urban high-precision navigation, high-precision remote sensing image and three-dimensional data production and key technology development, urban three-dimensional management information system relying on basic geographic information resources, urban operation and management informatization technology application, city information model (CIM) related technology development and application based on big data, Internet of Things, GIS and other bases.

XXIII. Railroads

1. Railroad construction and reconstruction: new railroad lines, reconstruction and expansion of existing railroads, and specialized railroad lines,

Intercity and municipal (suburban) railroad construction, full closure of lines and leveling of crossings, and expansion of key crossings
conversion

2. Engineering and construction technology: repair and durability improvement technology for concrete structures, material development, receiving and disposal of toilet and dirt flooring in railroad passenger trains

3. Green Intelligent Railway Construction: Development and Construction of Digital Railway and Intelligent Transportation, Railway Operation and Passenger and Freight Transportation Safety and Security System Technology and Equipment, Development and Construction of Train Operation Control and Vehicle Control System, Development and Construction of Railway Transportation Information System, Development and Construction of Operation Scheduling and Commanding Automation Technology, Development and Application of Railway Intelligent Green Construction Technology

4. Advanced Railway Transportation System: technology development and construction of passenger dedicated line and high-speed railroad system, AC traction drive system, braking system and core components (including silicon carbide power module, IGCT, IGBT components) of mainline rail vehicles, new energy power drive system, power factor compensation

technology application for traction power supply of electrified railroads, next-generation broadband mobile communication system of railroads, high-speed railroads or passenger dedicated line R&D and application of vibration and noise reduction technologies for high speed railways or passenger dedicated lines, intercity and suburban railroads.

5. Advanced rail transportation equipment: high-power AC-driven electric locomotives, compliant with national pollution standards

High-power AC-driven internal combustion locomotives with emission standards, and locomotives with speeds of 200 kilometers per hour and above,

200 km/h and below, power centralized locomotives, plateau locomotives at an altitude of more than 3000 meters, plateau locomotives, large special wagons, cold chain transport freight equipment, intermodal freight wagons, LNG special railroad wagons, special rescue equipment for locomotives and rolling stock, high-speed freight locomotives, large-scale road maintenance machinery, railroad engineering and construction machinery and equipment, line, bridge, and tunnel inspection equipment, traction power supply inspection equipment, 200 km/h and above railway contact nets, turnouts, buckling accessories, traction power supply equipment, and 200 km/h

and above. Kilometer **and above railroad contact network, turnouts, buckle accessories, traction power supply equipment**

XXIV. Highways and road transportation

1. Highway transportation network construction: national highway network project construction, national and provincial trunk line reconstruction

Upgrading, automobile passenger and freight stations, urban bus stations, urban public transportation

2. Road intelligent transportation system development: rapid passenger and freight transportation, road dumping transportation system development and construction, road container and van transportation, rural roads and passenger and freight transportation network development and construction, taxi service scheduling information system development and construction

3. Development and application of new technologies and materials for the construction and maintenance of highway projects and mega bridges and tunnels.

4. Green road infrastructure development

5. Highway Safety and Emergency Security Technology and Application: Highway Management Services, Highway Emergency Security System Construction, Operation Vehicle Safety Monitoring and Recording System Development and Application

XXV. Water transportation

1. Construction of high-grade waterways: public

infrastructure construction of coastal ports, waterways of international navigable rivers at national borders, high-grade waterways of inland rivers, navigable buildings, and other waterways and public infrastructure construction of inland water transportation in line with the strategic direction of the State.

2. Port hub construction: quay berth construction, ship pollutant port reception and disposal facility construction and equipment manufacturing, port hazardous chemical and oil product emergency facility construction and equipment manufacturing, international cruise transportation and cruise ship homeport construction, port shore power system construction and ship power receiving facility renovation, ship LNG refueling facility and electric ship charging and switching facility construction

3. Intelligent Water Transportation: Port Automation Intelligent Green Construction and Transformation, Intelligent Waterway, Green Waterway and Intelligent Green Shipping Construction

4. Green and safe shipping: construction of water traffic safety supervision, navigation security and rescue systems, standardization and greening of inland waterway vessel types, and construction of oil and gas recycling facilities for ships and

terminals

XXVI. Air transportation

1. Aviation infrastructure development: construction and operation of airports and ancillary facilities, air traffic control

Construction of control and communication, navigation, surveillance, meteorological and intelligence systems, development and construction of aviation computer management and its network systems, aviation fuel refueling services and construction of facilities

2. Public air transportation

3. Construction of general aviation, maritime air surveillance patrol and search and rescue services and facilities, and construction of emergency take-off and landing sites for small aircraft

4. Sustainable aviation fuel

XXVII. Integrated transport

1. Integrated construction and renovation of comprehensive transportation hubs, integrated development of hub stations and cities

2. Comprehensive Transportation Hub Operation and Management Information System Construction and Application

3. Comprehensive Transportation Hub Disaster Prevention, Relief and Emergency Evacuation System

4. Transportation hub intermodal system: comprehensive

transportation hub convenient transfer facilities and equipment, ticket integration, intermodal product development and application, comprehensive transportation hub convenient freight transfer system construction, port transfer facilities construction, multimodal transfer facilities construction, multimodal rapid transfer equipment, standardized transport unit development and application

XXVIII. Information industry

1. New-generation communications network infrastructure: construction of 100Gb/s and above optical transmission systems.

155MB/s and above digital microwave synchronous transmission equipment manufacturing and system construction, satellite communication system, earth station equipment manufacturing and construction, network management, monitoring, clock synchronization, billing and other communication support network construction, mobile Internet of Things, Internet of Things (sensor network), intelligent network and other new business network equipment manufacturing and construction, broadband network equipment manufacturing and construction, digital cellular mobile communication network equipment manufacturing and construction, IP service network construction, satellite digital

TV broadcasting system construction, value-added telecommunication industry

Construction of a service platform, construction of an emergency radio and television system, and integrated access to disaster site information from the air and the ground
Technology research and integrated application

2. Computers and related equipment: high-performance computers, portable microcomputers, ten trillion times per second and above, high-end servers, large-scale analog simulation systems, large-scale industrial controllers and controllers manufacturing, printers (including high-speed bar code printers) and mass memory and other computer peripherals, quantum, brain-like and other new mechanisms of computer systems research and manufacturing

3. Communication equipment: IPv6-based next-generation Internet technology research and development and services, network equipment, chips, systems and related test equipment research and development and production, 32-wave and above fiber optic wavelength division multiplexing transmission system equipment manufacturing, stratospheric communication system equipment manufacturing, digital mobile communications, mobile self-organizing network, access network systems, digital trunking communication systems and routers, gateways and other network equipment manufacturing, new type (non-dispersive) single-mode fiber and fiber pre-production rod manufacturing, wireless LAN technology development,

equipment manufacturing, satellite navigation chip, system technology development and equipment manufacturing, based on spatial information, BeiDou navigation and positioning services, communication and navigation remote integration fusion. (non-dispersive) single-mode optical fiber and optical fiber pre-fabricated rod manufacturing, wireless local area network technology development, equipment manufacturing, satellite navigation chip, system technology development and equipment manufacturing, based on spatial and temporal information, BeiDou navigation and positioning services, communications, navigation and remote sensing integration and fusion, geographic information systems (GIS) basic platform for the development and application of related technologies, quantum communications equipment, broadband digital trunking equipment, using time division duplex (TDD) mode carrier aggregation 230 Quantum communication equipment, broadband digital trunking equipment, broadband wireless data transmission equipment in 230MHz band using Time Division Duplex (TDD) carrier aggregation, next-generation private network communication equipment, and wireless communication equipment for car networking based on LTE-V2X wireless communication technology.

4. Integrated circuits: integrated circuit design, integrated

circuits with line widths of less than 65 nanometers (inclusive) Logic circuits, memory production, specialty process integrated circuits with line widths of less than 0.25 microns (inclusive) Road production (including mask plate, 8-inch and above wafer production), IC line width of less than 0.5 microns (including) the production of compound integrated circuits, and ball grid array package (BGA), pin grid array package (PGA), chip scale package (CSP), multi-chip package (MCM),

Lattice Array Package (LGA), System in Package (SIP), Flip Chip (FC), Crystal
Round Level Packaging (WLP), Sensor Packaging (MEMS), 2.5D, 3D and other one or more technologies integrated advanced packaging and testing, IC equipment and key components manufacturing

5. Manufacture of new electronic components: chip components, sensitive components and sensors, frequency control and selection components, hybrid integrated circuits, power electronics, optoelectronics, new electromechanical components, polymer solid capacitors, supercapacitors, passive integrated components, high-density interconnect laminates, single-layer, double-layer and multi-layer flexible boards, rigid-flexible printed circuit boards and sealing and loading boards, high-density, high-finesse line (line width / line spacing ≤ 0.05mm) flexible circuit boards, solar cells, lithium-ion batteries, sodium ions, fuel cells and other chemical and physical batteries. line spacing ≤ 0.05mm) flexible circuit boards, solar cells, lithium-ion batteries, sodium-ion batteries, fuel cells and other chemical and physical batteries.

6. Specialized materials for the production of electronic components: semiconductors, optoelectronic devices, new electronic components (chip components, power electronic devices, optoelectronic devices, sensitive components and

sensors, new electromechanical components, high-frequency microwave printed circuit boards, high-speed communication circuit boards, flexible circuit boards, high-performance copper cladding boards, etc.), and other materials for electronic products, including semiconductor materials, electronic ceramics materials, piezoelectric crystal materials, etc. Electronic functional materials, copper-clad materials, electronic copper foils, lead frames and other packaging and assembly materials, as well as wet chemicals, electronic special gas, photoresists and other process and auxiliary materials, semiconductor lighting substrate, epitaxial, chip, packaging and materials (including high-efficiency heat dissipation copper-clad plate, thermal conductive adhesive, thermally conductive silicone film), etc.; advanced various types of solar photovoltaic cells and high-purity crystalline silicon materials (polycrystalline silicon, the comprehensive power consumption of less than Advanced solar photovoltaic cells of various types and high-purity crystalline silicon materials (the integrated power consumption of polysilicon is less than 65kWh/kg, the conversion efficiency of monocrystalline silicon photovoltaic cells is more than 22.5%, that of polycrystalline silicon cells is more than 21.5%, that of cadmium telluride cells is more than 17%, and that of copper-indium-gallium-selenide cells is more

than 18%)

7. Specialized equipment for the production of electronic components: semiconductor lighting equipment, solar photovoltaic equipment.

Chip component equipment, new power battery equipment, surface mount equipment (including stencil printing machines.)

(automatic placement machine, lead-free reflow soldering, photoelectric automatic checker), etc.

8. Display components manufacturing and production of special equipment: thin-film field effect transistor LCD (TFT-LCD), organic light-emitting diode (OLED), Mini-LED / Micro-LED display, electronic paper display, laser display, 3D display and other new flat-panel display devices, glass substrates for the LCD panel industry, the electronics and information industry cover glass and other key components and key materials, thin-film transistor liquid crystal display (TFT-LCD), light-emitting diode (LED) and organic light-emitting diode display (OLED), Mini-/Micro-LED display, electronic paper display, laser display, 3D display Key components and key materials for the LCD panel industry, key components and key materials for the cover glass for the electronics and information industry, special equipment for the production of new display devices such as thin-film transistor liquid crystal display (TFT-LCD), light-emitting diode (LED) and organic light-emitting diode (OLED), Mini-/Micro-LED, e-paper display, laser display, 3D display, etc.

9. Basic and industrial software: software development and production (including the research and promotion of the application of national language informatization standards),

digital system (software) development and application, including embedded software for intelligent equipment, industrial control systems such as distributed control system (DCS), programmable logic controller (PLC) data acquisition and monitoring (SCADA), advanced control system (APC), etc., the Manufacturing Execution System (MES), computer-aided design (CAD), auxiliary engineering (CAE), process planning (CAPP), product lifecycle management (PLM), industrial cloud platform, industrial APP and other industrial software, energy management system (EMS), building information modeling (BIM) systems and other specialized systems, network simulation software, nuclear power instrumentation and control systems, core chips and related software. Network simulation software, core chips and related software for nuclear power instrumentation and control systems

10. Intelligent hardware and applied electronics: Doppler radar technology and equipment manufacturing, medical electronics, health electronics, bio-electronics, automotive electronics, power electronics, financial electronics, aerospace instrumentation electronics, image sensors, sensor electronics and other product manufacturing

11. Promoting the deep integration and application of information technology: digital cinema cameras, digital cinema

studio equipment, digital cinema production and visual effects equipment and software, digital cinema projection servers, digital cinema projectors, mastering equipment and software, digital cinema coding and decoding equipment, high technology

Art movie projection system, studio equipment, audio and video codec equipment, audio and video broadcast transmission equipment, digital TV studio equipment, digital TV system equipment, digital TV broadcasting network equipment, digital TV reception equipment, digital camcorders, digital video recorders, digital TV products, wearable intelligent cultural equipment

12. E-commerce and e-government systems development and application services

13. Anti-counterfeiting technology development and application

14. Big data, cloud computing, information technology services and blockchain information services within the scope permitted by the state

XXIX. Modern logistics

1. Modernization of logistics facilities for important commodities such as coal, grain, cotton, sugar, iron ore, fertilizers, oil, etc.

2. Construction of logistics and distribution facilities for agricultural products, cold chain logistics for agricultural products, food and pharmaceuticals, and technical services for quality and safety control in food and pharmaceutical logistics

3. Modern Supply Chain Innovation and Application, Supply

Chain Management Services

4. Logistics packaging and transportation technology development and application: standard pallets, 600mm × 400mm standard crates (baskets) and 600mm × 400mm packaging base module to promote the application of environmentally friendly, recyclable material pallet manufacturing and use, equipped with RFID and other visualization of the standard electronic tag manufacturing and use of standard trays, crates (baskets), standard pallets, recycling and sharing system construction and operation. Manufacturing of refrigerating containers

5. Logistics information technology development and application: logistics information service technology, cargo tracking and identification and positioning technology, intelligent warehousing, sorting and distribution technology, logistics information security technology, cargo temperature and humidity sensing technology research and development and application, development and construction of logistics public information platform, digitalization of the third

Square logistics delivery platform construction, intelligent logistics technology and equipment research and development applications

6. Emergency logistics, reverse logistics, green logistics facility construction and operation

7. Construction and operation of national logistics hubs, national backbone cold chain logistics bases, production and marketing cold chain distribution centers, suburban warehouse bases and national logistics hub economic demonstration zones, public warehousing required for urban logistics, and construction of ancillary facilities such as vehicle parking, loading and unloading, and charging and switching power.

XXX. Financial services

1. Inclusive finance, rural financial service system construction and product development and application, financial guarantee services for small and micro enterprises, farmers and new agricultural business subjects, direct leasing services in financial leasing services

2. Construction of RMB cross-border settlement and clearing system

3. Green financial service system building

4 Other financial products and services: development of loan pledges for intangible assets such as intellectual property

rights and revenue rights, venture capital investment, application of financial instruments and financial product development to revitalize stock assets such as asset securitization and real estate investment trusts (REITs), credit rating services, and construction of a system of services for the issuance and trading of stocks, depository receipts, convertible bonds, and bonds

5. Commercial Insurance: Agricultural Insurance, Liability Insurance, Credit Insurance, Technology Insurance, Commercial Health Insurance, Property Insurance

6. Financial technology: financial technology product development, application, service output and security protection of financial institutions, financial supervision, financial risk management technology development and application

XXXI. Science and technology services

1. Industrial design, meteorology, biology and medicine, new materials, new energy, energy conservation, environmental protection, surveying and mapping, oceanographic and other professional scientific and technological services, standardization services, metrology testing, quality certification and inspection

Inspection and testing services, science and technology popularization

2. Information technology consulting services: industry (enterprise) management and informatization solution development, web-based software service platform, software development and testing services, information system integration, consulting, operation and maintenance, and data mining and other service businesses

3. Science and technology consulting services: scientific and technological literature, scientific and technological achievements, scientific data, scientific and technological finance and other elements of scientific and technological innovation, geography, international trade and other areas of information sharing, comprehensive development and utilization of services, information technology consulting services, digital content services

4. Digitization technology, high fidelity technology, digital twin, high-speed computing technology and other emerging cultural science and technology support technology construction and services

5. Inspection, testing and certification services: analysis, experimentation, testing and related technical consulting and R&D services, intelligent product overall program, ergonomics

design, system simulation and other design services

6. Technology transfer services: scientific and technological information exchange, scientific and technological research and literature information search, technology consulting, technology incubation, scientific and technological achievements evaluation, scientific and technological achievements promotion, technology trading, technology due diligence, scientific and technological achievements transfer and transformation services and scientific and technological forensic services.

7. Intellectual Property Services: Intellectual Property Agency, Transfer, Registration, Appraisal, Search, Analysis, Evaluation, Operation, Certification, Counseling and Related Investment and Financing Services

8. Information technology outsourcing, business process outsourcing, knowledge process outsourcing and other technologically advanced services, trade in services

9. Industrial services: maintenance and repair of modern high-end equipment, digital production line transformation and integration, industrial service network platform, industrial e-commerce, intelligent equipment remote operation and maintenance management system, intelligent factory equipment monitoring and diagnostic platform, predictive

maintenance system, professional maintenance services and supply chain services, industrial management services [including equipment operation and maintenance management consulting, equipment operation and maintenance and management services].

services, industrial APPs and equipment management software (SaaS)], data and digitization services (PaaS.)
IaaS, data analytics services and other innovative data services)

10. Science and technology innovation platform construction: national engineering (technology) research centers, national industrial innovation centers, national agricultural high-tech industrial demonstration zones, national agricultural science and technology parks, state-recognized enterprise technology centers, national laboratories, national key laboratories, national major scientific and technological infrastructures, scientific and technological business incubators, crowdsource spaces, green technology innovation bases and platforms, new product development and design centers, science and education Infrastructure, comprehensive public service platforms for industrial clusters, pilot bases, experimental bases, and construction of national technological innovation centers.

XXXII. Business services

1. Economic, management, information, accounting, tax, auditing, legal, energy saving, water saving, environmental protection and other consulting and services, language services (including translation, localization services, language technology development and application)

2. Engineering consulting services (including services such as planning consulting, project consulting, evaluation consulting, and whole process engineering consulting)

3. Asset valuation, calibration, testing, inspection and other services

4. Advertising ideas, planning, design, production, agency, publishing and other advertising services

5. Convention and exhibition services (excluding construction of convention venues)

XXXIII. Business services

1. Modern circulation network for agricultural products: construction of modern market circulation facilities for agricultural products and means of production, chain operation and comprehensive services for agricultural materials such as seeds, seedlings, livestock and fish fry (seeds), fertilizers, pesticides, agricultural machinery and tools, agricultural films, fishing nets, etc., chain operation of daily necessities, medicines, publications and other daily necessities for the villages, auction services for agricultural products, and modern circulation services for the new rural areas.

Network engineering construction, agricultural material Internet of Things application and demonstration project construction

2. Commodity trading market network: unified distribution and distribution network construction for business enterprises, transformation and upgrading of traditional commodity trading markets using information technology, construction of used goods markets, second-hand commodity trading markets, and modernized second-hand car trading service system

XXXIV. Tourism

1. Tourism equipment and equipment, leisure, mountaineering, skiing, diving, adventure and other types of outdoor activities supplies development and marketing services

2. New forms of tourism: cultural tourism, recreational tourism, rural tourism, eco-tourism, marine tourism, forest tourism, grassland tourism, wetland tourism, lake tourism, ice and snow tourism, red tourism, urban tourism, industrial tourism, sports tourism, themed amusement and other comprehensive development of tourism resources, infrastructure construction and information and other services, intelligent tourism, science and technology tourism, recreational tourism, self-drive tours, low-altitude tourism Service system construction of intelligent tourism, science and

technology tourism, leisure and vacation tourism, self-driving tourism, low-altitude tourism, cruise yacht tourism and other new tourism modes.

XXXV. Postal industry

1. Send end network construction: urban and rural express business outlets, stores and other express service outlets and intelligent express (letter bag) box, express end of the integrated service venues, village-level comprehensive service station of mail logistics and other end facilities construction

2. Postal hub layout construction: construction of express delivery processing facilities such as urban and rural, intra-regional and inter-regional shipment sorting centers, transfer centers, distribution centers, processing hubs, etc.

3. R&D and application of postal technology: data collection, containers, intelligent terminals, intelligent warehousing, automatic sorting, mechanized loading and unloading, cold chain express, AGV, unmanned aircraft, unmanned vehicles, unmanned warehouses, green packaging, recyclable packaging, intelligent security check system, intelligent video monitoring system,

Research and development of advanced technologies and equipment such as intelligent voice complaint processing system and universal address coding for mail delivery
Development and Applications

4. Technology development and application of mail express transportation and transportation network integration and multimodal transportation, operation platform, etc.

5. Intelligent Express & Logistics Park

XXXVI. Education

1. pre-school education

2. special education

3. vocational training

4. "Internet+Education" (online subject-based training for primary and secondary school students and online training for students in the 3 to 4 age group).

(except for online training for 6-year-old preschoolers)

XXXVII. Health

1. Construction of medical service facilities: construction of preventive health care, health emergency, health supervision service facilities, construction of medical and health service facilities, infectious disease, children's, mental health specialized hospitals and rehabilitation hospitals (centers), nursing homes (centers), hospice centers, general practice medical facilities and services, and health care integration

facilities and services

2. Health services for key populations: family planning, eugenics, reproductive health counseling and services, health information services and health management services such as health counseling, medical knowledge, infant and child health management, early childhood development, geriatric health care

3. "Internet + Medical and Health Services", Medical Big Data Applications

4. Psychological counseling services

5. Chinese Medicine Health Care Service

XXXVIII. Culture

1. **Public culture, culture and art, press and publication, film, radio and television, network audiovisual, cultural heritage protection and utilization and facilities construction, cultural relics protection equipment development and application, cultural heritage protection and utilization equipment development and application**

2. **Cultural and creative product development, digital cultural and creative (including digital cultural and creative technical equipment, digital cultural and creative software, digital cultural and creative content production, new media services, digital cultural and creative content application services, immersive experience), digital content services such as digital music, cell phone media, network publishing, etc., animation creation, production, dissemination, publishing, and derivatives product development**

3. **Film, radio and television and network audiovisual production, distribution, trading, broadcasting, publishing, derivatives development, copyright protection, supervision and related technology development and application, interactive video, VR video, immersive video and other high-tech video development and application, ultra-high-definition, cloud retransmission development and application, high-tech audiovisual**

industry base (park construction)

4. News publishing content supervision technology, copyright protection technology, publication production technology, publication distribution technology development and application, electronic paper, readers and other new carriers of news publishing technology development, application and industrialization

5. Development and Application of Film Digitization Service and Supervision Technology

6. Protection of intangible cultural heritage: protection and development of ethnic and folk arts, traditional arts and crafts and handicrafts, protection of historical and cultural cities (towns and villages) and historical and cultural districts, Chinese traditional villages and villages of Chinese ethnic minorities with special characteristics, protection and development of old Chinese brands, and international marketing and promotion of national cultural and artistic excellence.

7. Smart Museum Construction, Convergence of Traditional and Emerging Media, Convergence of Publishing, Smart Radio and Television Construction, Mobile Multimedia Broadcasting and Television, Digitization of Broadcasting and Television, Wired Without

line satellite broadcasting and television network intelligent cooperative coverage, the national cable television network intelligent construction and mutual
Construction of an interoperability platform, a national cultural network and a national cultural big data system

8. show business

XXXIX. Sports

1. Sports competitions and performance activities

2. Sports, fitness and leisure activities

3. Construction and management of sports facilities

4. Physical education and training

5. Sports Media and Information Services

6. Sports Health and Rehabilitation

XL. Elderly and childcare services

1. Elderly Services: Elderly Care Services, Elderly Financial Services, Construction of Elderly Facilities, Elderly Technology and Intelligent Elderly Services, Manufacturing of Elderly Goods and Related Products, Social Security for the Elderly, Elderly Public Administration, Sales and Leasing of Elderly Goods and Related Products, Elderly Health Promotion and Social Participation, Other Elderly Services

2. Child-care services: construction of child-care service facilities (child-care institutions, integrated child-care service centers, community child-care service facilities), scientific child-

care guidance and services for families with infants and toddlers, community child-care services

3. **Talent development for elderly care and childcare services: elderly care education and training and human resources services, childcare talent development and practitioner training**

XLI. Housekeeping

1. **Community housekeeping services**

2. Employee-based housekeeping service

3. Vocational education and skills training in home economics

4. Integrated Home Economics Information Service

5. Construction and Operation Management of Home Economics Service Facilities (Home Economics Service Outlets, Home Economics Innovation and Integration Platform, etc.)

XLII. Environmental protection and resource conservation and comprehensive utilization

1. Atmospheric Pollutant Management and Carbon Emission Reduction: development and utilization of alternatives to ozone-depleting substances and hydrofluorocarbons (HFCs), development and application of ozone-depleting substance and HFC disposal technologies, development and application of substitution and disposal technologies for persistent organic pollutants (POPs) products, development and application of POPs reduction and control technologies, carbon capture, utilization and sequestration engineering, technical equipment and technical services, indoor air Indoor air pollutant monitoring, analysis and treatment technology, volatile organic compounds reduction, resource utilization and end-end treatment and monitoring technology, advanced filtration materials, low-nitrogen graded partition combustion and mature, stable and efficient desulphurization, denitrification,

dust removal technology and equipment, not less than 200,000 pieces / day (including) new sintered brick production line or new dry-process cement kiln harmless co-disposal of wastes, flue gas carbon dioxide capture, purification and use of technology research, development and application, ammonia emissions, technology development and application of product substitution and disposal of persistent organic pollutant products. R & D and application of flue gas carbon dioxide capture and purification utilization technology, ammonia emission monitoring and control technology development and application of industrial parks odor pollution online monitoring technology development and application of

2. Ecosystem restoration and resource utilization: mine ecosystem restoration project, marine environment Conservation and scientific exploitation, marine ecological restoration

3. Urban sewage and garbage treatment: development of high-efficiency, low-energy sewage treatment and regeneration technology, urban garbage, rural domestic garbage, urban domestic sewage, rural domestic sewage, sludge and other solid wastes reduction, resourcefulness, harmless treatment and comprehensive utilization engineering, development of technology for the resourceful utilization of kitchen waste and

the construction of facilities, garbage classification technology, equipment and facilities.

Development of distributed and miniaturized organic waste treatment technology for urban and rural areas, and sludge co-production for wastewater treatment plants.
Same as disposal works

4. Environmental pollution monitoring and prevention: environmental pollution monitoring and prevention technology, environmental monitoring system engineering, ecological environmental protection supervision and law enforcement technology and equipment development, soil and groundwater pollution source control engineering, rapid detection of toxic and hazardous substances leakage, on-line monitoring and migration early warning technology, equipment research and development and application, low-disturbance, low-incidence soil and groundwater pollution prevention technology and equipment R & D and application, low-disturbance, low-incidence soil and groundwater pollution prevention technology and equipment R&D and application. R&D and application of groundwater pollution prevention and control technologies and equipment

5. Noise pollution and electromagnetic radiation prevention and control: development and application of noise pollution monitoring technology, R&D and application of low-noise construction technology and equipment, R&D and application of low-frequency sound-absorbing and sound-isolating

materials specialized for environmental pollution control, development and application of electromagnetic radiation control technology for power grid and information system.

6. Hazardous Waste Disposal: Hazardous waste (medical waste) harmless disposal and efficient use of technology and equipment development and manufacturing, the use of disposal center construction and/or operation, radioactive waste, nuclear facilities decommissioning engineering safety disposal technology and equipment development and manufacturing and disposal center construction, mercury-containing wastes of mercury recycling and treatment technology, mercury-containing product substitutes development and application, waste landfill containment technology and materials, cut and control of Development and application of heavy metal emission technologies, efficient treatment technologies for toxic and organic waste gases and odors, recycling of sulfur-containing wastes such as waste sulfuric acid, waste sulfur, industrial by-product gypsum, hydrogen sulfide, and sulfur-containing waste liquids to make sulfuric acid.

7. Waste recycling: construction of urban typical waste recycling network system (including standardized recycling stations, green sorting centers and trading centers in line with the requirements of relevant national standards), scrap steel

crushing production line (above 4,000 hp), scrap copper and aluminum crushing and sorting line (recycling rate of 95% or more), complete sets of equipment for recycling and processing of waste plastic composites (recycling rate of 95% or more), and recycling network for waste power batteries Construction

8. Waste recycling: scrap iron and steel, scrap non-ferrous metals, waste paper, waste rubber, waste glass

Recycling of typical urban wastes such as glass, waste plastics, waste wood and end-of-life automobiles, waste electrical and electronic products, waste ships, waste batteries, waste tires, waste wood materials, waste agricultural tools, waste textiles and textile wastes and edges, waste photovoltaic modules, waste wind turbine blades, waste oils and fats, development and application of technology and equipment, automated dismantling of waste power batteries, automatic and rapid sorting into groups, Battery residual life and consistency assessment, integrated recovery of valuable components, laddering, recycling technology and equipment development and application, recycling of low-value recyclables, construction of "urban minerals" bases and resource recycling bases, coal gangue, fly ash, tailings and other waste materials.

(co-associated minerals), smelting slag, industrial by-product gypsum, red mud, construction waste and other industrial waste recycling, crop residues, livestock and poultry manure, pesticide packaging and other agricultural and forestry waste recycling, biomass energy technology and equipment (power generation, heating, oil production, biogas)

9. Remanufacturing: dismantling, reuse and

remanufacturing of waste equipment and parts such as end-of-life automobiles, decommissioned civil airplanes, construction machinery, mining machinery, agricultural machinery, machine tools, office equipment, shield machines, aviation engines, industrial robots, internal combustion locomotives and other waste equipment.

10. Recycling of industrial ''three wastes'': comprehensive utilization and treatment technology, equipment and engineering of ''three wastes'', development and production of biological strains and additives for ''three wastes'' treatment, application of high efficiency recycling technology for wastewater Application of wastewater recycling technology, recycling of industrial hard-to-degrade organic wastewater, recycling of high-salt wastewater, recycling of recycled water, high-efficiency separation membrane materials, high-efficiency catalytic oxidation materials and other technical equipment, resource utilization of high-salt wastewater and industrial by-products of salt, comprehensive utilization of light-hydrocarbon petrochemical by-products, sulfur recycling equipment (low-temperature Krause method)

11. Energy-saving technology development and application: energy-saving, water-saving, material-saving environmental protection and comprehensive utilization of resources and

other technology development, application and equipment manufacturing, to provide users with energy-saving, water-saving, environmental protection and comprehensive utilization of resources.

Combined use of consulting, design, evaluation, testing, auditing, certification, diagnostics, financing, and retrofitting,
Operation management and other services, ice storage technology and its complete set of equipment manufacturing, waste heat recovery and utilization of advanced technology and equipment

12. Green mines: high-efficiency, green, low-carbon mining, ore dressing technology (pharmaceuticals), stripper backfill (filling) technology, low-grade, complex, difficult-to-process ore development and comprehensive utilization of technology and equipment, symbiotic, associated minerals extraction of valuable elements and comprehensive utilization of resources, ionic rare earth ore green and efficient leaching and extraction of the integration of technology, the development and application of advanced and applicable technologies for the conservation and comprehensive utilization of mineral resources.

13. Energy efficient magnetic levitation power equipment: magnetic levitation centrifugal blower, magnetic levitation turbine vacuum pump, magnetic levitation centrifugal refrigeration compressor, magnetic levitation low temperature waste heat generator, magnetic levitation air compressor, magnetic levitation vapor compressor, magnetic levitation

flywheel energy storage, etc.

XLIII. Public safety and emergency response products

1. Monitoring and early warning equipment and technology: meteorological, seismic, geological, marine, water and drought disasters, urban and forest fire disaster monitoring and early warning technology and equipment development and application, biological disasters, animal epidemic monitoring and early warning technology development and application, hazardous chemicals, coal mines, non-coal mines, dykes, tailing ponds and other safety monitoring and early warning technology and equipment development and application of water, soil, air pollutants in the production of life, rapid safety Monitoring technology and products, space-time safety, transportation safety, urban public safety, terrorist attack safety, network and information system safety, police safety, special equipment safety, engineering construction safety, fire, major sources of danger, safety monitoring and early warning system, product technology development and application, emergency scene information rapid mapping, storage, transmission and other technologies and products, satellite remote sensing technology application scenarios to expand the development and application of AI vision technology application scenarios, satellite remote sensing technology

application scenarios to expand the development and application of AI vision technology application scenarios to expand the development and application of AI vision technology. application, AI vision technology application scenario development and application, "low, slow and small" aircraft detection and countermeasure technology and equipment.

Development of weather protection technology for ocean navigation, aviation, energy, power, finance and other public security and
appliance

2. Inspection and testing equipment and technology: food and drug safety rapid inspection technology, instrumentation development and application, radioactivity, drugs and other contraband, nuclear, biological, chemical and terrorist sources and other dangerous goods rapid detection and testing technology and products, life detection equipment, fire product quality rapid detection equipment, agricultural products and their origin environment, the development and application of harmful elements monitoring technology

3. Emergency protection equipment and technology: emergency rescue personnel protective equipment, household emergency protection product development and application, lightning disaster new protection technology development and application, special work protection products, important infrastructure security, social public security, agriculture, forestry, meteorology, biological disaster prevention and protection technology development and application

4. Emergency rescue equipment and technology: intelligent, large-scale, special, unmanned, high-performance fire-fighting and rescue equipment, building (structure) all-terrain debris

rescue equipment, major disaster emergency rescue base-based logistics support key technology and equipment, all-terrain high mobility multi-functional emergency rescue special vehicles and equipment, aviation emergency rescue equipment and equipment, water (underwater and deep-sea) emergency rescue technology and equipment. Aviation emergency medical system, mobile medical rescue system, health emergency disinfection and supply equipment, life support, treatment, guardianship integration of first aid and evacuation platform, emergency rescue bases, public emergency experience infrastructure construction, special equipment accident rescue technology and equipment, major accidents and disasters, intelligent unmanned emergency rescue key technology and equipment, hazardous chemical disasters, emergency rescue technology and equipment, coal mine disaster emergency response technology and equipment Rescue technology and equipment

5. Emergency disposal equipment: road emergency relief equipment and facilities, marine oil spills and toxic and hazardous substances leakage emergency disposal technology and equipment, toxic and hazardous liquids rapid absorption treatment technology and equipment, mobile medical waste rapid treatment device, hazardous waste characteristics of the

identification of special instruments and other sudden

Environmental protection technology and equipment for emergency response to environmental disasters, technology and equipment for counter-terrorism operations and detection and control technology, counter-terrorism

Comprehensive combat platform technology, anti-nuclear, biological and chemical terrorist robots, emergency explosion-proof vehicles, medium-sized anti-terrorist detonation robots, explosion-proof trailers, explosives destruction, large, multi-functional engineering rescue equipment, flood control and drought relief equipment and equipment, nuclear accident emergency disposal technology and equipment, temperature abnormal rapid screening and disease detection and disposal of technology development and application of the plateau and alpine areas of the disaster site resettlement equipment and key technologies and equipment research and application, rain, snow and ice disaster efficient and intelligent de-icing and snow removal equipment Research and application of equipment, rain, snow and ice disaster efficient intelligent de-icing and snow removal equipment

6. Emergency response professional and technical services: emergency response consulting, assessment, training, leasing and insurance services, typhoon risk zoning mapping technology and application, safety production simulation training technology development and application

7. Emergency material reserves: new fireproof coatings, fireproof materials, fire stopping and explosion suppression devices, fire-resistant building components, emergency material reserves, deployment of technical facilities and services

8. Safe production equipment and technology: mines, hazardous chemicals, fireworks and other high-risk industries in the field of unmanned, intelligent production technology and equipment

XLIV. Civilian explosives and fireworks products

1. Industrial explosives: safe, environmentally friendly and energy-saving industrial explosives and bulk industrial explosives without detonator sensitivity, on-site mixing production mode, on-site mixing production mode with centralized preparation of latex matrix and remote distribution, on-site mixing production mode for underground mines, large-scale chambers, highways and railroad tunnels, etc., and on-site mixing explosives technology, and the integration of civil explosives scientific research, production, and blasting services. "mode, decommissioning fire
(explosives) in industrial explosives, special purpose explosives, industrial explosives intelligent production technology and equipment, industrial explosives unmanned workshop,

production line online monitoring, fault self-diagnostic technology, on-site mixing production mode of high-precision charge metering technology, on-line parameter detection technology, on-site mixing production mode of the whole process of intelligent management and control platform, the production, sales (including warehousing)

The informationization and visualization of the intelligent network monitoring platform (storage), the waste hazardous materials and substandard products security
Full, environmentally friendly recycling and reuse process technology and equipment

2. Industrial detonators: new types of detonating equipment, digital electronic detonators, industrial detonator finished products to prevent martyrdom explosion safety technology and basic detonator intensive production, remote distribution and safe packaging, digital electronic detonator electronic ignition components (including electronic control modules and ignition components) centralized production and remote distribution mode, charge series of industrial detonation guides, modularization of high-risk production processes, automation, continuous equipment, safety environmentally friendly waste (material) destruction and disposal equipment, pyrotechnic agents, products, intelligent production processes and equipment, industrial detonator production line unmanned workshop, production process quality control points process parameters, people, machines, materials, environment and other data automatic collection, storage and traceability analysis system, no occupational hazards, safety and environmental protection, information technology, high degree of product performance testing

methods, the production process of industrial detonating cord explosives to add drugs, Automated equipment for winding, coiling, sealing and packaging.

3. Intelligent production equipment and technology: automation of the production process of detonating apparatus; periodically deactivatable

Stable and controllable seismic source pillars, the application of water-containing explosives in seismic source pillars; serialized and generalized projectile products; reliable, diversified, highly efficient and environmentally friendly combustion explosives for artificial weather influence; industrial explosives production process with process data visualization, online collection of production data, and automatic detection of safety parameters; high level of quality and safety in the manufacture of detonating apparatus; process equipment for continuous and intelligent melting, mixing, pouring, and demoulding processes; automatic charging and assembly of seismic source pillars; automatic charging and pressing of projectiles; and process equipment for continuous and intelligent melting, mixing, pouring, and demoulding of seismic source pillars. Continuous, intelligent melting, mixing, casting, demolding and other processes of technology and equipment; seismic source pillars automatic charging, automatic assembly of technology and equipment;

shot shells automatic charging, automatic suppression of technology and equipment

4.Automatic safety production lines: industrial explosives production lines with a total number of operators in the hazardous workshop of not more than 3; production lines where the production of detonating apparatus is intelligentized, no fixed operators in the melting and mixing workshop, and the total number of operators in a single demoulding, inspection and packaging workshop is not more than 5 (inclusive);

Shock source drug column production to achieve continuous, automation, informationization, flexible intelligent manufacturing, 1.1

Production lines with no more than 5 operators in a single hazardous room; the production of projectiles to achieve Automation, intelligence, the number of operators in the dangerous workshop is not more than 6 people production line; artificial weather influence with combustion equipment production automation, intelligence, the number of operators in the dangerous workshop is not more than 5 people production line; sea life-saving pyrotechnic signals and other pyrotechnic information bullet manufacturing to achieve automation of the preparation of the agent, loading process, the mechanization of the assembly process, the isolation of man-machine, dangerous workshop operators are not more than 5 people production line; a single production line contact base detonator and into the production line; a single production line contact base detonator and into the production line. (c) Production lines with a total of 5 operators; single production lines with access to basic detonators and to the production of fireworks; production lines with a total of 5 operators.

The total number of on-site operators for product detonators is no more than 3, and the contact time of a single industrial

detonator assembly workshop is no more than 2 hours.
Industrial detonator assembly lines with a total of no more than 6 operators on site for basic and finished detonators

5. Fireworks: blunt pyrotechnics, smokeless (micro) pyrotechnics, safe and environmentally friendly fireworks, automated intelligent fireworks production equipment, production line

XLV. Human resources and human capital services

1. Recruitment, human resources assessment, human resources training, human resources management consulting, outsourcing of human resources services (including payroll services, welfare services, social security services, etc.) executive search, human resources science and technology, human resources and social security services agency, employment and entrepreneurship guidance, flexible employment services and other human resources services.

2. Digitalization of human resources and data security management

3. Construction of platforms such as human resources service industrial parks and human resources service export bases

4. Construction of human resources market and supporting service facilities and construction of service platform for rural labor force transfer and employment

5. **Standardized construction of human resources services, credit system construction, brand building**

XLVI. Artificial Intelligence

1. **Artificial Intelligence Chip, Industrial Internet, Public System, Digital Software, Intelligent Equipment System Integration Technology and Application**

2. **Intelligent infrastructure such as network infrastructure, big data infrastructure, high-performance computing infrastructure, etc.**

3. **Artificial Intelligence Standard Testing and Intellectual Property Service Platform**

4. **Intelligent industrial upgrading: intelligent home, intelligent medical care, medical image assisted diagnosis system, intelligent security, video image identification system, intelligent transportation, intelligent means of delivery, intelligent education, smart city, intelligent agriculture, intelligent port construction**

XLVII. Smart manufacturing

1. **Robots and integrated systems: industrial robots and integrated systems such as welding robots, spraying robots, assembly robots, clean robots, heavy-duty robots, collaborative robots, composite robots, etc., medical robots, agricultural robots, mining robots, construction robots, underwater robots, security robots, robots working in hazardous environments, etc., and integrated systems, intelligent robots. High-precision**

gearboxes, high-performance servo systems, intelligent controllers, intelligent integrated joints and other key components for robots, operating systems, process software and databases for robots, offline simulation software, cloud service platforms, etc., human-robot interaction and autonomous programming for robots, robot safety and reliability, and other key common technology development and application, intelligent robot evaluation and certification system, robot application test and verification. Center

2. Intelligent testing equipment and instruments: digital non-contact precision measurement, online non-destructive testing, laser tracking measurement and other intelligent testing equipment and instruments

3. Sensors: micro-nano displacement sensors, flexible tactile sensors, high-resolution vision sensors

Low-power smart sensors with wireless communication functions, such as sensors and encryptable sensors

4. Additive manufacturing equipment and special materials: metal additive manufacturing equipment and special materials, non-metallic additive manufacturing equipment and special materials, bio-additive manufacturing equipment and special materials, lasers, electron guns, scanning microscopes and other key parts and components, additive manufacturing software, additive manufacturing integrated solutions and production services

5. Intelligent logistics equipment: intelligent multi-layer multi-directional shuttle, intelligent large-scale three-dimensional warehouses and other intelligent logistics and warehousing equipment, information systems, intelligent port loading and unloading equipment, intelligent logistics equipment for agricultural products, etc.

6. Intelligent products: wearable devices, smart home; unmanned autonomous systems, intelligent human-computer interaction systems; research and development and application of virtual reality (VR), augmented reality (AR), voice semantic image recognition, multi-sensor information fusion and other technologies

7. Industrial control systems: medium and large

programmable logic controllers (PLC), supervisory control and acquisition systems (SCADA), safety instrumented systems (SIS), advanced process control systems (APC), motion control systems (MCS), large-scale high-performance real-time database systems, large-scale high-performance time-series database systems

8. Industrial software and systems: computer-aided design (CAD), auxiliary engineering (CAE) and other R & D and design software, advanced planning and scheduling (APS), manufacturing execution system (MES) process planning (CAPP), product lifecycle management (PLM) and other production and manufacturing software, industrial operating systems, configuration and programming software and other control and execution software, industry-specific process library, Model library, new industrial software based on industrial cloud, industrial big data, industrial AI and other new technologies; basic common industrial APP, industry general industrial APP, industrial APP store; process knowledge encapsulation technology development and application, process mechanism model development and application.

9. Industrial Internet platform: with the ability of equipment access, knowledge deposition, application development, etc. industry-based industrial Internet platforms, specialized industrial Internet platforms such as cloud simulation, digital twin, data processing, fault prediction and health management, industrial whole-process microservice resource pools, and industrial Internet platform monitoring and evaluation index system

10. Industrial cloud application: industrial cloud platform, industrial cloud operating system, industrial resource library and component library construction, cloud manufacturing service platform, industrial cloud-side collaboration, cloud-side-end integration R&D and applications

11. Industrial information security: R&D and application of software and hardware products for in-depth analysis of industrial Internet threats, security countermeasures, cloud security protection, etc., R&D and application of technologies for industrial information security situational awareness, risk early warning, event emergency response, etc., R&D and application of technology for mining, analyzing and repairing information security vulnerabilities of industrial control systems, R&D and application of technology for security testing of industrial control products, R&D and application of full life cycle security of important

intelligent products and systems, R&D of solutions and security units, R&D and application of products for industrial disaster recovery and backup and bandwidth operation. R&D and application of solutions and security units, R&D and application of products for industrial disaster recovery and backup and operation with disease.

12. Intelligent manufacturing system integration and application experience verification services: intelligent manufacturing strategy, management, assessment, supervision and other consulting services, intelligent manufacturing system design and development, integration and implementation, application verification, operation and maintenance services
13. Intelligent Manufacturing Standard Development and Test Verification Platform Construction by Sub-Industry
14. Intelligent manufacturing capability maturity evaluation, intelligent manufacturing development level evaluation system
15. Intelligent manufacturing scenarios: Internet + collaborative design and manufacturing, machine vision and intelligent quality inspection, intelligent production scheduling, predictive maintenance, intelligent inventory management, industrial brain and other technology development and application

16. Smart factories: information-physical systems (CPS), data- and knowledge-driven optimization and

R&D and application of real-time optimization and advanced control technologies for decision-making, manufacturing equipment and production processes.

Integrated management and control platform for smart factory, R&D and application of full life cycle smart factory system for discrete industry, R&D and application of full life cycle smart factory system for process industry

XLVIII. Agricultural machinery and equipment

1. Tractors and Key Components: power shift tractors, CVT tractors, hilly and mountainous tractors, paddy tractors, hilly and mountainous multi-purpose power platforms, hybrid tractors, new energy tractors, high efficiency and low emission intelligent agricultural diesel engines, NRMM aftertreatment systems, heavy-duty gearboxes and drive axles, power shift gearboxes, Continuously Variable Transmissions (CVTs), mechanical-hydraulic Continuously variable transmissions (HMT), variable pumps, multi-way valves, electro-hydraulic proportional valves and electronic control systems for agricultural machinery, agricultural high-strength conveyor belts and half-tracks, wet clutches, electronically controlled hydraulic lifters

2. Low-loss and high-efficiency harvesting machinery: self-propelled grain combine harvester (feeding capacity above 9kg/s), self-propelled full-feed rice combine harvester (feeding

capacity above 5kg/s), self-propelled semi-feed rice combine harvester (more than 4 rows), self-propelled cob and stalk maize harvester (more than 4 rows), self-propelled maize kernel combine harvester (more than 4 rows), self-propelled potato harvester, light and simple harvesting equipment for hilly mountain areas, self-propelled pick and pack cotton harvester (more than 3 rows), large self-propelled silage harvester (400 horsepower), straw forage collection and baler, grass harvester (more than 400 horsepower). Light and simple harvesting equipment, self-propelled picking and baling cotton harvester (more than 3 rows), large self-propelled silage harvester (more than 400 hp), straw forage collection and baling machine, forage harvesting machinery, self-propelled oilseed rape, peanuts and other oilseed crop combine harvester, soybean and corn intercropping harvesting machinery, self-propelled sugarcane, sugar beets and other sugar crops combine harvesting machine, onions, ginger, garlic, collards, small green vegetables and other vegetable harvesting machinery, self-propelled chili peppers, self-propelled harvesting machinery, self-propelled harvesting machine, sugar cane and beet harvesting machinery. Harvesting machinery, self-propelled pepper, tomato and other tomato and berry fruit and vegetable harvesting machinery, self-propelled red dates, wine grapes,

Chinese herbs and natural

Rubber and other special economic crops harvesting machinery, hybrid trees, protein mulberry, lemon and other high-quality protein

Type fodder harvesting machinery, multifunctional picking platforms for standardized orchards, natural rubber cutting machines, wood 🎧 grain and oil, forest economy harvesting equipment, bamboo harvesting, bamboo shoots digging, non-powered bamboo product delivery machinery, etc.

3. Tillage and field management machinery: farmland stone picker, satellite grader, deep pine and land preparation machine, hydraulic turning plow (single width $\geq 40\mathrm{cm}$), heavy-duty power-driven harrow, power-driven wide rotary tiller, high-speed precision strip-tillers, high-speed precision planter, no-till precision planter, soybean and corn banded composite planting of special planters, hilly and mountainous areas with lightweight and simple type of sowing equipment, forest crops, small-scale planter. High-speed rice transplanter with automatic navigation, rice transplanter with side-deep fertilization, rice potting and planting machine, high-efficiency transplanting machine and hole opener for oilseed rape, vegetable, tobacco, traditional Chinese medicine, sweet potato, sugar beet, etc., sugarcane planting machine, upland gap sprayer, large and medium-sized sprinkler irrigation machine, water-fertilizer-drug-integrated micro-drip irrigation equipment, grapevine burying trenching fertilizer

application machine, agricultural drones (with a load of 20kg or more), residual film recycling machine, centralized seedling (Seedlings), environmental control, automatic roof cleaning and other planting machinery, intelligent greenhouse, unmanned plant factories

4. Livestock, poultry, aquaculture and agricultural products processing machinery: precision feeding, intelligent ring control, letter

Information monitoring, disease prevention and control, intelligent collection and processing of livestock products, farming inspection robots, milking robots, dead livestock and aquatic harmless treatment equipment, efficient fecal waste collection and resource utilization, livestock and poultry production performance measurement, set of fish catching and harvesting, and water purification and treatment of livestock and poultry aquaculture equipment, grains, oilseeds and other bulk agricultural products such as hulling, clearing, drying, storage and puffing freshness and other primary processing equipment, grains, Tea, Chinese herbs and other specialty agricultural products such as grinding and crushing, mixing and modulation, cutting and drying, conditioning molding, selection and grading and other primary processing equipment, fruits and vegetables, livestock and poultry, aquatic and other fresh

agricultural products such as pre-cooling, preservation, refrigeration, clearing, grading, splitting, packaging and other primary processing equipment.

Seed Processing Equipment, Machine Picked Cotton Processing Equipment, Feed Processing Equipment, Agricultural Equipment Waste Fermentation Equipment

5. Specialized parts and components for agricultural machinery: high-efficiency low-emission intelligent agricultural diesel engines, after-treatment systems for off-road mobile machinery, heavy-duty gearboxes and drive axles, powershift gearboxes, continuously variable transmissions (CVTs), hydro-mechanical CVTs (HMTs), variable pumps, multilane valves, electro-hydraulic proportional valves, and electronic control systems for agricultural machinery, agricultural high-strength conveyor belts and half-tracks, wet clutches, and electronically-controlled hydraulic lifters. The company has also developed a wide range of agricultural equipment, such as soil-touching parts for agriculture, precision seed dischargers, soybean cutting tables, spindles for cotton pickers, highly reliable knots, special cutting knives, high-performance spray nozzles, large-displacement diaphragm pumps, agriculture-specific sensors, BeiDou-based auxiliary driving systems for agricultural machinery, measurement and control systems and equipment for agricultural machinery such as information recognition, real-time measurement and control of parameters, fault diagnosis, and decision-making on operations.

6. R&D and industrialization of suitable agricultural machinery and equipment for hilly areas

7. Crop transplanting machinery: ride-on disk soil motorized high-speed rice transplanter (more than 350 insertions per minute, 3 to 5 plants per hole, adapted to row spacing of 20 to 30 centimeters, adjustable spacing, adapted to plant spacing of 12 to 22 centimeters), disk soil motorized rice transplanter (ride-on or hand-held, adapted to row spacing of 20 to 30 centimeters, adjustable spacing, adapted to plant spacing of 12 to 22 centimeters)

8. Water-saving irrigation equipment: large and medium-sized sprinklers, micro-drip irrigation equipment, flood control and drainage equipment (drainage capacity of more than 1,500 cubic meters per hour, head of 5 to 20 meters, power of more than 1,500 kilowatts, efficiency of more than 60%, movable)

XLIX. CNC machine tools

1. High-grade CNC machine tools: five-axis and above linkage CNC machine tools, high-speed and high-precision CNC machines

couch

2 Equipments for manufacturing equipments: High-speed precision press (180kN or more), ferrous metal fluid Pressure extruder (over 150 mm/sec), light alloy hydraulic extruder (under 10 mm/sec), high speed precision shear (over 2000kN, section slope under 1.5°), internal high pressure molding machine
(above 10000kN), large bending machine (above 60000kN), digital sheet metal processing center (flexible manufacturing system), high-speed powerful spinning press (radial spinning force/per wheel: above 1000kN), CNC multi-station press (replaced by servo multi-station press), large nominal pressure cold/warm forging press (above 10000kN), more than 4 stations of automatic warm/hot Forging presses
(16,000kN or more), servo multi-station press (12,000kN or more), large servo press (8,000kN or more), progressive die press (6,000kN or more), composite drive thermoforming press (12,000kN or more, linkage force coefficient of ≥ 6), high-speed composite drive press intelligent stamping line (30,600kN or more, a single continuous stroke), the new generation of aircraft skin integrated drawing shape intelligent complete sets of equipment, aerospace large and ultra-large sheet metal parts liquid filling and forming equipment, radial forging machine and rotary forging machine (630 times / minute) (more than 30600kN, a single

machine continuous stroke ≥ 12 times / min), a new generation of aircraft skin integrated drawing shape intelligent equipment, aerospace large and very large sheet metal parts liquid-filled forming equipment, radial forging machine and rotary forging machine (630kN or more), vibration extrusion machine (630kN or more), high-speed upsetting machine (forging weight of more than 1.6kg)

3. CNCs and industrial software for high-end CNC machine tools: CNCs (with 5-axis operation)

(more than two technical features, such as dynamic control, high-precision machining, high-speed machining, special specialized machining functions, etc.), servo drives and motors (including spindle motors, torque motors, linear motors and related components, etc.), high-performance positional feedback components/encoders/scales (absolute encoders, linear positioning accuracy of 3 μm/m, rotary resolution: single-turn 23-bit, multi-turn 21-bit), with

Specialized industrial software for CNC machine tools and digital manufacturing (including 5-axis and high-end machining)

CAD/CAE/CAM software, MES software for industrial machine tools, etc.)

4. Key components, accessories and gauges for high-end CNC

machine tools: High-performance CNC rotary tables.

High-power, high-speed spindle, high-precision spindle unit, precision-grade or higher rolling functional parts, and
To drive parts, dynamic and static pressure, static pressure support components, CNC pendulum head, machining attachment head, servo-powered turret, tool holder, high-speed tool changer robot, tool magazine, high-speed and high-precision large chuck, automated manufacturing of the required special functional components and machine tool accessories, industrial robots required by the digital manufacturing system, cemented carbide, carbide and other cutting tools and tooling system, high-performance abrasives (diamond and CBN and other super-hard materials and their micro-powders, grinding wheels for special materials), gauges and measuring instruments (with online measurement function, accuracy level above measurement level)

5. Cutting, welding equipment: intelligent welding equipment, laser welding, electron beam welding and other high-energy beam welding and cutting equipment, stirring friction, composite heat source and other welding equipment, digital, high-capacity inverter welding power supply, high-power, high-precision five-axis laser cutting machine (5-axis linked processing, fiber laser power $\geq 20\mathrm{kW}$)

Fifty. Cybersecurity

1. Network security products: endpoint security products, facility security products, application security products, data security products, identity security products, security management products, etc.

2. Network Security Services: Security Consulting, Design and Development, Security Integration, Security Operation, Secure Processing and Storage of Information, Assessment and Certification, Disaster Backup and Recovery, Network Security Audit, Emergency Response, Training Infrastructure Services, Education and Training, Security Crowdsourcing, Network Security Insurance, etc.

3. Research, development and transfer of network security technology

4. Network security testing tools: source code auditing tools, software load stress testing tools, network performance testers, vulnerability scanning and verification tools, security configuration verification tools, network traffic analysis tools, fuzzy testing tools, penetration testing tools, protocol conformance verification tools,

Flow simulation tools, etc.

5. Construction and upgrading of cybersecurity infrastructure: cybersecurity infrastructure platform facilities, cybersecurity industrial parks, etc.

6. R&D and industrialization application of data security technology products, development of data security services (including testing and evaluation, certification, education and training)

Restricted category II

The restricted category is mainly production capacity, process technology, equipment and products that are backward in technology, do not comply with industry access conditions and relevant regulations, are not conducive to safe production, are not conducive to the economical and intensive utilization of natural resources, are not conducive to the realization of the goal of carbon peaking and carbon neutrality, and need to be urged to renovate and prohibit the construction of new production capacity, process technology, equipment and products. New projects whose energy efficiency has not reached the benchmark level in the latest version of "Energy Efficiency Benchmarking Levels and Benchmarking Levels in Key Areas of Industry" are managed with reference to the restricted category.

Restricted categories adhere to the principle of market-oriented, rule of law, mainly from the safety, environmental protection, energy consumption, water consumption, quality and other aspects of setting restrictions on the no longer overcapacity, the market can be effectively regulated, liberalization of restrictions on the safety and environmental protection and other hidden problems, there are clear

regulatory measures of production capacity, process technology, equipment and products, no longer included in the restricted categories.

For new projects belonging to the restricted category, investment is prohibited. Investment management departments shall not approve or authorize them; financial institutions shall not issue loans; and departments such as natural resources, construction, ecology, water conservancy, market supervision, firefighting and customs shall not carry out the relevant formalities. Where investment and financing construction is carried out in violation of the regulations, the relevant units and personnel shall be held responsible. For the existing production capacity belonging to the restricted category, enterprises are allowed to take measures for transformation and upgrading within a certain period of time, and financial institutions will continue to give support according to credit principles. The relevant state departments shall, in accordance with the requirements of optimizing and upgrading the industrial structure, follow the principle of survival of the fittest and implement classified guidance.

I. Agriculture, forestry and fisheries

1. Overgrazing of natural pastures

2. Single-line 50,000 m3/year or less ordinary particleboard, high medium density fiberboard production units

3. Rosin production projects of less than 1000 tons/year, turpentine primary processing projects

4. Veterinary powder, bulk and mixing production line projects (except for species with new veterinary drug certificates or automated closed high-efficiency mixing production processes)

5. Production line project of veterinary cellular vaccine in the form of trans-bottle culture production (except for species holding new veterinary drug certificates and adopting new technologies)

6. Production and use of disposable wood products and wooden packaging made of high-quality forest wood as raw material and wood and bamboo processing projects with low comprehensive utilization rate of wood and bamboo processing

7. Plywood and blockboard production lines of less than 10,000 cubic meters/year

8. Root carving manufacturing of rare plants and ancient trees

9. Processing of precious and endangered wild animals and plants using wild resources as raw materials
10. Bait net culture in lakes and reservoirs that do not meet the requirements for ecological culture
11. Open field agricultural development projects that are not conducive to ecological and environmental protection
12. Construction of pulp raw material forest bases in water-scarce areas and national ecologically fragile areas
13. Grain-to-ethanol and edible plant oilseed-to-biofuel projects that are not in line with national planning and industrial policy
14. Development that destroys woodlands, wetlands, grasslands, deserts

II. Coal

1. Coal mines with less than 300,000 tons/year, coal mines with less than 900,000 tons/year with prominent coal and gas

2. Coal mining projects using non-mechanized mining processes
3. Coal mining projects that have not reported and approved the mine master plan in accordance with the procedures stipulated by the State
4. Coal mining projects with more than 2 underground workings
5. Coal mines whose mining depth exceeds the provisions of the Coal Mine Safety Regulations, commercial coal whose quality fails to meet the requirements of the Interim Measures for the Management of Commodity Coal Quality, and coal mines whose mining technologies and equipment are listed in the restricted catalog of the Policy Guidelines for Coal Production Technology and Equipment (2014 Edition) and are unable to implement technological reforms.

III. Electricity

1. Within the coverage of the large power grid, the coal consumption of power supply is higher than 285 g standard coal/kWh.

Regular bituminous coal wet-cooled generating units, conventional bituminous coal air-cooled generating units with power supply coal consumption higher than 300 grams of standard coal/kWh (excluding units burning special coal types such as anthracite and lignite).

2. Diversionary hydroelectric power generation without discharging ecological flows

3. Coal power units (except those with special furnace types) and coal-fired boilers that fail to meet the ultra-low emission requirements

IV. Petrochemicals

1. 10 million tons/year or less of normally reduced pressure, 1.5 million tons/year or less of catalytic cracking, 1 million tons/year or less of continuous reforming, 1.5 million tons/year or less of hydrocracking production units

2. naphtha cracking to ethylene under 800,000 tons/year, acrylonitrile under 130,000 tons/year, purified terephthalic acid under 1,000,000 tons/year, ethylene glycol under 200,000 tons/year, styrene under 200,000 tons/year (except for the process of ethylbenzene made from dry gas), caprolactam under 100,000 tons/year, acetic acid by the ethylene method, acetic acid by the carbonyl synthesis method under 300,000 tons/year, natural gas-to-methanol production units (except for the natural gas with the content of more than 20 percent of CO 20% or more of the CO2 content of natural gas, coal to methanol production units of less than 1 million tons / year, acetone cyanohydrin method of methanol production units of less than 1 million tons / year.

Methyl acrylate (except for hydrocyanic acid by-production from acrylonitrile), grain acetone/butanol, chlorine
Alcohol-based epichlorohydrin and chlorohydrin-based epichlorohydrin production units, and saponin (including hydrolysate) production units up to 300 tons/year.

3. 70,000 tons / year or less polypropylene, 200,000 tons / year or less polyethylene, acetylene (poly) vinyl chloride, the starting scale of less than 300,000 tons / year of vinyl oxychlorination polyvinyl chloride, 100,000 tons / year or less polystyrene, 200,000 tons / year or less acrylonitrile-butadiene-styrene copolymer (ABS) 100,000 tons / year or less common synthetic latex - carboxybutadiene rubber (including styrene-butadiene latex) production units devices, 50,000 tons / year of nitrile latex devices, new construction, expansion of chloroprene rubber, styrene-butadiene thermoplastic rubber, polyurethane and polyacrylate solvent-based general-purpose adhesive production units

4. Acid production from sulfur below 300,000 tons/year (except for electronic-grade sulfuric acid with a single metal ion ≤ 100 ppb), acid production from sulfurous iron ore below 200,000 tons/year, nitric acid by atmospheric pressure method and integrated method, calcium carbide (except for equivalent replacement by large-scale advanced process equipment), and potassium

hydroxide production units with a single-line capacity below 50,000 tons/year.

5. Soda ash (except for underground recycling alkali production, natural alkali, and alkali production unit that adopts comprehensive utilization of industrial waste salt in its entirety), caustic soda (except for ionic membrane caustic soda unit that adopts comprehensive utilization of industrial waste salt in its entirety), yellow phosphorus, ammonium phosphates, sodium tripolyphosphate, sodium hexametaphosphate, bisphosphorus pentasulfide, calcium hydrogenphosphate, calcium less baking process sodium dichromate, calcium carbonate, anhydrous sodium sulfate (except for co-production of salt and by-products), barium carbonate, and barium sulfate, Barium hydroxide, barium chloride, barium nitrate, strontium carbonate, silica (except for the gas phase method), choline chloride production units (except for equal or reduced replacement of 🎧 entry capacity)

6. The starting scale is less than 30,000 tons/year, and the capacity of single line is less than 10,000 tons/year of sodium cyanide (discounted).

(100%), single-line capacity of 5000 tons / year or less of lithium carbonate, lithium hydroxide (except recycling) dry aluminum fluoride, low molecular ratio cryolite production units

7. Nitrogen fertilizers made from oil and natural gas, synthesized by fixed-layer intermittent gasification technology

Ammonia, copper scrubbing ammonia synthesis feed gas purification process

8. Pesticide raw materials with high toxicity, high residue and high impact on the environment or quality and safety of agricultural products

[Including oxymethol, terbufos, parathion, methyl bromide, methomyl, methomyl, aldicarb, carbofuran, sodium dichlorvos, dichlorvos ketone, rodenticides, rodenticidal ethers, bromadiolone, bromadiolone, botulinum toxin, bispyribac-sodium, aluminium phosphate, organochlorine and organotin insecticides, fumonisole, and sodium dinitrophenate. (Potassium), metsulfuron, endosulfan, chlorothalonil, fipronil, thiophanate, flufenacet, cypermethrin, acephate, carbendazim, butyryl hydrazine, etc.] production units

9. 草甘膦、毒死蜱、三唑磷、百草枯、百菌清、阿维菌素、吡虫啉、乙草胺、氯化苦、甲草胺、2,4-滴、啶虫脒、噻虫嗪、莠去津、丁草胺、二甲四氯、莠灭净、麦草畏、敌草快、草铵膦、烯草酮、代森锰锌、敌百虫、三唑醇、丙环唑、异菌脲、多效唑、石硫合剂生产装置

10. Sulfuric acid titanium dioxide (except cogeneration process), lead chrome yellow, less than 30,000 tons/year

Iron oxide pigments, solvent-based coatings (except for the paint varieties and production processes that are encouraged), powder coatings containing triglycidyl isocyanurate (TGIC)(except for closed production units), and nitrocellulose coating production units with VOCs content exceeding 75%.

11. Dyestuffs, dyestuff intermediates, organic pigments, printing and dyeing auxiliaries production installations (except for new functional, high-performance environmentally friendly dyestuffs (pigments), the adoption of cleaner production, 🔊 quality and safety of the new technology)

12. Hydrogen fluoride (HF, enterprise downstream deep-processing products supporting self-use, electronic grade and wet process phosphoric acid supporting the exception) production units, the initial size of less than 200,000 tons / year, a single set of less than the size of the

100,000 tons/year of methyl chlorosilane monomer production unit, less than 100,000 tons/year (silicone supporting)
除外）和 10 万吨/年及以上、没有副产四氯化碳配套处置设施的甲烷氯化物生产装置，没有副产三氟甲烷配套处置设施的二氟一氯甲烷生产装置，可接受用途的六氟化硫（SF6，高纯级除外）生产装置，用作制冷剂、发泡剂等受控用途的二氟甲烷（HFC-32）、1,1,1,2-四氟
Difluoromethane (HFC-32), 1,1,1,1,2-tetrafluoroethane (HFC-134a), pentafluoroethane (HFC-125), 1,1,1-trifluoroethane (HFC-143a), 1,1,1,3,3-pentafluoropropane (HFC-245fa) production units for controlled uses such as refrigerants, blowing agents, etc. (excluding by-production facilities)

13. Production of bias tires, tires (including wheelbarrow tires), nylon cord, steel cord up to 50,000 tons/year, recycled rubber (except for atmospheric pressure continuous environmentally friendly desulfurization process), rubber plastisol pentachlorothiophenol, rubber accelerator tetramethyltetramethyltoluene disulfide (TMTD)

V. Information industry

1. Laser Disc Player Production Line (VCD Series Complete Products)

VI. Steel

1. Iron and steel joint ventures, independent coking enterprises are not synchronized with the construction of dry

quenching, coal loading, push coke dedusting, VOCs control devices coking project

2. Iron and steel, ferroalloys, foundry walk-in sintering machines, belt sintering machines up to 180 square meters (except ferroalloy sintering machines and pig iron sintering machines for foundry use)

3. Blast furnace for pig iron for steel making with effective volume more than 400 cubic meters and less than 1200 cubic meters
4. Steelmaking converters with a nominal capacity of more than 30 tons and less than 100 tons
5. Electric arc furnaces with a nominal capacity of more than 30 tons and less than 100 tons (50 tons for alloy steel)

6. Hot-dip galvanized coil projects of 300,000 tons/year or less

7. Color-coated sheet and coil projects of 200,000 tons/year or less

8. Chromium-containing refractories

9. Pressing equipment, roasting equipment and production of ordinary and high power graphite electrodes (except for graphite electrodes with a diameter of more than 1200 mm for industrial silicon mineral heat furnaces)

10. Production of UHP graphite electrodes with a diameter of less than 600 mm or less than 20,000 tons/year threads

11. Pre-roasted anodes (carbon briquettes) under 80,000 tons/year, ordinary cathode carbon under 20,000 tons/year Production line of carbon electrodes with a capacity of 40,000 tons/year or less

12. Pelletizing equipment with a single machine of less than 1.2 million tons/year (except ferroalloys and pig iron pellets for foundry use)

13. Height of charring chamber of top-loading coke oven <6.0 m, height of charring chamber of masticating coke oven <5.5 m; volume of masticated coal cake of heat-recovery coke oven <35 m3; capacity of single-oven semi-coke ovens <100,000 t/a (with the exception of magnesium smelting and gas distribution units with a single-oven capacity of ≥50,000 tons/year and using high-temperature pyrolysis of low-rank coals)

14. Electric furnaces for the refining of low- and medium-carbon ferromanganese, electric furnace manganese metal and low- and medium-carbon ferrochrome, 3000 kVA and above, not using the hot-loading and hot-tuning process

15. Ferromanganese blast furnaces up to 300 cubic meters; 300 cubic meters and above, but with coke ratios higher than 1320 kg/tonne ferromanganese blast furnace; ferromanganese blast furnace enterprises with a size of less than 100,000 tons/year

16. Mineral-heating furnaces for calcium-silicon alloys and calcium-silicon barium-aluminum alloys of less than 12,500 kVA; and mineral-heating furnaces of 12,500 kVA and above, but with calcium-silicon alloy power consumption higher than 11,000 kWh/tonne.

17. Mineral-heating furnaces of silica-aluminum alloys below 16,500 kVA; mineral-heating furnaces of 16,500 kVA and above, but with power consumption of silica-aluminum alloys higher than 9,000 kWh/tonne

18. 2×25,000 kVA (total capacity 50,000 kVA) and below ordinary ferroalloy mines

Thermoelectric furnace; 2 x 25,000 kVA (total capacity of 50,000 kVA) or more, no clear solid waste
and hazardous waste treatment processes and facilities for new construction and expansion of ferroalloy electric furnaces
(including all mineral heat electric furnaces and refining electric furnaces)

19. Electrolytic manganese metal leaching process with intermittent leaching and intermittent liquid feeding
20. There are no independent sintering and hot rolling production lines in the plant to support the iron and steelmaking processes.
21. Semi-closed Manganese-Silicon Alloy, Ferro-Nickel, High-Carbon Ferro-Chrome, High-Carbon Ferro-Manganese Mineral Heat Furnace

VII. Non-ferrous metals

1. New construction and expansion of tungsten ore mining projects with tungsten metal reserves of less than 10,000 tons (except for the expansion of deep and side resource mining projects of existing tungsten mines), and tungsten, molybdenum, tin and antimony smelting projects.
(except for projects that meet the requirements of national laws and regulations on environmental protection and energy conservation) and antimony oxide, lead-tin solder production

projects, rare earth mining, smelting and separation projects (except for projects of rare earth enterprise groups that meet the requirements of the total amount control index for rare earth mining, smelting and separation)

2. Crude copper smelting projects with a scale of less than 100,000 tons/year in a single series (except for recycled copper projects and oxide ore direct leaching projects), and copper smelting projects adopting PS converter blowing process.

3. New construction and expansion of electrolytic aluminum projects (except capacity replacement projects), new construction and expansion of alumina projects using monohydrate duralumin as raw material

4. Lead smelting and recycled lead projects under the scale of 50,000 tons/year in a single series (merged with the original 8)

5. Single series of zinc smelting projects below 100,000 tons/year scale (except for secondary resource utilization of zinc)

6. New construction and expansion of magnesium smelting projects (except comprehensive utilization projects)

7. Stand-alone aluminum carbon projects of less than 100,000 tons/year

8. New and expanded primary mercury mining projects

9. Projects for the beneficiation of associated radioactive minerals without implementing the safe and effective utilization of by-product monazite

VIII. Gold

1. The self-supply capacity of raw materials for processing less than 200 tons of gold concentrate per day is less than 50%.

(excluding) stand-alone cyanidation projects (except biocyanidation for gold extraction)

2. Independent gold beneficiation plant project without supporting mining system processing less than 300 tons of ore per day (not included)

3. Pyrometallurgical smelting project of independent gold smelting plant without supporting mining system processing less than 200 tons of gold concentrate per day (not included)

4. Stand-alone heap leach pad projects without integrated mining system up to 1500 tons/day (not included)

5. Open pit mining projects processing less than 300 tons (excluding) of rock gold ore per day, 100 tons (excluding) of rock gold ore per day, 100 tons (excluding) of rock gold ore per day, 100 tons (excluding) of rock gold ore per day

(Underground mining projects up to (but not including)

6. Alluvial gold mining projects processing less than 300,000 (not including) cubic meters of alluvial gold ore per year

7. Alluvial gold mining projects in forested areas, base farmland, river channels

IX. Building materials

1. New dry-process cement clinker production lines (except special cement production lines) of less than 2000 tons/day (not included) and cement grinding stations of less than 600,000 tons/year (not included).

2. 1.5 million square meters / year and below the production line of architectural ceramics (excluding architectural glazed products), 600,000 pieces / year (not included) below the tunnel kiln sanitary ceramics production line

3. Production lines of paper-faced gypsum boards of less than 30 million square meters/year (not included) (except in Tibet)

4. Medium alkali glass fiber pool kiln drawing production line, single kiln size less than 80,000 tons / year(excluding) of non-alkali glass fiber roving pool kiln drawing production line, medium alkali, non-alkali, alkali-resistant glass spheres

Kiln production line, medium alkali, non-alkali glass fiber substitution platinum crucible drawing line

5. Clay hollow brick production line (except Shaanxi, Qinghai, Gansu, Xinjiang, Tibet, Ningxia)

6. Gypsum (hollow) block production lines of less than 150,000 square meters/year (not included), concrete small hollow blocks of less than 50,000 cubic meters/year in a single shift (not included), and fixed production lines of concrete pavement bricks (including water-permeable bricks) of less than 150,000 square meters/year in a single shift (not included), and production lines of man-made lightweight aggregates (ceramic granules) of less than 50,000 cubic meters/year (not included).

7. Aerated concrete production lines with a capacity of less than 150,000 cubic meters/year (not included)

8. Production lines for sintered bricks and sintered hollow blocks of less than 60 million standard bricks/year (not included)

9. Production lines of rock (mineral) wool products of less than 30,000 tons/year and production lines of thermal insulation glass wool products of less than 8,000 tons/year

10. 1 million meters/year and below prestressed high-strength concrete centrifugal pile production line; prestressed steel cylinder concrete pipe (referred to as PCCP pipe)

production line (PCCP-L type: annual design production capacity) (≤50 kilometers; PCCP-E type: annual design production capacity ≤30 kilometers)

X. Pharmaceuticals

1. New construction and expansion of production facilities for colognate and vitamin C raw powder (including pharmaceutical, food, feed, and cosmetic), and new production facilities for raw materials of vitamin B1, vitamin B2, vitamin B12, and vitamin E for pharmaceutical, food, feed, and cosmetic purposes.

2. Penicillin industrial salt, 6-aminopenicillanic acid (6-APA), 7-aminocephalosporanic acid (7-ACA), 7-amino-3-deacetoxycephalosporanic acid (7-ADCA), penicillin V, ampicillin, hydroxybenzylpenicillin, cephalosporin C, oxytetracycline, tetracycline, chloramphenicol, anandamide, paracetamol, lincomycin, gentamicin, streptomycin, butylcarbamate.

Vegetin, Madecassicin, Columnar Leucomycin, Cyclopropylfluorophenic acid, Fluorophenic acid, Fluorazinic acid, Rifampicin,
Caffeine, Kocodine Production Facility

3. Paclitaxel (except for the planting of Picea abies), plant extract method of Huanglianin (except for the planting of Huanglian) production equipment

4. New construction, alteration and expansion of pharmaceutical butyl rubber stopper, two-step production of plastic bottles for infusion production unit

5. New construction, alteration and expansion of raw materials containing endangered plant and animal medicinal materials have not been planted or cultured on a large scale of the product production equipment

6. New construction, reconstruction and expansion of mercury-filled glass thermometers, sphygmomanometers, silver amalgam dental materials, and new construction of disposable syringes, blood transfusion devices and infusion devices with a capacity of less than 200 million units/year.

XI. Machinery

1. Rock loader (except vertical jaw rock loader) manufacturing project

2.3 Project for the manufacture of small mining cars of cubic meters or less

3. Winch manufacturing project for winches with a diameter of 2.5 m and below

4. Manufacturing projects for mine hoists with a diameter of 3.5 m and below

5. Project for the manufacture of screening machines of 40 square meters or less

6. Cyclone manufacturing projects with a diameter of 700 mm or less

7. Coal Mining Machine Manufacturing Project of 800 kW and below

8. Manufacture of mining excavators with a bucket capacity of 3.5 cubic meters and below

9. Manufacturing project of mixing, thickening and filtering equipment for mining (except pressurized type)

10. Specialized vehicles for general transportation such as warehouse trucks, panel trucks, dump trucks and general vans, and enterprise projects for general transportation trailers; three-wheeled vehicles, low-speed electric vehicles

11. Single-cylinder diesel engine manufacturing project

12. Belt-driven small four-wheeled tractors with single-cylinder diesel engines, walk-behind tractors with single-cylinder diesel engines, sliding gear shifters, and wheeled tractors of less than 50 horsepower that do not meet the requirements for emissions.

13. Manufacturing projects of conventional coal-fired thermal power generation equipment of 300,000 kilowatts and below (except for comprehensive utilization units)

14. Manufacturing project of dry cross-linked power cables (for land use) of 6 kV and above

15. Non-CNC Metal Cutting Machine Tools Manufacturing Project

16. Project for the manufacture of general mechanical presses of 6,300 kN and below

17. Non-numerical control shearing machine, bending machine, pipe bender manufacturing project

18. Plain high-speed steel drills, milling cutters, saw blades, taps, plate teeth items

19. White corundum, brown corundum, green silicon carbide, black silicon carbide and other sintered blocks project

20. Grinding wheels of all types of bond with a diameter of up to 450 mm and a grinding speed of up to 40 m/s (except for

rail grinding wheels and wheels made of super-hard materials).

21. Manufacture of synthetic diamond cutting saw blades with a diameter of 400 mm or less (bending strength of the working part of synthetic diamond cutting saw blades >1000 Mpa and strength of its bonding part with the substrate) (except for ≥600 MPa)

22. P0 grade, diameter of 60 mm or less ordinary small and medium-sized bearings manufacturing project

23. 220 kV and below power transformers (except amorphous alloy, rolled iron core and other energy-saving distribution transformers)

24. Manufacturing projects of high, medium and low voltage switchgear up to 220 kV (except for insulated switchgear using environmentally friendly medium-voltage gases and explosion-proof switchgear for use in explosive environments)

25. Acid Carbon Steel Welding Rod Manufacturing Project
26. Civilian General Electricity Meter Manufacturing Project
27. Standard fastener manufacturing project for common low-grade fasteners up to grade 8.8
28. General-purpose stationary reciprocating piston air compressors (drive motor power 560 kilograms)

(Watt and below, rated exhaust pressure 1.25 MPa and below) Manufacturing project

29. Dry container project for general transportation
30. 56-inch and smaller single-stage casement pump manufacturing project
31. General-purpose 10 MPa and below low and medium pressure carbon steel valve manufacturing project
32. Short-age cupolas of 10 tons/hour and less
33. Non-ferrous alloys hexachloroethane refining, magnesium alloys SF6 protection
34. Water-glass sand molding and core making process without old sand regeneration
35. Salt Bath Nitrocarburizing, Sulfur Nitrocarburizing Furnace and Salt
36. Electronic tube high frequency induction heating equipment
37. Nitrite corrosion inhibitor and preservative
38. Oil heating furnace for casting/forging

39. Coal-fired heating furnace for forging
40. Manual Gas Forging Furnace
41. steam hammer
42. Arc Welding Transformers
43. Lead and cadmium containing brazing materials
44. Full-face boring machine assembly project
45. Free forging hydraulic press project above 10,000 tons

46. Clay sand casting projects that do not use automated molding equipment, water-glass fusion molding projects, and other projects.

Dense casting project, the size of less than 200,000 tons / year of centrifugal ductile iron pipe project, the size of less than 3 Centrifugal gray cast iron pipe project of 10,000 tons/year

47. Moving coil and tapping type manual electrode arc welding machine

48. Y series (IP44) three-phase asynchronous motors (seat no. 80-355) and their derivatives, Y2 series (IP54) three-phase asynchronous motors (seat no. 63-355)

49. Backpack manual compression sprayer

50. Backpack motorized spray duster

51. Manual rice transplanter

52. Bronze Tea Processing Machinery

53. Double-disc friction presses

54. Leaded powder metallurgy parts

55. Export Ship Segment Construction Project

56. Copper-plated welding wire project

57. Fixed grate biomass boilers of 35 vph and below

58. Coal-fired boilers of less than 35 steam tons per hour in built-up areas of cities at county level and above, and other

Coal-fired boilers under 10 steam tons per hour in the region

59. **Medical waste incineration facilities with a capacity of less than 500 kg/hour that cannot meet the pollutant emission requirements set out in the "Pollution Control Standards for Medical Waste Treatment and Disposal", and hazardous waste incineration facilities with a capacity of less than 10,000 tons/year that cannot meet the pollutant emission requirements set out in the "Pollution Control Standards for Hazardous Waste Incineration".**

XII. Light industry

1. Polyvinyl chloride general artificial leather production line
2. Production lines with an annual processing capacity of less than 300,000 standard cowhide skins
3. Polyurethane foam production lines, continuous extruded polystyrene foam (XPS) production lines, and production lines for refrigerators, freezers, automobile air-conditioners, industrial and commercial cold storage and refrigeration equipment, using hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) as refrigerants, blowing agents, fire extinguishing agents, solvents, cleaning agents, processing aids, and other controlled applications
4. Polyvinyl chloride (PVC) food preservation packaging film
5. Incandescent lamps for general lighting
6. Lockstitch machines with a maximum speed of less than 4,000 stitches/minute (excluding heavy duty lockstitch machines) and with a maximum speed of less than 4,000 stitches/minute.

Overlock machines with high speeds below 5000 stitches/minute

7. Electronic pricing scales (accuracy less than 1/3000 of the maximum weighing capacity, weighing capacity ≤ 15 kg), electronic belt scales (accuracy less than 5/1000 of the maximum weighing capacity), electronic crane scales (accuracy less than 1/1000 of the maximum weighing capacity, weighing capacity ≤

50 tons), spring-loaded dial scales (accuracy less than 1/400 of the maximum weighing capacity, weighing capacity ≤ 8 kg)

8. Electronic vehicle weighing (accuracy less than 1/3000 of the maximum weighing capacity, weighing capacity ≤ 300 tons), electronic static rail weighing (accuracy less than 1/3000 of the maximum weighing capacity, weighing capacity ≤ 150 tons), electronic dynamic rail weighing (accuracy less than 1/500 of the maximum weighing capacity, weighing capacity ≤ 150 tons)

9. Glass Insulated Bottle Gallbladder Production Line

10. Production lines for glass bottles and jars of 30,000 tons/year or less

11. Manual preparation and weighing of glass compounds

12. Glass furnaces that do not meet the indicators set forth in the Specification Conditions for the Daily Glass Industry

13. Fatty alcohol products produced by carbonyl synthesis and Ziegler method

14. Thermal production line of sodium tripolyphosphate

15. Single-layer spray gun laundry detergent production process and equipment, sulfonation unit up to 1.6 tons/hour scale

16. Northern sea salt projects up to 1 million tons/year, southern sea salt salt farm projects, 600,000 tons /Mining (well) salt project for less than one year 17. Monochrome metal plate offset printing machine

18 Single chemical wood pulp less than 300,000 tons/year, chemical mechanical wood pulp less than 100,000 tons/year, Chemical bamboo pulp less than 100,000 tons/year

19 Raw Sugar Processing Project and 5,000 tons of sugarcane per day (3,000 tons in Yunnan), Projects processing less than 3000 tons of sugar beet per day

20 Alcohol production line

21 Saccharin and other chemically synthesized sweeteners production line

2 Soybean crushing and leaching projects (except for the main soybean producing areas in Heilongjiang, Jilin and Inner

Mongolia); oilseed processing projects in the eastern and central regions with a single daily processing capacity of 200 tons or less of rapeseed and cottonseed, and 100 tons or less of peanuts; and processing projects in the western region with a single daily processing capacity of 100 tons or less of oilseed such as rapeseed, cottonseed, peanuts, etc.

23 Annual processing of corn less than 450,000 tons, absolute dry harvest rate of 98% or less corn starch (waxy corn, high straight-chain corn and other special corn processing scale of less than 10,000 tons per year)

24 Annual slaughtering of 150,000 hogs and below, 10,000 beef cattle and below, 150,000 meat sheep

Slaughtering construction projects of 10 million live birds or less (except for ethnic minority areas)

25. Western meat processing projects of 3000 tons/year or less

26. Annual production of yeast products of 2000 tons (dry) or less

27. Frozen Marine Surimi Production Line

28. Lead storage battery production in the casting of plate, powder, powder, filling powder, and paste, coating, painting, acid filling, external chemical formation, weighing, wrapping and other manual work processes

29. Production of lead storage batteries by external chemical formation process

30. Citric acid production line with an annual capacity of less than 50,000 tons

31. Lysine and threonine production lines of 100,000 tons/year or less; glutamic acid production lines of 200,000 tons/year or less.

XIII. Textiles

1. Single-line capacity of less than 200,000 tons / year of conventional polyester (PET) continuous polymerization production equipment

install

2. Dimethyl terephthalate (DMT) production process for conventional polyesters

3. Semi-continuous Spinning Viscose Filament Line

4. Intermittent spandex polymerization production plant

5. Semi-automatic winding machines for conventional chemical fiber filament yarns with spindle lengths of 1200

mm or less

6. Viscose plate and frame filter
7. Conventional polypropylene spunbond nonwoven fabrics with single-line capacity ≤1000 tons/year and width ≤2 meters.

assembly line

8. Carding machines up to 25 kg/hour
9. Cotton combing machines up to 200 pincers/min.
10. Self-discharging air spinning equipment under 50,000 rpm
11. FA502, FA503 Spinning machines
12. Rapier looms with a weft insertion rate of less than 600 m/min and a weft insertion rate of less than 700 m/min

Air-jet weaving machines with a weft insertion rate of less than 900 m/min, water-jet weaving machines with a weft insertion rate of less than 900 m/min

13. Adoption of polyvinyl alcohol paste (PVA) sizing process and products (polyester-cotton products, except high-count and high-density products of pure cotton)
14. Wool washing processes and equipment that use more than 20 tons of water for washing raw wool per ton
15. Vertical Reeling Process and Equipment for Shuanggong Silk and Quercus Silk
16. Stranded yarn dyeing process
17. Sodium chlorite bleaching equipment
18. General polyester carrier dyeing

XIV. Tobacco

1. Processing of tobacco products (including electronic cigarettes and other new tobacco products)

XV. Civilian explosives and fireworks products

1. Discontinuous, automated detonator assembly line without human-machine segregation
2. Discontinuous, automated explosives production line
3. Highly polluting detonating charge production lines
4. High energy consumption, high pollution, low performance industrial powder explosives production line
5. The total number of on-site operators in hazardous

materials production plants with a hazard class of 1.1 is greater than

5-man explosives production line

6. The number of on-site operators in a hazardous materials production plant with a hazard class 1.1 is greater than 9.

Production line for explosives products for human beings

7. Basic detonator filling production lines where the number of operators in close contact with the detonator (including operators working with raw materials and semi-finished products, excluding operators delivering finished products) is greater than 5 persons.

8. Production line of packaged industrial explosives with a licensed capacity of 12,000 tons or less per year.

9. Fireworks production machinery and equipment not segregated from human and chemical operations

XVI. Construction

1. Flash butt-welding of reinforcing bars used in non-stationary specialized prefabrication plants (yards) or rebar processing plants (yards) for the connection of reinforcing bars with a diameter greater than or equal to 22 mm.

2. The base pile hand-dug hole process used in areas where one of the following conditions exists: (1) Areas with adverse geologic conditions such as abundant groundwater, weak soils, quicksand, etc.; (2) Excessive air pollutants in the holes; and (3) Areas accessible to mechanical hole-forming equipment.

3. Hot-melt process for bituminous waterproofing membranes used in waterproofing works in underground confined spaces, poorly ventilated spaces, and in the vicinity of flammable materials (open-flame construction)

4. Portal-type steel pipe bracing for the erection of full load-bearing bracing systems

5. Incandescent lamps, tungsten iodine lamps, halogen lamps for production, office, living and other areas of the construction site lighting

6. Gantry and derrick material hoists for construction works

of 25 meters and above

7. The construction process of steel and wooden support for pipe jacking shafts used under any of the following conditions: (1) the depth of the pit is more than 3 meters; (2) the groundwater level exceeds the height of the base plate of the pit.

8. In any of the following conditions used in the bridge hanging hanging basket upper and bottom basket fine-rolled rebar boom connection process: (1) before the hanging point connection; (2) other hanging point connection: ① direct connection of the upper and lower steel structure (did not pass through the concrete structure); ② and the bottom basket connection does not use the activities of the hinge; (3) boom is not equipped with external protective sleeve)

9. Non-numerical control orifice grouting equipment used in the construction of post-tensioned prestressed members in prefabrication yards of municipal engineering projects of category II or above

10. Post-tensioning prestressed members in prefabrication yards of municipal engineering projects of category II or above.

Non-numerically controlled prestressing tensioning equipment used during working hours

11. Nine-cell bricks for municipal road works

12. Glossy pavement panels (bricks) with poor anti-skid properties for new construction and maintenance of squares, parking lots, pedestrian walkways, and slow-moving traffic lanes

13. Flat concrete drainage pipes (including reinforced concrete pipes) used in buried drainage projects in residential areas, enterprises and public institutions and municipal pipeline networks.

XVII. Firefighting

1. Fire extinguishing agents containing perfluorooctane sulfonic acid and its derivatives

XVIII. Other

1. Urban trunk road projects where the width of the red line of the site (including the green belt) exceeds the following standards: 40 meters for small cities and key towns, 55 meters for medium-sized cities, and 70 meters for large cities (2 million people).

(If it is necessary for the main road of a mega-city above the mouth to exceed 70 meters, there should be a special explanation in the city's spatial master plan.)

2. Urban leisure and assembly plaza projects with a land area exceeding the following standards: 1 hectare for small cities and key towns, 2 hectares for medium-sized cities, 3 hectares for large cities, and 3 hectares for mega cities with a population of more than 2 million.

Urban 5 ha

3. Villa-type real estate development projects
4. Golf course project
5. Racecourse project
6. Automatic transmissions (AT) for mechanical vehicles with 4 speeds or less
7. Engines for motor vehicles with emission standards of National III and below
8. Low-speed three-wheeled and four-wheeled electric vehicle production line

9. Mineral resources mining recovery rate, beneficiation recovery rate and comprehensive utilization rate of co-associated minerals were not

Projects that meet national requirements

10. National laws and regulations do not allow new construction, does not meet the requirements of the ecological environment access list, does not meet the national safety, environmental protection, energy consumption, water consumption, quality of mandatory standards, does not meet the requirements of the international environmental conventions, such as processes, technologies, products, equipment

Group III phase-out

The phase-out category mainly includes backward technologies, equipment and products that do not comply with relevant laws and regulations, constitute a serious waste of resources, pollute the environment, pose serious risks to safety and production, and impede the realization of the goal of carbon peaking and carbon neutrality, and need to be eliminated. For production capacity, technology, equipment and products that can be effectively regulated by the market and have been eliminated in actual production and life, they will no longer be included in the elimination category under the premise that there is no hidden danger of safety and environmental protection and the risk of ''resurgence'', and that there are already clear regulatory measures in place. Projects whose energy efficiency has not reached the benchmark level in the latest version of "Energy Efficiency Benchmarking Levels and Benchmark Levels in Key Areas of Industry" and whose transformation has not been completed within the specified period, as well as projects whose energy efficiency of the products and equipment produced has not reached the access level in the latest version of "Advanced Levels of Energy Efficiency, Energy Saving Levels and Access Levels of Key Energy-Using Products and Equipment", or projects that have not reached the minimum requirements of the

mandatory energy-efficiency standards, will be managed with reference to the phase-out category.

The year in parentheses after the phase-out category entry is the phase-out deadline, e.g., the phase-out deadline is 12 December 2023.

The phase-out date of December 31, 2023 means that it should be phased out before December 31, 2023, and so on; entries with phase-out plans will be phased out according to the plans; entries without phase-out deadlines or phase-out plans have been explicitly ordered to be phased out by the national industrial policy or will be phased out immediately.

Investment in phase-out projects is prohibited. Financial institutions shall cease all forms of credit support and take measures to recover loans that have been granted; regions, departments and enterprises concerned shall take vigorous measures to phase out the projects within a specified time limit. During the phase-out period, the state price authorities may raise the price of electricity supply. The production process technology, equipment and products that the state has explicitly ordered to be eliminated shall not be imported, transferred, produced, sold, used or adopted. The local people's governments at all levels and the relevant departments shall, in accordance with the State's regulations, eliminate the production process technology, equipment and

products of enterprises.

The relevant laws and regulations shall order them to suspend production or close down, and shall take appropriate measures to relocate the personnel of the enterprise,

To preserve the safety of the credit assets of financial institutions, etc.; if their products are subject to the management of production licenses, the relevant departments shall revoke the production licenses in accordance with the law; the environmental protection management departments shall revoke their sewage discharge licenses; and the power supply enterprises shall stop supplying electricity in accordance with the law. Those who violate the regulations shall be held directly responsible and the leaders concerned accountable in accordance with the law.

I. Outdated production process equipment

(i) Agriculture, forestry and fisheries

1. **Wet fiberboard production process**
2. **Drip method rosin production process**
3. **Rural traditional old-fashioned stove kang**
4. **Indigenous activated carbon and indigenous charcoal production using wood and roots as the main raw material**
5. **Tourism activities exceeding ecological carrying capacity and collection of medicinal herbs and other forest products**
6. **Construction of irrigated paper raw material forest bases in areas with severe water shortages**
7. **Pre-planting bromomethane soil fumigation process**
8. **Workshop plywood production**
9. **Skin roll mills with roll lengths up to 1000 mm and saw blades up to 80 saw blades**

Ginning machines, balers for lint cotton with a pressure tonnage of less than 400 tons (excluding 160-ton and 200-ton short-staple cotton balers)

(ii) Coal

1. **Small coal mines that overlap with the planar projection of large coal mine fields**
2. **Long-term suspension of production and construction**

of 300,000 tons/year (excluding 300,000 tons/year) "zombie enterprise" coal mines; 300,000 tons/year (excluding 300,000 tons/year) impact pressure, coal and gas protrusion and other serious disasters coal mines

3. High-sulfur coal (sulfur content higher than 3%) production mines that have neither sulfur reduction measures nor users that meet the discharge standards, high-ash coal (ash content higher than 40%) production mines that cannot be used on-site, and high-arsenic coal (arsenic content exceeding 80 μg/g in coal for power use, and arsenic content exceeding 35 μg/g in coal for coking use) production mines

4. 6AM, φM-2.5, PA-3 type coal flotation machine

5. PB2, PB3, PB4 type explosion-proof high-voltage switches for mines

6. PG-27 Vacuum Filter

7.X-1 Chamber Filter Presses

8. ZYZ, ZY3 type hydraulic support

9. Coal beneficiation process that cannot realize the closed-loop recycling of coal washing wastewater, and dry coal beneficiation equipment that cannot realize the standard discharge of dust

10. Coal mines whose mining areas overlap with nature reserves, scenic spots and protected areas for drinking water sources (to be phased out in accordance with the requirements of laws and regulations and relevant state documents)

11. Coal mines that use informal mining techniques such as digging instead of mining

12. Coal mines with more than 2 levels of simultaneous production (excluding 2)

13. Other coal processing with a capacity of less than 5,000 tons of activated carbon from coal, less than 50,000 tons of activated coke from coal

(iii) Electricity

1 Non-compliant conventional coal-fired thermal power

units with a single unit capacity of 300,000 kW and below (except for units utilized in a comprehensive manner), oil-fired boilers and generating units which are mainly used for power generation (to be established first and then broken down, to be phased out in an orderly manner in accordance with the annual phase-out plan released)

(iv) Petrochemicals

1. 2 million tons/year and below atmospheric decompression units (except for Qinghai Golmud and those that meet the relevant conditions), kettle distillation units using open-flame high-temperature heating to produce oil, indigenous refining processes for waste rubber and plastics, tar intermittent production of asphalt, a single set of crude (light) benzene refining units of 25,000 tons/year and below, and a single set of coal tar processing units of 50,000 tons/year and below.

2. less than 100,000 tons/year of ammonium phosphate (except industrial grade) (December 31, 2025), and

Acid production from sulfurous iron ore and sulfur (except in remote areas) of less than 100,000 tons/year, potassium permanganate by oxidation method in flat furnaces, caustic soda production units by the diaphragm method (those that can be retained for comprehensive utilization as waste salt), alkali sulphide production process by the flat furnace method and the evaporation method in large cauldrons, sodium silicate (effervescent alkali) production process by the manganese method, and carbon disulphide process by the batch coke method.

3. Calcium saponification chlorohydrin process (December 31, 2025), with a capacity of 5,000 units per unit

吨/年以下黄磷生产装置，有钙焙烧铬化合物生产装置，单线产能 3000 吨/年以下普通级硫酸钡、氢氧化钡、氯化钡、硝酸钡生产装置，产能 1 万吨/年以下氯酸钠生产装置，单台炉容量小于 1.25 万千伏安的电石炉、开放式电石炉、内燃式电石炉，高汞催化剂（氯化汞含量 6.5%以上 ）and acetylene (poly)vinyl chloride production units using high-mercury catalysts, sodium methanol, potassium methanol, sodium ethanol, potassium ethanol, polyurethane, acetaldehyde, caustic soda, biopesticides and topical antimicrobial agents production units using mercury or

mercury compounds, sodium ammonia and sodium cyanide production processes in cyanide melts

4. Single-line production capacity of less than 10,000 tons/year of sodium tripolyphosphate, less than 0.5 million tons/year of sodium hexametaphosphate, less than 0.5 million tons/year of phosphorus trichloride, less than 30,000 tons/year of calcium phosphate for feedstuffs, less than 5,000 tons/year of hydrofluoric acid with outdated technology and serious pollution, wet aluminum fluoride, and open crystalline fluoride salt production units.

5. The capacity of a single line is less than 0.3 million tons/year of sodium cyanide (100% sodium cyanide), less than 10,000 tons/year of potassium hydroxide, less than 15,000 tons/year of general-grade silica, less than 20,000 tons/year of general-grade calcium carbonate, and less than 100,000 tons/year of general-grade anhydrous sodium sulfate (except for the co-production of the salt industry and the by-production),

0.3 million tons/year of lithium carbonate and lithium hydroxide (except for recycling of waste lithium batteries),

Production units of ordinary-grade barium carbonate below 20,000 tons/year and ordinary-grade strontium carbonate below 15,000 tons/year

6. Ammonia synthesis from ammonia liquid phase desulfurization of semi-aqueous coal gas and natural gas atmospheric batch conversion process,

Carbon monoxide atmospheric pressure change and full medium-temperature conversion (high-temperature conversion) process, wet desulfurization process without supporting sulfur recovery device, fixed-story intermittent coal gasification plant without supporting the construction of blowing gas waste heat recovery, gas-making slag comprehensive utilization of the device, no supporting process condensate hydrolysis and resolution of the device for urea production facilities, high-temperature gas scrubbing water in the open-type cooling tower with direct contact with air cooling process technology

7. Sodium paraquat production process, trichlorfon alkali dichlorvos production process, small packages (1 kg and below) of pesticide products hand-packed (filling) process and equipment, Raymond machine method of production of pesticide powders, hexachlorobenzene as raw material production of pentachlorophenol (sodium) device

8. Resins for paints directly heated by fire, carbon tetrachloride solvent extraction of chlorinated rubber production process, saponin (including hydrolysate) production units of less than 100 tons/year, hydrochloric acid acid hydrolysis

saponin production process and pollutant emissions can not meet the standards of the saponin production units, iron powder reduction process

4,4-Diaminostilbene-disulfonic acid (DSD acid), 2-amino-4-methyl-5-chlorobenzenesulfonic acid (CLT acid), 1-amino-8-naphthol-3,6-disulfonic acid (H acid) are suspended.]

95 million bias tires and tires with natural cotton cord fabric as the backbone per year and below, dry granulated carbon black (except for special carbon black and semi-reinforced carbon black), natural rubber latex condoms per year and below 300 million condoms, rubber vulcanization accelerator N-oxo-bis(1,2-ethylidene)-2-benzothiazolylsulphonamide (NOBS), and rubber antioxidant D production unit.

10. Chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) for controlled uses such as refrigeration, foaming, cleaning, etc., hydrochlorofluorocarbons (HCFCs), except for those used as feedstock for downstream chemicals, 1,1,1-trichloroethane (methyl chloroform) used for cleaning, the main production of carbon tetrachloride (CTC), all products using carbon tetrachloride (CTC) as a process aid, and fluoropolymers using PFOA as a process aid. production process.

DDT-containing paints, non-closed production unit for dicofol from DDT
(to be phased out in accordance with the requirements of the National Master Plan for the Implementation of International Conventions)

(v) Steel

1. clay coking (including improved coke ovens), single-oven capacity of 75,000 tons / year or less (single-oven capacity ≥ 50,000 tons / year and the use of low-rank coal high-temperature pyrolysis process, except for magnesium smelting gas distribution unit)or no gas, tar recycling and sewage treatment does not meet the coke industry norms for the production of semi-coke (Lancashire) device

2. Carbonization chamber height less than 4.3 m coke oven (except 3.8 m and above pounded coke oven), coke oven of iron and steel enterprises without supporting dry quenching device, enterprise production capacity <400,000 tons/year heat recovery coke ovens, coke ovens without simultaneous supporting the construction of thermal energy recovery devices

3. Ring Sinter for Iron and Steel Production, Walking Sinter (December 31, 2025) and
Sinter up to 90 square meters, pelletizing shaft furnace up to 8 square meters, ferroalloy production 24 square meters

Belt-type manganese ore and chrome ore sintering machine up to meters, sintering machine up to 24 square meters for pig iron production for foundry use

4. Pig iron blast furnaces for steelmaking of 400 cubic meters and below (pig iron blast furnaces for steelmaking of 450 cubic meters and below in Hebei Province), blast furnaces for ferro-alloy production of 200 cubic meters and below, pig iron blast furnaces for casting of 200 cubic meters and below (of which pig iron blast furnaces for casting with casting process of square meters and below are of 100 cubic meters and below)

5. Industrial and medium-frequency induction furnaces used for melting scrap (eliminated in accordance with laws and regulations and the national outlawing of "use for melting" related requirements)

6. 30 tons and the following steelmaking converter (excluding ferroalloy converter) (Hebei Province 40 tons and the following steelmaking converter), 30 tons and the following steelmaking electric arc furnace (excluding mechanical casting, high-temperature alloys.)

Electric arc furnaces for precision alloys and other special alloy materials), iron and steelmaking

7 Compound duplex wire rod mills, horizontal wire rod mills, horizontal bar and section mills (excluding mills for the production of high-temperature alloys), stacked sheet mills, general steel preliminary mills and medium-sized mills for billetizing, hot strip mills for narrow strip mills 600 mm and smaller, three-roll lauter-type mills for medium plates, hot-rolled seamless tube sets up to 76 mm in diameter, three-roll type mills for profiles (excluding the production of special steels)

8 Metallurgical furnaces that do not meet environmental standards

9 Hand-operated earthen asphalt tar impregnation device, mixed firing of ore raw materials and solid raw materials, natural ventilation, hand-operated earthen vertical kiln, inverted-flame kiln with coal as direct fuel, soot purification can not meet the standard

10. General ferroalloy mineral-heating furnaces below 12,500 kVA, ferroalloy semi-closed direct-current furnaces below 3,000 kVA, and ferroalloy-refining furnaces (except for special varieties of furnaces such as ferro-tungsten, ferro-vanadium, etc.)

11. Steam-heated mixing and kneading, inverted flame

roasters, Acheson AC graphitization furnaces, three-phase bridge rectifier Acheson DC graphitization furnaces and parallel units thereof, 10,000 kVA and below

12. Equipment for the production of cold-rolled ribbed steel bars with a capacity of 30,000 tons or less per machine (except equipment for the production of high-ductility cold-rolled ribbed steel bars)

13. Production equipment for single-can drawing machines for the production of prestressed steel wires

14. Lead quenching process for stress relief treatment in prestressing steel production

15. Furnaces for melting ferro-titanium with a capacity of less than 5 tons per furnace, ferromolybdenum production lines for roasting molybdenum concentrates in reflecting furnaces, and production lines for the production of chromium metal by reducing and calcining sodium alum and chromic anhydride in reflecting furnaces

16. Coal-fired inverted flame kiln refractories and raw material products production line

17. One-stage stationary coal gasifier project for iron and steel industry (excluding pulverized coal gasifier)

18. Rectifier transformers of 6000 kVA or less for the electrolysis of manganese metal, with an effective volume of 1,000 kVA.

250 cubic meters and less for chemical tanks

19. Reflector furnace for reduction of manganese dioxide (including reflector furnace for manganese sulphate plant, reflector furnace for mineral powder plant, etc.)

20. Plate-and-frame and box-type filter presses other than high-pressure diaphragm filter presses for primary filtration of electrolytic manganese metal

21. Light-fired reflecting kiln with an effective volume of 18 cubic meters or less

22. Vertical kiln with an effective volume of 30 cubic meters and below for heavy-fired magnesium sand

23.1 Single production line (one transformer) of electrolytic manganese metal below 10,000 tons/year, and enterprises with a total production scale of electrolytic manganese metal below 30,000 tons/year.

24. Electrolytic manganese process equipment using dichromate passivation technology (December 31, 2023) (day)

(vi) Non-ferrous metals

1. The use of muffle furnace, manger furnace, horizontal

tanks, small vertical tanks for roasting, simple condensing facilities for dust collection and other backward ways of zinc refining or production of zinc oxide process equipment

2. Adoption of backward methods of mercury refining such as iron pots and earthen stoves, distillation tanks, crucible furnaces and simple condensation and dust collection facilities.

3. The use of earth pit furnace or crucible furnace roasting, simple condensing facilities for dust collection and other backward ways of refining arsenic oxide or metal arsenic process equipment

4. Prebaked anode aluminum electrolytic cells below 160kA

5. Blast Furnace, Electric Furnace, Reflector Furnace Copper Refining Process and Equipment

6. Flue gas to acid dry purification and hot concentrated acid scrubbing technology

7. The use of pit furnaces, crucible furnaces, Hirsch furnaces and other backward ways to refine antimony
8. Adoption of sintering pots, sintering pans, simple blast furnaces and other backward ways of lead refining processes and equipment
9. Process and equipment for melting recycled aluminum alloy and recycled lead using crucible furnaces
10. Aluminum Wet Process Fluoride Salt Project
11. Recycled lead projects of less than 10,000 tons/year
12. Reflector furnace project using direct coal combustion in the production of recycled non-ferrous metals
13. Copper wire rod (black rod) production process
14. Lead refining process in sintering machine without acid production and tail gas absorption system
15. Sintering - blast furnace lead refining process and equipment
16. Recycled copper incineration process and equipment without flue gas control measures
17. Process and equipment for copper reclamation in conventional fixed reflector furnaces of less than 50 tons
18. Melting furnaces for recycled aluminum up to 15 tons
19. Ionic rare earth ore heap leaching and pool leaching process
20. Monazite Single Mineral Development Project

21. Rare Earth Chloride Electrolytic Preparation of Metals Process Project
22. Wet production of fluorinated rare earths for electrolysis production process
23.2 Mixed rare earth mine development projects up to 10,000 tons (REO)/year, 5,000 t (REO)

Rare earth mine development projects for cerium fluorocarbon cerium ores up to 500 tons (REO)/year, and ionic rare earth mine development projects up to 500 tons (REO)/year.

24. Rare earth separation projects under 2000 tons (REO)/year
25. Less than 1500 tons/year, electrolytic cell current less than 5000A, current efficiency less than 85%

Light Rare Earth Metals Smelting Project

26. Primary Mercury Mining (August 16, 2032)

27. Vertical Tank Zinc Refining Process and Equipment (December 31, 2025)

(vii) Gold

1. Amalgamated gold extraction process
2. Small cyanide pool leaching process, earth smelting process
3. Extraction of gold, silver, palladium and other precious metals from circuit boards without environmental protection measures
4. Mining projects with a daily processing capacity of 50 tons (not included) or less
5. Whole ore amalgamation; open burning of amalgam or processed amalgam; burning of amalgam in residential areas; cyanide leaching of mercury-added sediment, ore or tailings without first removing mercury

(viii) Building materials

1 Dry hollow kiln (except for the production of special cement such as aluminate cement), cement machine kiln, Lipol kiln, wet kiln, cement grinding equipment with a diameter of 3 meters (not included) or less (except for the production of special cement)

2 Non-laminating plastic woven cement bag production

line, the production and use of cement bags with sewn bottoms (the two bottoms need to be sewn together by the seam)

3 Flat glass production line for flat drawing process (including lattice method)

4. 1 million square meters / year (not included) below the building ceramic tiles, 200,000 pieces / year (not included) below the sanitary ceramics production line, building sanitary ceramics (excluding architectural glazed products) clay kiln, inverted flame kiln, porous kiln, coal-fired bright flame tunnel kiln, flame tunnel kiln, saggars loaded with sanitary ceramics tunnel kiln, the friction brick press machine for the molding of ceramic tiles for construction

5. Production process for drawing glass fiber clay crucibles, ceramic crucibles and other non-platinum crucibles

and equipment

6. Production lines of paper-faced gypsum board with a capacity of less than 10 million square meters/year (not included)

7.5 million square meters / year (excluding) the following modified asphalt waterproofing roll-roofing production line, asphalt composite tire flexible waterproofing roll-roofing production line, 1 million rolls / year (excluding) the following asphalt paper-fiber linoleum production line

8. Lime clay vertical kiln
9. Brick and tile rotary kilns, as well as vertical kilns, roofless and moving roof kilns, horseshoe kilns and other earth kilns
10. Simple mobile concrete block molding machine, attached vibration molding table
11. Fixed concrete block molding machines with a single shift of less than 10,000 m3/year, with a single shift of 10,000 m3/year or less.

Fixed molding machine for concrete pavement blocks (including permeable bricks) of less than 10,000 square meters/year

12. Production process for hand-cast, non-mechanically molded gypsum (hollow) blocks
13. Gas refining one-step quartz glass production process equipment

14. 6 x 6 MN hexagonal top small presses for the production of synthetic diamonds
15. Hand-cut aerated concrete production line, non-autoclaved curing aerated concrete production line
16. Non-sintered, non-autoclaved fly ash brick production line
17. Decorative stone mine chamber blasting technology, sling type marble earth saws, mobile small circular saws.

(ix) Pharmaceuticals

1. Manual capsule filling process
2. Cork Hot Wax Packaging Pharmaceutical Process
3. Tower type redistiller
4. Hot air drying oven without purification facilities

5. API production units whose environment, occupational health and safety do not meet national standards
6. Iron powder reduction method acetaminophen (paracetamol), caffeine device
7. Manufacturing processes for pharmaceuticals using chlorofluorocarbons (CFCs) as aerosols, propellants, dispersants or dispersants (to be phased out in accordance with the requirements of the National Master Plan for the Implementation of International Conventions)
8. Mercury-filled glass thermometer and sphygmomanometer production unit (December 31, 2025)

(x) Machinery

1. Heat treatment lead bath furnace (except for on-line heat treatment lead bath production line with lead liquid covering agent and negative pressure air extraction and dust removal environmental protection facilities for metal wire rope and its products)
2. Heat treatment barium chloride salt bath furnace (high-temperature barium chloride salt bath furnace with deferred phase-out)
3. TQ60, TQ80 Tower Crane
4. QT16, QT20, QT25 derrick simple tower crane
5. KJ1600/1220 Single drum hoisting winch

6. Common brown corundum smelting furnaces up to 3000 kVA

7. Stationary brown corundum smelting furnaces up to 4000 kVA

8. Silicon carbide smelting furnaces up to 20,000 kVA

9. Forced-drive simple elevator

10. Production line of tobacco expansion equipment using chlorofluorocarbons (CFCs) as an expansion agent

11. Sand casting clay drying sand molds and cores

12. Coke oven for melting non-ferrous metals

13. Sand casting oil sand core making

14. Heavy Brick Lined Bogie Hearth Furnaces

15. Medium frequency generator induction heating power supply

16. Coal-fired Flame Reflector Heating Furnace

17. Pickling processes and pickling projects used only for removing surface oxidized skin from metal parts (except for projects supporting the manufacture of products)

18. Positional AC contactor temperature control cabinet

19. Insertion electrode type salt bath furnace

20. Moving Coil and Tap Type Silicon Rectifier Arc Welders

21. Magnetic amplifier type arc welding machine

22. Punching machines that cannot be fitted with safety protection devices

23. Medium Frequency Induction Furnace without Magnetic Yoke (≥0.25 tons) in Aluminum Case

24. Coreless Industrial Frequency Induction Furnace

25. Phosphating Process for Drilling Tool Joint Threads (December 31, 2023)

26. 5 t/h and below cupola (priority areas December 31, 2023, others)

(Region December 31, 2025)

(xi) Ships

1. Scrap Ship Beach Dismantling Process

2. Single-piece assembled monolithic construction process for marine steel ships of more than 90 meters in length and for inland waterway steel ships of more than 120 meters in length

(xii) Light industry

1. **A single vacuum salt production unit of less than 100,000 tons/year, lake salt of less than 200,000 tons/year and northern sea salt production facilities of less than 300,000 tons/year**

2. **Production process and equipment for the utilization of mineral salt brine, oil and gas field water and the use of flat pots and beach tanning for salt production**

3. Southern sea salt production units of 20,000 tons/year or less

4. Production of ultra-thin (less than 0.025 mm thick) plastic shopping bags

5. Tannery lines with an annual processing capacity of 50,000 standard cowhides for raw hides and less than 30,000 standard cowhides for wet blue hides.

6. Total ink production units of less than 300 tons/year (except those utilizing high technology and non-polluting)

7. Production of solvent-based inks containing benzene

8. Lime-based ground-pool pulping equipment (except for rice paper)

9. Chemical wood pulp production lines below 51,000 tons/year

10. Single non-wood pulp production line of less than 34,000 tons/year

11. Single 10,000 tons/year and below, waste paper as raw material pulp production line

12. Culture paper production with a width of 1.76 meters or less and a vehicle speed of 120 m/min or less threads

13. White board and boxboard with a width of 2 meters or less and a speed of 80 m/min or less.

Paper and corrugated paper production line

14. Refrigerators, freezers, car air-conditioners, industrial and commercial cold storage and refrigeration equipment production lines using chlorofluorocarbons (CFCs) as refrigerants and blowing agents

15. Manufacture of polyurethane, polyethylene and polystyrene foams using chlorofluorocarbons (CFCs) as blowing agents

16. Production process using carbon tetrachloride (CTC) as cleaning agent

17. Production process using trifluorotrichloroethane (CFC-113) and methyl chloroform (TCA) as cleaning agents and solvents

18. Tertiary amine process by fatty acid method, fuming sulfuric acid sulfonation process, stirred kettle ethoxylate process

chemical process

19. Tin soldering in the tin can industry

20. Crucible glass kilns burning coal and furnace gas, direct-fire glass annealing furnaces without hot air circulation

21. Mechanical Timing Row Type Bottle Making Machine

22. Carbonated beverage production lines with a capacity of 150 bottles/minute or less (250 ml or less)

23. Raw milk processing capacity (two shifts) of 20 tons per day or less concentration, spray drying and other facilities; Manual and semi-automatic liquid milk filling equipment up to 200 kg/hour

24. Alcohol production lines of less than 30,000 tons/year (except for alcohol made from waste molasses)

25. Glutamic acid production line with iso-ionization process, MSG production unit up to 50,000 tons/year

26. Traditional calcium salt method citric acid production plant

27. Wet corn starch production lines (except special corn starch production lines) processing less than 150,000 tons per year with a total dry matter yield of 97% or less

28. Hog slaughtering equipment such as bridge-type split saws and open-type scalding machines for hogs
29. Manual slaughtering process for pigs, cattle, sheep and poultry
30. Wheat flour whitening agent (benzoyl peroxide, calcium peroxide) addition process
31. Elemental Chlorine Bleaching Pulping Process
32. Open type lead melting pot and open type lead powder machine for lead storage battery production
33. Dry powder filling process for tubular lead batteries
34. Addition of white arsenic, antimony trioxide, lead, fluorine (except for fully electric kilns), chromium

Slag and other hazardous raw and auxiliary materials for glass compounds

(xiii) Textiles

1. Cotton, wool, and linen spinning equipment and weaving equipment with a service life of 30 years.
2. ZD647, ZD721 type automatic reeling machine, D101A type automatic reeling machine, ZD681 type vertical reeling machine, DJ561 type silk spinning machine, K251, K251A type silk loom and other silk processing equipment
3. Z114 small jacquard machine
4. GE186 Jacquard Terry Machine
5. Z261 Artificial Fur Machine
6. Dyeing and finishing equipment type 74 without modification
7. Steam-heated open and unconfined dyeing and printing flat wash tanks
8. Acid Viscose Spinning Machine R531

9.40 million tons/year and below viscose conventional staple fiber production line

10. Wet spandex production process
11. Dimethylformamide (DMF) solvent method spandex and acrylic production process
12. Nitric acid method acrylic conventional fiber production process and device

13. Conventional polyester (PET) batch polymerization production process and equipment
14. Semi-automatic winding machines for conventional polyester filament spindle lengths of 900 mm or less
15. Domestic and imported printing and dyeing pre-treatment equipment with a service life of more than 15 years, stenter and shaping equipment, circular and flat screen printing machines, continuous dyeing machines with a service life of more than 20 years.
16. Intermittent dyeing equipment for cotton and chemical fibers with bath ratios greater than 1:10 and with a service life of more than 15 years

17. Printing and dyeing line with DC motor drive

18. Steamer and washing plant in cast iron construction for printing and dyeing, bottomless steamer with cast iron wall panels, L-type annealing and rinsing crawler steamer with short preheating zones for steaming

19. Screw extruder diameter less than or equal to 90mm, less than 2000 tons / year polyester recycled spun staple fiber production units

(xiv) Printing

1. All lead platings, lead printing process
2. All lead printers and related auxiliary machines
3. photographic plate maker
4. ZD201, ZD301 series single character casting machine
5. Model TH1 Automatic Strip Casting Machine, Model ZT102 Series Strip Casting Machine
6. ZDK101 Type Character Engraving Machine
7. KMD101 Type Die Cutter Grinder
8. AZP502 semi-automatic Chinese hand-selected casting machine, ZSY101 semi-automatic Chinese casting machine, TZP101 foreign character casting machine, ZZP101 Chinese automatic casting machine.
9. QY4012QY404 type series of electric lead printing and proofing machine, QYSH4012QY401,

DY401 Manual Type Lead Printing Proofing Machine

10. Model YX01,YX02,YX03 series of paper press molding machines, HX01,HX02,HX03,

HX04 Series Paper Dryer

11. Model PZB401 Flat Plate Casting Machine, YZB02,YZB03, YZB04,YZB05,

YZB06, YZB07 Series Lead Plate Casting Machine

12. JB01 Flat Lead Plate Casting Machine

13. RQ02, RQ03, RQ04 Series Lead Pump Melting Furnaces

14. BB01 type plate planer, YGB02, YGB03, YGB04, YGB05 type round lead plate scraper, YTB01 type round lead plate boring machine, YJB02 type round lead plate sawing machine, YXB04, YXB05, YXB302 type series round lead plate retouching machine.

15. Model P401, P402 series of four-opening flatbed presses, P801, P802, P803, P804 Series Octavo Flatbed Printer

16. PE802 double hinge printing machine

17. TE102, TE105, TE108 Series Full Sheet Automatic Two Rotary Table Printing Machine

18. TY201 Folio Single Color One Rotary Platform Printing Machine, TY401 Four Folio Single Color One Rotary Platform Printing Machine

19. TY4201 four open one rotary two-color printing machine

20. TT201, TZ201, DT201 Folio Manual Continuous Stop Rotary Platform Printing Machine

21. TT202 folio automatic stop rotary table printing machine, TT402,TT403,TT405, DT402 four-opening automatic stop rotary table printing machine, TZ202 folio semi-automatic stop rotary table printing machine, TZ401, TZS401, DT401 four-opening semi-automatic stop rotary table printing machine

22. TR801 Series Vertical Platform Printer

23. LP1101,LP1103 type series of flatbed paper full sheet single-sided rotary printing machine, LP1201 type of flatbed paper full sheet double-sided rotary printing machine, LP4201 type of flatbed paper four open two-color rotary printing machine 24. LSB201 (880mm × 1230mm) and LS201, LS204 (787mm × 1092) (mm) type series web booklet rotary printing machine

25. LB203, LB205, LB403 Web Newsprint Rotary Press, LB2405, LB4405 Web Double Layer 2-set Newspaper Plate Rotary Printing Machine, LBS201 Web Book and Newspaper Printing Machine

Dual-purpose rotary printing presses

26. K.M.T type automatic casting typesetting machine, PH-5 type Chinese character typesetting machine

27. DIA PRESS brush-cleaning machines

28. Hand-operated phototypesetting machines, domestic plate-making cameras produced before 1985

29. Centrifugal Coater

30. J1101 Series Full Sheet Monochrome Offset Press (5000 sheets per hour and below)

31. J2101, PZ1920 series of folio monochrome offset presses (printing speed 4,000 sheets per hour and below), PZ1615 series of quarto monochrome offset presses (printing speed 4,000 sheets per hour and below), YPS1920 series of double-sided monochrome offset presses (printing speed 4,000 sheets per hour and below)

32. W1101 Full Sheet Automatic Gravure Printing Machine, AJ401 Web Single Sided Four Color Gravure Printing Machine

33. DJ01 Paperback Binding Coupling Machine, PRD-01, PRD-02 Paperback Binding Coupling Machine, DBT-01 Paperback Wire Binding, Wrapping and Stamping Coupling Machine

34. Solvent-based ready-to-coat laminators, various types of laminators where the substrate cannot be degraded and

recycled

35. QZ101, QZ201, QZ301, QZ401 type paper cutter
36. MD103A Knife Sharpener

(xv) Civil Explosives and Fireworks Products

1. Closed packing type emulsion explosive matrix cooler
2. Closed packing type emulsion explosives low temperature sensitization machine
3. Small Diameter Handmade Single Head Explosives Charging Machine
4. Explosives equipment such as mixing and conveying with bearings encapsulated in chemical agents

5. Explosive charges drying process using steam drying room drying process
6. Delayed component (body) manufacturing process using hand-loading process
7. Processes for detonator filling, assembly processes and inter-process transfers without reliable protection against detonation
8. Production lines without reliable explosion-proof facilities for the dosing device in the detonator manufacturing process
9. Production of industrial explosives and industrial detonators in hazardous workplaces where remote video surveillance has not been realized

threads

10. Hazardous workplaces do not realize the remote video surveillance of the detonating cord production line
11. Pharmaceutical process for explosives using the traditional wheel milling method
12. Wastewater from the production of detonating agents does not meet the Water Pollution Discharge Standards for Fireworks Pharmaceuticals in the Arms Industry.

(GB14470.2) Requirements for the emission of production processes

13. Emulsification processes with an emulsifier discharge temperature greater than 130°C

14. Charging machines with a charging efficiency of less than 1200 kg/h for small-diameter watery explosives and less than 800 kg/h for small-diameter powdered explosives.

15. Explosives equipment with noise levels exceeding 85 dB at locations with stationary operators

16. Production technology for electric detonators with a total resistance difference of more than 1.5 Ω (steel core with a length of 2 m)

various genera of flowers of Asteracea family (daisies and chrysanthemums)

17. Boxed products off the line does not realize the production data online collection, timely transmission of the production line

18. Electric detonators with a total resistance difference of more than 1.0 Ω (steel core foot wire length 2m) production workers

skill

19. Blasting cord production lines without reliable anti-blast transmission measures between processes

20. The production of detonating cords without on-line detection of the amount of drug in the rope-making process and automatic interlocking protection devices

threads

21. Manufacturing process for common type electric detonators with a maximum ignition current of less than 0.25A
22. Manufacturing processes in which human-machine segregation is not achieved in the detonator filling process
23. Manufacturing processes that require manual transfer of products between detonator bayoneting and inspection processes
24. Low-level industrial explosives production lines with an annual capacity of 10,000 tons or less
25. Hand-loading production process for firecrackers, combination fireworks, fireworks and other products

(xvi) Firefighting

1. Production process of electronic components for fire detectors with manual insertion soldering

(xvii) Mining

1. Manual loading and unloading of ore rocks in centralized shoveling operations
2. Dry rock drilling operations not fitted with dust traps
3. The main trackless transportation roadway and open-pit quarry use human or animal power to transport the ore rock
4. Use of non-flame retardant cables, ducts and conveyor

belts in underground mines

5. Use of wood support for major shafts in underground mines
6. Underground mines using the airfield method of mining (bottomless pillar mining) Manual loading operations in the quarry

deed

7. Underground mines using cross-braced pillar mining
8. Open pit mines using flare blasting
9. Open-pit mines employing undercutting, dredging and "one-wall" mining without stratification
10. Surface mines use blasting for secondary crushing of large blocks of ore rock

(xviii) Construction

1. On-site simple production of rebar protective layer matting process
2. Winches steel straightening process

3. Decorative brick cement mortar paste process
4. Bamboo (wood) scaffolding
5. Hydraulic jacking process for unloading formwork without oil leakage safety device for cover beams (tie beams)
6. Hollow core slab, box girder airbag internal molding process
7. Sewage inspection well bricklaying process
8. Bridge suspension casting counterweight hanging basket equipment

(xix) Other

1. Plating processes containing toxic and harmful cyanide (except gold, silver, copper-based alloys and copper priming processes)
2. Zinc deposition with cyanide
3. Physical dams with islands technology
4. Tourism activities exceeding ecological carrying capacity and collection of medicinal herbs and other forest products
5. Small-scale incinerators that do not meet current national pollution control standards, engineering standards and equipment standards related to the incineration of municipal waste, medical waste and industrial waste
6. Virtual currency "mining" activities

7. **Manufacture of plastic products from medical waste**

8. **One-stage stationary gasifier** (December 31, 2023)

9. **National laws and regulations expressly eliminated, do not meet the requirements of the ecological environment access list, do not meet the national safety, environmental protection, energy consumption, water consumption, quality of mandatory standards, do not meet the requirements of international environmental conventions and other requirements of backward production processes and equipment**

II. Backward products

(i) Petrochemicals

1. Modified starch, modified fiber, colorful interior wall (resin based on nitrocellulose, soluble)

(xylene-based O/W coatings), vinyl chloride-vinylidene chloride copolymer emulsions for exterior walls, tar-based polyurethane waterproofing, waterborne PVC tar waterproofing, polyvinyl alcohol and its acetal-based interior and exterior walls (106, 107 paints, etc.), and polyvinyl acetate emulsions (including ethylene/vinyl acetate copolymer emulsions) for exterior walls.

2. Interior wall, solvent-based wood, toy, automobile, exterior wall coatings containing harmful substances such as bis-p-chlorophenyltrichloroethane, tributyltin, perfluorooctanoic acid (PFOA) and its salts, perfluorooctane sulfonic acid (PFOS), and reddan.

3. Azo dyes that cleave under reducing conditions to produce 24 hazardous aromatic amines (deferred for non-textile applications), nine carcinogenic dyes (deferred for applications that do not come into direct contact with the human body)

4. Paint strippers containing benzene, phenol, benzaldehyde and dichloromethane, Lidl, PVC construction waterproofing jointing material (tar type), 107 glue, lean meat extract, PCBs.

(Transformer oil)

5. Highly toxic pesticide products: hexachloroethylene, ethylene dibromide, butyrylhydrazine, diquat, herbicide, acetamiprid, poisonous rat poison, fluoroacetamide, sodium fluoroacetate, dibromochloropropane, fenitrothion (Sulphur 203), phosphamidon, glyflurane, silicon picloram, methamidophos, parathion, parathion-methyl, monocrotophos, cyclothionesulfuron (ethylthiocyclophosphate), formazanil, methylarsine, and all arsenic formulations, mercury formulations, lead formulations, water formulations with 30% or less glyphosate, calcium phosphide, zinc phosphide, benzyl phosphide, geosmin, magnesium phosphide, sulfur line phosphorus, fly poisonous phosphorus, terbutyl phosphorus, glyphosate Water formulations with a content of 30% or less, methyl cyclamate, calcium phosphide, zinc phosphide, fenitrothion, dithiophos, magnesium phosphide, thiophos, fenitrothion, fenitrothion, phorate, fenitrothion, tetramethosulfuron, methidophos, 2,4-dichlorobutyl ester, methamidophos, hydramidophos, methomyl, nonylphenol (pesticide additives), dicofol, chlorsulfuron, aminomethylsulfuron, and all arsenic formulations.

6. Product to be phased out under the national master plan for compliance with international conventions: Chlordane, 七氯、溴甲烷、滴滴涕、六氯苯、灭蚁灵、林丹、毒杀芬、艾氏剂、狄氏剂、异狄氏剂、硫丹、氟虫胺、十氯酮、α-六氯环己烷、β-六氯环己烷、六氯丁二烯、多氯联苯、五氯苯、六溴联苯、四溴二苯醚和五溴二苯醚、六溴二苯醚和七溴二苯醚、六溴环十二烷、全氟辛基磺酸及其盐类和全氟 Octanesulfonyl fluoride, perfluorohexane sulfonic acid (PFHxS), its salts and related compounds, perfluorooctanoic acid (PFOA), its salts and related compounds, decabromodiphenyl ether, short-chained chlorinated paraffins, pentachlorophenol and its salts and esters, polychlorinated naphthalenes (exempted uses are restricted)

7. Soft-side structure bicycle tires, ordinary conveyor belts with cotton cord as backbone material and ordinary V-belts with nylon cord as backbone material, hand-engraved vulcanizing molds for tires, bicycle tires, and motorcycle tires

(ii) Railroads

1. G60, G17 tank car, P62 shed car, K13 ore car, U60 cement car, N16, N17 flat car, L17 grain car, C62A, C62B open car, railroad flat car (load capacity 40 tons and below)

(iii) Steel

1. Hot rolled silicon steel sheet
2. Steel wires and strands of ordinary relaxation class

3. **Hot rolled steel bar: Grade** HRB335**,** HPB235

4. **The use of industrial frequency or medium frequency induction furnace melting scrap production of steel billets (ingots), and its production of steel products as raw materials (according to national laws and regulations and the state outlawed material production of steel related)**

(Requested to be phased out)

5. Earth sinter, hot sinter

(iv) Non-ferrous metals

1. Copper wire rod (black rod)

(v) Building materials

1. Glass Reinforced Cement (GRC) Hollow Slabs Produced with Non-Alkali-Resistant Fiberglass or Non-Low-Alkali Cement

2 Clay crucibles, ceramic crucibles and other crucibles made of non-platinum materialsPulled glass fibers and products and their reinforced plastic (FRP) products

3.25A hollow steel windows

4. S-2 concrete sleepers

5. Toilets with a maximum water consumption of 8 liters or more per flush

6. Hornblende asbestos (i.e., blue asbestos)

7. Non-mechanical production of insulating glass, double-layer double-frame windows and doors of all types and single-cavity structural type of plastic doors and windows

8. Polyethylene polypropylene class composite waterproofing roll-roofing, polyethylene polypropylene composite waterproofing roll-roofing (polyethylene core thickness of 0.5mm or less), cotton-polyester fiberglass (high alkali) grid composite substrate materials, PVC waterproofing

roll-roofing (S-type), produced by using the secondary heating composite molding process

9. Asbestos-containing friction materials

(vi) Pharmaceuticals

1. Lead-tin ointment tubes, single-layer polyolefin ointment tubes (except for anorectal and luminal administration)
2. Ampoule Filling Sterile Powder for Injection

3. Pharmaceutical Natural Plugs
4. non-flexible ampoule
5. Polyvinyl chloride (PVC) flexible bags for infusion (excluding peritoneal dialysis solution, for flushing solution)

(vii) Machinery

1. T100, T100A Bulldozers
2. ZP-II, ZP-III dry type slurry sprayer
3. WP-3 Excavator
4. Pneumatic grippers up to 0.35 cubic meters
5. Mining wire rope percussion drilling rig
6. 1.98 m diameter water gas generator
7. CER Membrane Box Series
8. Thermocouples (Divisions LL-2, LB-3, EU-2, EA-2, CK)
9. RTD (Div. No. BA, BA2, G)
10. DDZ-I type electric unit combination meter
11. GGP-01A Belt Scale
12. BLR-31 Load Cell
13. WFT-081 Radiant Thermometer
14. WDH-1E, WDH-2E Optical Thermometer, PY5 Digital Thermometer
15. BC Series Single Bellows Differential Pressure Gauges, LCH-511, YCH-211, LCH-311,

YCH-311, LCH-211, YCH-511 Cyclic Differential Pressure Gauges

16. EWC-01A **Model Long Chart Electronic Potentiometer**
17. XQWA **Bar Type Automatic Balancing Indicator**

18. Model ZL3 X-Y Recorder

19. DBU-521, DBU-521C Type Liquid Level Transmitter

20. YB series (No. 63-355mm, rated voltage 660V and below), YBF series (No. 63-160mm, rated voltage 380/660V or 380/660V), YBK series (No. 100-355mm, rated voltage 380/660V, 660/1140V) Flame-proof three-phase asynchronous motor

21. DZ10 series molded case circuit breaker, DW10 series frame circuit breaker

22. CJ8 Series AC Contactor

23. QC10, QC12, QC8 Series Starters

24. JR0, JR9, JR14, JR15, JR16-A, B, C, D Series Thermal Relays

25. Coke-fueled non-ferrous melting furnaces

26. GGW Series Medium Frequency Centerless Induction Melting Furnace

Model B, BA single-stage single-suction cantilevered centrifugal pump series

28.F type single-stage single-suction corrosion-resistant pump series

29. JD Long Shaft Deep Well Pumps

30. KDON-3200/3200 Accumulator Full Low Pressure Process Air Separation Equipment, KDON-1500/1500 Accumulator (Tubular) Full Low Pressure Process Air Separation Equipment, KDON-1500/1500 Tubular Plate

Full Low Pressure Process Air Separation Equipment, and KDON-6000/6600 Accumulator Process Air Separation Equipment.

31. 3W-0.9/7 (annular valve) air compressor
32. C620, CA630 Ordinary lathes
33. C616, C618, C630, C640, C650 Ordinary lathes

34. X920 Keyway Milling Machine
35. B665, B665A, B665-1 planing machine with headstock
36. D6165, D6185 EDM molding machines
37. D5540 Electro-pulse machine tool
38. J53-400, J53-630, J53-1000 Double-disc friction presses
39. Q11-1.6×1600 Plate shears
40. Q51 Truck Crane
41. 3-ton direct-current wire-type underground mine motorcars
42. A571 Single girder crane
43. Fast circuit breakers: DS3-10，DS3-30，DS3-50 (1000，3000，5000A)
DS10-10, DS10-20, DS10-30 (1000, 2000, 3000A)
44. SX Series Chamber Resistance Furnaces
45. Single-phase meters: DD1, DD5, DD5-2, DD5-6, DD9, DD10, DD12, DD14, DD15, DD17, DD20, DD28
46. SL7-30/10～SL7-1600/10、S7-30/10～S7-1600/10 Power Distribution Transformer
47. Knife switch: HD6, HD3-100, HD3-200, HD3-400, HD3-600, HD3-1000, HD3-1500
48. GC type low pressure boiler feed pumps, DG270-140，DG500-140，DG375-185
Boiler feed pumps
49. Thermodynamic Traps: S15H-16, S19-16, S19-16C, S49H-

16, S49-16C, S19H-40, S49H-40, S19H-64, S49H-64

50. Fixed Grate Coal-Fired Boilers

51. Reciprocating air compressor, power type L-10/8, L-10/7

8-18 series, 9-27 series high-pressure centrifugal ventilators

53. X52、X62W 320×150 Elevating table milling machine

54. J31-250 Mechanical Press

55. TD60, TD62, TD72 Fixed Belt Conveyors

56. E135 2-stroke medium speed diesel engine (including 2, 4 and 6 cylinder models), 4146 diesel engine

57. TY1100 Single-cylinder vertical water-cooled direct-injection diesel engine

58-165 Single-cylinder horizontal evaporative water-cooled diesel engine with pre-combustion chamber

59. Mercury-containing switches and relays

60. fuel-assisted vehicle

61. Vehicle engines with less than National II emissions

62. Friction linings of asbestos-containing materials for braking of motor vehicles

63. Non-stereotyped vertical shaft cages, hoisting winches up to Φ1.2 m (excluding Φ1.2 m) used for lifting personnel, KJ-type mine hoist, JKA-type mine hoist, XKT-type mine hoist, JTK-type mine hoisting winches, belt-brake mine hoisting winches, TKD-type hoisting electrical control devices and hoisting electronic control devices using the principle of relay structure, dry brakes used on trackless rubber-wheeled vehicles,

deep-hole rock drilling equipment without pressure stabilizers, dry brakes used on trackless rubber-wheeled vehicles, dry brakes used on deep-hole rock drilling equipment without pressure stabilizers. Dry brakes for trackless rubber-wheeled vehicles, medium- and deep-hole rock drilling equipment without pressure stabilizers

64. Coal-fired boilers of 10 steam tons per hour and below

65. National III and the following emission standard operating diesel trucks, the use of thin combustion technology and "oil to gas" old gas vehicles

66. Biomass boilers of 2 steam tons per hour and below

67. Coal-fired hot air furnace

68. Complete phase-out of fuel-type coal gas generators with a hearth diameter of less than 3 meters and batch-type fixed-bed coal gas generators (except for ammonia production) in key areas for the prevention and control of air pollution

69. Internal combustion calcium carbide furnaces and closed calcium carbide furnaces with a capacity of less than 20,000 kVA per furnace in the manufacture of inorganic salts.

70. Coal-fired boilers of 35 steam tons per hour and below (air pollution control priority areas)

71. Cement mills up to 3.2 meters in diameter (including mineral mills)

(viii) Ships

1. Steel transportation vessels constructed by the single-piece-assembled monolithic shipbuilding method
2. Converted ships that do not meet specifications and ships that have reached the end of their life expectancy
3. Single-hull oil tanker

(ix) Light industry

1. Mercury cells (mercuric oxide primary cells and batteries, zinc-mercury batteries)
2. Mercury-containing paste zinc-manganese batteries, mercury-

containing cardboard zinc-manganese batteries, mercury-containing cylindrical alkaline-manganese batteries, mercury-containing button alkaline-manganese batteries, mercury-containing button zinc-silver oxide batteries and zinc-air batteries

3. Mercury-containing laminated paper, mercury-containing zinc powder
4. Open-type general lead batteries, dry-type loaded lead batteries
5. Lead batteries containing more than 0.002% cadmium
6. Lead storage batteries containing more than 0.1% arsenic
7. Cadmium-nickel batteries for civilian use
8. Direct Vent Gas Water Heater

9. Screw-lift (cast iron) spout
10. Aniline inks for gravure printing
11. Inlet below overflow, top-guided direct-fall commode cistern fittings
12. Cast Iron Globe Valve
13. Semi-automatic (Horizontal) industrial washing machine
14. Open type perchloroethylene dry cleaning machine and ordinary closed type perchloroethylene dry cleaning machine, split type petroleum dry cleaning machine and ordinary closed type petroleum dry cleaning machine
15. Production and use of alkylphenol ethoxylates (including nonylphenol ethoxylates, octylphenol ethoxylates and dodecylphenol ethoxylates, etc.)
16. Disposable foamed plastic tableware, disposable plastic swabs; daily necessities containing plastic beads; ultra-thin plastic bags with a thickness of less than 0.025 mm; polyethylene agricultural land film with a thickness of less than 0.01 mm
17. Cold cathode fluorescent lamps and fluorescent lamps with external electrodes for electronic displays: (1) short lengths (≤500 mm) containing more than 3.5 mg of mercury per unit; (2) medium lengths (>500 mm and ≤1,500 mm) containing more than 5 mg of mercury per unit; (3) long lengths (>1,500 mm) containing

more than 13 mg of mercury per unit; (4) all kinds of fluorescent lamps, other than those listed above, of various lengths. (4) Cold cathode fluorescent lamps and external electrode fluorescent lamps of various lengths other than those listed above, which are used for electronic displays.

18. Cosmetics (containing more than 1 part per million of mercury), including skin illuminating soaps and creams, excluding eye cosmetics that use mercury as a preservative and for which there is no effective and safe alternative preservative

19. Manufacture of non-electronic measuring instruments containing mercury such as barometers, hygrometers, pressure gauges, thermometers (other than thermometers) (except for non-electronic measuring devices for which suitable non-mercury alternatives are not available, which are installed in large equipment, or which are used for high-precision measurements)

20. Mercury-containing thermometers and mercury-containing sphygmomanometers (December 31, 2025)

21. Batteries containing mercury, excluding button zinc silver oxide batteries containing less than 2% mercury and button zinc air batteries containing less than 2% mercury.

22. Compact fluorescent lamps not exceeding 30 watts and containing more than 5 milligrams of mercury per lamp for general lighting purposes.

23. Straight tube fluorescent lamps for general lighting purposes: (1) Less than 60 watts with a single Straight-tube fluorescent lamps containing more than 5 mg of mercury (using tri-color phosphor) (2) Less than Straight fluorescent lamps (with halophosphate phosphors) of 40 watts or more containing more than 10 milligrams of mercury per lamp.

24. High-pressure mercury lamps for general lighting purposes

25. Production of refrigerator and freezer products, refrigerated container products, and electric water heater products using HCFC-141b as blowing agent

26. Daily flavor containing musk xylene

(x) Firefighting

1. Difluoro-monochloro-bromomethane fire extinguishing

agent (referred to as 1211 agent), fire extinguishing systems and equipment

2. Trifluorobromomethane fire extinguishing agent (referred to as 1301 agent), fire extinguishing systems and equipment

(except for feedstock and essential uses)

3. PVC lined fire hose

(xi) Civil Explosives and Fireworks Products

1. a fuse (for explosive)
2. ammonium ladder explosive

3. paper-cased detonator
4. Pyrotechnic and fireworks products containing detonating agents and other sensitive pharmaceutical ingredients

(xii) Construction

1. Sodium oxide equivalent content of more than 1.0% and less than the factory control value of alkaline quick-setting agent

(xiii) Other

1. 59, 69, 72, TF-3 gas masks
2. ZH15 Isolated Chemical Oxygen Self-Rescuer, Carbon Monoxide Filter Self-Rescuer
3. National laws and regulations expressly eliminated, does not meet the requirements of the ecological environment access list, does not meet the national safety, environmental protection, energy consumption, water consumption, quality of mandatory standards, do not meet the requirements of international environmental conventions and other backward products

附件 1

产业结构调整指导目录
（2023 年本，征求意见稿）

产业是经济发展的关键所在，是一个国家的立国之本。推动产业结构调整是建设现代化产业体系、增强产业核心竞争力、促进产业迈向全球价值链中高端的重要举措。党的十八大以来，我国产业发展取得了举世瞩目的成就，综合实力、创新力和竞争力迈上新台阶，形成了规模优势、体系优势和部分领域领先优势，有力支撑了国家经济社会建设和我国大国地位。当今，世界正经历百年未有之大变局，新一轮科技革命和产业变革深入发展，全球产业链供应链格局面临深刻调整，我国产业发展进入战略机遇和风险挑战并存、不确定难预料因素增多的时期。为深入贯彻党的二十大精神，适应产业发展新形势新任务新要求，加快建设现代化产业体系，根据《国务院关于发布实施〈促进产业结构调整暂行规定〉的决定》（国发〔2005〕40号），国家发展改革委牵头会同相关部门共同修订形成《产业结构调整指导目录（2023年本）》（以下简称《目录（2023年本）》）。

《目录（2023年本）》由鼓励、限制和淘汰三类目录组成。鼓励类主要是对经济社会发展有重要促进作用的技术、装备及产品；限制类主要是工艺技术落后，不符合行业准入条件和有关规定，不利于安全生产，不利于实现碳达峰碳中和目标，需要督促改造和禁止新建的生产能力、工艺技术、装备及产品；淘汰类主要是不符合有关法律法规规定，严重浪费资源、污染环境，安全生产隐患严重，阻碍实现碳达峰碳中和目标，需要淘汰的落后工艺技术、装备及产品。鼓励类、限制类和淘汰类之外的，且符合国家有关法律、法规和政策规定的属于允许类。

《目录（2023年本）》坚持以习近平新时代中国特色社会主义思

想为指导，深入贯彻落实党的二十大精神，坚持把发展经济的着力点放在实体经济上，推进新型工业化，加快建设制造强国、质量强国、航天强国、交通强国、网络强国、数字中国，加快构建具有智能化、绿色化、融合化特征和符合完整性、先进性、安全性要求的现代化产业体系。政策导向是：

一是推动制造业高端化、智能化、绿色化。持续增强制造业核心竞争力，推动质量提升和品牌建设，不断引领产业向中高端跃升。以智能制造为主攻方向推动产业技术变革和优化升级，加快推广应用智能制造新技术，推动制造业产业模式转变。鼓励绿色技术创新和绿色环保产业发展，推进重点领域节能降碳和绿色转型，坚决遏制高耗能、高排放、低水平项目盲目发展。

二是巩固优势产业领先地位。加快传统产业改造提升，提高先进产能比例，有效扩大优质供给。依法依规化解过剩产能，淘汰落后产能。大力发展壮大战略性新兴产业，加快发展数字经济，前瞻布局未来产业，构建产业发展新引擎。扎实推进农业现代化，巩固和提高粮食、重要农产品生产能力，强化农业科技和装备支撑。加快发展物联网，建设高效顺畅的流通体系。优化基础设施布局、结构、功能和系统集成，构建现代化基础设施体系。

三是在关系安全发展的领域加快补齐短板。加快实现高水平科技自立自强，以国家战略需求为导向，积聚力量进行原创性引领性科技攻关，坚决打赢关键核心技术攻坚战。加快推进产业基础再造和重大技术装备攻关，提升战略性资源供应保障能力。加强重点领域安全能力建设，增强产业体系抗冲击能力，确保粮食、能源资源、重要产业

链供应链安全，守住不发生系统性风险底线。

四是构建优势高效的服务业新体系。推动现代服务业同先进制造业、现代农业深度融合，培育新业态新模式新路径。推动生产性服务业向专业化和价值链高端延伸，加快发展研发设计、现代物流、法律服务等服务业，加快推进服务业数字化。推动生活性服务业向高品质和多样化升级，加快发展健康、养老、托育、文化、旅游、体育、家政等服务业，加强公益性、基础性服务业供给。推进服务业标准化、品牌化建设。

请有关部门加强协调配合，加快制订和修订财税、信贷、土地、进出口、市场监管等相关政策，进一步完善促进产业结构调整的政策体系。各省、自治区、直辖市人民政府要结合本地区产业发展实际，制订具体措施，合理引导投资方向，鼓励和支持发展先进生产能力，依法依规限制和淘汰落后生产能力，防止盲目投资和低水平重复建设，切实推进产业结构优化升级。

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第一类　鼓励类

鼓励类主要是对经济社会发展有重要促进作用，有利于关键技术创新，实现高水平自立自强；有利于产业跨区域转移，促进区域协调发展；有利于自然资源节约集约利用和产业绿色低碳转型，助力碳达峰碳中和；有利于普惠性、基础性、兜底性民生建设和服务业发展，促进共同富裕的技术、装备和产品。对改造后能效达到最新版《工业重点领域能效标杆水平和基准水平》中标杆水平的项目，参照鼓励类管理。

鼓励类目录聚焦基础性、战略性、前瞻性关键领域，重点鼓励市场机制难以有效发挥、需要政府发挥引导作用、对行业发展具有重要指导作用的事项；对市场机制能够有效发挥、对国计民生影响不大、对行业发展作用有限、发展水平不再先进的事项，不再列入鼓励类。

对鼓励类投资项目，按照国家有关投资管理规定进行审批、核准或备案；鼓励金融机构按照市场化原则提供信贷支持。对鼓励类投资项目的其他优惠政策，按照国家有关规定执行。

一、农林牧渔业

1.农田建设与保护工程：高标准农田建设，农田水利建设，高效节水灌溉，农田盐碱化改善渗排工程建设，旱作盐碱地改造和综合利用，土壤侵蚀防治，土、肥、水速测及水肥一体化技术开发与应用

2.耕地质量建设：保护性耕作，新开耕地快速培肥，肥沃耕作层培育，耕地保养管理

3.农业节水改造和精细化管理：更新改造不符合灌溉节水标准的灌区，旱作节水农业，水资源短缺和超载地区发展雨养农业，干旱半干旱地区推广以雨养和节水为导向的绿化模式

4.种质资源保护利用和种子库建设：农产品及农作物种子基地建设，农作物、林木、草、畜禽和渔业种质资源保护与建设，动植物种质资源收集、保存、鉴定、开发与应用

5.农业良种技术攻关和生物育种产业化应用：动植物（含野生）优良品种选育、繁育、保种和开发，生物育种，种子（种苗）生产、加工、包装、检验、鉴定技术和仓储、运输设备的开发与应用，猪牛羊胚胎（体内）及精液工厂化生产

6.智慧农业及新型农业技术开发：蔬菜、瓜果、花卉设施栽培（含无土栽培）先进技术开发与应用，优质、高产、高效标准化栽培技术开发与应用，农业生物技术开发与应用，农业生产数字化改造和智慧农业建设

7.农林产品深加工：木、竹、草（包括秸秆、芦苇）人造板及其复合材料技术开发及应用，林产化工原料林基地建设，林产化学品深

加工，木竹结构建筑和木（竹）质材料环保加工、循环节约利用、能源化技术开发与应用，竹藤、花卉、苗木基地建设、产品开发及精深加工，次小薪材、沙生灌木及三剩物深加工、产品开发及能源化

8.农产品仓储运输：农林牧渔产品储运、保鲜、加工与综合利用

9.粮食储备技术及装备：粮油干燥节能设备，农户绿色储粮生物技术，驱鼠技术，农户新型储粮仓（彩钢板组合仓、钢骨架矩形仓、钢网式干燥仓、热浸镀锌钢板仓等），安全绿色储粮技术及装备推广应用

10.动物防疫和农作物病虫害防治：重大病虫害、外来入侵物种及动物疫病防治，动物疫病新型诊断试剂、疫苗及低毒低残留兽药（含兽用生物制品）新工艺、新技术开发及应用，野生动植物培植、驯养繁育基地及疫源疫病监测预警体系建设，农作物、林木害虫密度自动监测技术开发与应用

11.农业气象服务：人工增（消）雨防雹等人工影响天气作业系统、技术、装备开发与应用，气象卫星工程（卫星研制、生产及配套软件系统，地面接收处理设备，卫星遥感应用技术）和气象信息服务

12.生态农业：生态种植业、生态畜牧业、生态草业的技术开发及应用

13.绿色农业：全生物降解地膜、高强度易回收地膜农田示范与应用，受污染耕地风险管控与修复，符合绿色低碳循环要求的饲料、饲料添加剂、肥料、农药、兽药等优质安全环保农业投入品及绿色食品生产允许使用的食品添加剂开发，农产品及其产地环境监测技术开发

和应用，有机废弃物无害化、价值化处理及有机肥料产业化技术开发与应用

14.现代畜牧业及水产生态健康养殖：畜禽标准化规模养殖技术开发与应用，农牧渔产品绿色生产技术开发与应用，畜禽养殖废弃物处理和资源化利用（畜禽粪污肥料化、能源化、基料化和垫料化利用，病死畜禽无害化处理），远洋渔业、人工鱼礁、渔政渔港工程、绿色环保功能性渔具示范与应用，新能源渔船，淡水与海水健康养殖及产品深加工，淡水与海水渔业资源增殖与保护，海洋牧场

15.林果业：国家储备林建设，特色经济林建设，碳汇林建设，植树种草工程，林草种苗工程，油茶、核桃、油橄榄、仁用杏、榛子、油棕等木本粮油基地建设，生物质能源林和用材林定向培育与产业化，森林资源培育（速生丰产用材林、大径级用材林等）

16.中药材种植：中药材生态种植、野生抚育和仿野生栽培，珍稀濒危动植物药材培育，天然橡胶及杜仲种植生产，林下种养殖技术开发及应用

17.可再生资源综合利用：农作物秸秆综合利用（秸秆收储运体系建设、秸秆肥料化利用、秸秆饲料化利用、秸秆能源化利用、秸秆基料化利用、秸秆原料化利用等），农村可再生资源综合利用开发工程（沼气工程、生物天然气工程、“再生资综合利用、沼气发电、生物质能清洁供热、秸秆气化清洁能源利用工程、废弃菌棒利用、太阳能利用）

18.农村旅游特色产业：休闲农业和乡村旅游精品工程，森林康养、

自然教育和生态旅游

19.农村数字化改造：数字乡村建设，“村数字+”农林产品出村进城工程

20.农村废弃物治理：面向资源化的农村生活污水、生活垃圾、厕所粪污、畜禽粪便、农业废弃物与农田面源污染协同综合治理

21.农村水系整治：生态清洁型小流域建设及面源污染防治

22.农村人居环境治理：农业农村环境保护与治理技术开发与应用

23.重要生态系统保护和修复：草原、森林灾害综合治理工程，天然草原植被恢复工程，优质高产牧草人工种植与加工，自然保护地建设及生态示范工程，内陆流域性大湖资源增殖保护工程，山水林田湖草沙系统治理，天然林保护与修复，营造林工程（包括防护林建设、退化林修复、森林抚育等）

24.水土流失治理：水土流失综合治理工程，荒漠化、石漠化防治及防沙治沙工程，固沙、保水、改土新材料生产，抗盐与耐旱植物培植

25.生物多样性保护：珍稀濒危野生动植物和古树名木保护工程

26.农业社会化服务：农业服务公司、农村集体经济组织、基层供销合作社等各类主体提供的单环节、多环节、全程生产托管服务

二、水利

1.水资源利用和优化配置：跨流域调水工程，综合利用水利枢纽工程

2.节水供水工程：农村供水工程，灌区及配套设施建设、改造，

高效输配水、节水灌溉技术推广应用，灌溉排水泵站更新改造工程，合同节水管理，节水改造工程，节水工艺、技术和装备推广应用，城镇用水单位智慧节水系统开发与应用，非常规水源开发利用

3.防洪提升工程：病险水库、水闸除险加固工程，城市积涝预警和防洪工程，水利工程用土工合成材料及新型材料开发制造，水利工程用高性能混凝土复合管道的开发与制造,山洪地质灾害防治工程(山洪地质灾害防治区监测预报预警体系建设及山洪沟、泥石流沟和滑坡治理等），江河湖海堤防建设及河道治理工程，蓄滞洪区建设，江河湖库清淤疏浚工程，堤防隐患排查与修复，出海口门整治工程

4.水生态保护修复：水生态系统及地下水保护与修复工程，水源地保护工程（水源地保护区划分、隔离防护、水土保持、水资源保护、水生态环境修复及有关技术开发推广），水土保持工程（淤地坝工程、坡耕地水土流失综合治理，侵蚀沟治理）

5.水利数字化建设：水工程防灾联合调度系统开发，洪水风险图编制技术及应用（大江大河中下游及重点防洪区、防洪保护区等特定地区洪涝灾害信息专题地图），水资源管理信息系统建设，水土保持信息管理系统建设，水文站网基础设施及水文水资源监测能力建设，数字孪生流域建设，数字孪生水利工程建设

三、煤炭

1.煤炭跨区域运输通道和集疏运体系：管道输煤，大型煤炭储运中心、煤炭交易市场建设，储煤设施建设和环保改造

2.智能化和安全高效矿井建设：矿井灾害（瓦斯、煤尘、矿井水、

火、围岩、地温、冲击地压等）防治，井下救援技术及特种装备开发与应用，新型矿工避险自救器材开发与应用，煤矿智能化开采技术装备及煤矿机器人研发应用

3.矿山生态修复：地面沉陷区治理，矿井水资源保护与利用

4.煤炭资源开发利用：煤炭共伴生资源加工与综合利用，煤层气勘探、开发、利用和煤矿瓦斯抽采、利用，矿井采空区、建筑物下、铁路等基础设施下、水体下采用煤矸石等物质填充采煤技术开发与应用，煤田地质及地球物理勘探，煤电一体化建设

5.煤炭清洁高效开发利用技术：煤炭清洁高效利用技术，煤炭清洁高效洗选和洁净型煤技术开发与应用,提高资源回收率的采煤方法、工艺开发与应用，实施安全、高效、绿色、智能开采的大型煤矿项目（井工煤矿设计生产能力≥120 万吨/年、露天煤矿设计生产能力≥400 万吨/年）

四、电力

1.新型电力系统技术及装备：±800 千伏及以上直流输变电，1000 千伏及以上交流输变电，分布式新能源并网、分布式智能电网（含微电网）技术推广应用，水力发电中低温水恢复措施工程、过鱼措施工程技术开发与应用，乏风瓦斯发电技术及开发利用，垃圾焚烧发电成套设备，生物质热电联产

2.电力基础设施建设：大中型水力发电及抽水蓄能电站、大型电站及大电网变电站集约化设计和自动化技术开发与应用，跨区电网互联工程技术开发与应用，电网改造与建设，增量配电网建设

3.电力系统数字化升级：继电保护技术、电网运行安全监控信息技术开发与应用，智慧能源系统，电力智能运维及智慧工地技术，关键电力应急装备技术，电力系统网络安全防护技术

4.电力系统调节：气源落实地区天然气调峰发电项目，电力源网荷储一体化和多能互补电源建设

5.电力消纳和存储：电化学、压缩空气、飞轮、储氢（氨）、蓄热等各类新型储能技术推广应用，电动汽车充电设施，高效电能替代技术及设备，船舶充换电设施、港口船舶岸电设施建设和应用，跨季节储能技术

6.火力发电低碳节能改造：燃煤发电机组二氧化碳捕集、利用与封存（CCUS）技术，超低排放、重金属脱除等多污染物协同治理技术，减污降碳协同增效技术开发与应用，输变电、配电节能、降损、环保技术开发与推广应用，火力发电机组节能降碳改造、供热改造、灵活性改造

7.煤电技术及装备：单机60万千瓦及以上，采用超超临界发电机组，保障电力安全的支撑性煤电项目和促进新能源消纳的调节性煤电项目；单机30万千瓦及以上，超（超）临界热电联产机组，循环流化床、增压流化床、整体煤气化联合循环发电等洁净煤发电项目以及利用煤矸石、中煤、煤泥等低热值煤发电项目；背压（抽背）型热电联产、热电冷多联产；燃煤耦合生物质发电

五、新能源

1.风力发电技术与应用：15MW等级及以上海上风电机组技术开

发与设备制造，漂浮式海上风电技术，高原、山区风电场建设与设备生产制造，海上风电场建设与设备及海底电缆制造，稀土永磁材料在风力发电机中应用

2.可再生能源利用技术与应用：太阳能热发电集热系统、太阳能光伏发电系统集成技术开发应用，逆变控制系统开发制造，电解水制氢和二氧化碳催化合成绿色甲醇,太阳能建筑一体化组件设计与制造，高效太阳能热水器及热水工程，太阳能中高温利用技术开发与设备制造，海洋能、地热能利用技术开发与设备制造，可再生能源供暖技术的开发与应用

3.生物质能发电技术与应用：生物质纤维素乙醇、生物燃油（柴油、汽油、航空煤油）等非粮生物质燃料生产技术开发与应用，生物质直燃、气化发电及热电联产技术开发与设备制造，农林生物质资源收集、运输、储存技术开发与设备制造，农林生物质成型燃料加工设备、气化设备、锅炉和炉具制造，以农作物秸秆、畜禽粪便、厨余垃圾、工业有机废弃物、有机污水污泥等各类城乡有机废弃物为原料的大型沼气和生物天然气生产成套设备，沼气发电机组、沼气净化设备、沼气管道供气、沼气提纯压缩液化制备生物天然气设备、装罐成套设备制造，秸秆热解气化相关设备制造

4.氢能技术与应用：高效经济制氢、运氢及高密度储氢技术开发应用及设备制造，加氢站及车用清洁替代燃料加注站，移动新能源技术开发及应用，新一代氢燃料电池技术研发与应用，可再生能源制氢，液态、固态和气态储氢，管道拖车运氢，管道输氢，加氢站，氢电耦

合等氢能技术推广应用

5.发电互补技术与应用：氢能、风电与光伏发电互补系统技术开发与应用，传统能源与新能源发电互补技术开发及应用

六、核能

1.先进核能技术与应用：先进核反应堆及多用途模块化小型堆建造与技术开发，高性能核燃料元件、MOX 元件、金属元件制造，先进的铀同位素分离技术开发与设备制造，钍反应堆应用技术开发

2.核能综合利用：同位素、加速器及辐照应用技术开发，核能综合利用（供暖、供汽、海水淡化等）

3.核能开发：铀矿地质勘查和铀矿采冶、铀精制、铀转化核电站建设

4.核与辐射安全技术与应用：乏燃料后处理，辐射防护技术开发与监测设备制造，核安保关键系统开发与设备制造，核设施退役及放射性废物治理，核电站延寿及退役技术和设备，核电站应急抢险技术和设备

七、石油天然气

1.石油天然气开采：常规石油、天然气勘探与开采，页岩气、页岩油、致密油（气）、油砂、天然气水合物等非常规资源勘探开发

2.油气管网建设：原油、天然气、液化天然气、成品油的储存和管道输送设施、网络和液化天然气加注设施建设、技术装备开发与应用

3.油气勘探开发技术与应用：油气伴生资源综合利用，油气田提

高采收率技术、安全生产保障技术、生态环境恢复与污染防治工程技术开发利用，挥发或放空石油、天然气自动监控、回收利用技术、装备开发与应用，天然气分布式能源技术开发与应用，液化天然气技术、装备开发与应用，天然气与新能源融合发展项目及技术开发与应用，液化天然气装置不凝气提取高纯氦气技术、成套设备开发及应用

八、钢铁

1. 黑色金属矿山开采、选矿及共伴生矿产综合开发利用，黑色金属矿山尾矿充填采矿工艺、技术及装备

2. 带式焙烧等高效球团矿生产及高炉高比例球团冶炼，气基竖炉直接还原低碳炼铁（不含煤制气），高炉富氢喷吹冶炼、冶金渣余热回收及综合利用，近终型铸轧一体化，加热炉高效燃烧（包括全氧燃烧技术、富氧燃烧技术、低氮燃烧技术），热轧氧化铁皮无酸表面处理

3. 利用钢铁生产设备处理社会废弃物（不含危险废物）

4. 钢铁、焦化、铁合金行业超低排放技术，以及副产物资源化、再利用化

5. 冶金固体废弃物综合利用，冶金废液（含废水、废酸、废油等）循环利用

6. 废钢回收、拆解、除油、加工、分类、配送一体化

九、有色金属

1. 矿山：有色金属现有矿山接替资源勘探开发，紧缺资源的深部、难采及低品位矿床开采，矿山尾矿充填采矿工艺、技术及装备

2. 冶炼：高效、低耗、低污染、新型冶炼技术开发，铜冶炼 PS 转炉的环保升级改造

3. 综合利用：高效、节能、低污染、规模化再生资源回收与综合利用。（1）废杂有色金属回收利用。（2）有价元素的综合利用。（3）赤泥及其他冶炼废渣综合利用。（4）高铝粉煤灰提取氧化铝。（5）钨冶炼废渣的减量化、资源化和无害化利用处置。（6）锌湿法冶炼浸出渣资源化利用和无害化处置。（7）铝灰渣资源化利用。（8）再生有色金属新材料

4. 新材料：（1）信息。半导体、芯片用电子级多晶硅（包括区熔用多晶硅材料）、硅单晶（直径 200mm 以上）及碳化硅单晶、硅基电子气体、磷化铟单晶、多晶锗、锗单晶等，直径 125mm 以上直拉或直径 50mm 以上水平生长化合物半导体材料、铝铜硅钨钼稀土等大规格高纯靶材、超高纯稀有金属及靶材、超大规模集成电路铜镍硅和铜铬锆引线框架材料、电子焊料等。（2）新能源。硅能源（晶硅光伏）材料，包括配套的高纯多晶硅（包括棒状多晶硅和颗粒硅）、高效单晶硅棒、高效单晶硅片；核级海绵锆及锆材、高容量长寿命锂离子电池用三元和多元、磷酸铁锂等正极材料，前驱体材料。（3）交通运输、高端制造及其他领域。航空航天、海洋工程、数控机床、轨道交通、核工程、新能源、先进医疗装备、环保节能装备等高端制造用轻合金材料、铜镍金属材料、稀有稀土金属材料、贵金属材料、复合金属材料、金属陶瓷材料、助剂材料、生物医用材料、催化材料、3D 打印材料、高性能硬质合金材料及其工具。（4）新能源、半导体照明、电子

领域用连续性金属卷材、真空镀膜材料、高性能箔材

十、黄金

1. 黄金深部（1000 米及以下）探矿与开采、智能化采选、氰化尾渣及含氰废水无害化处置、低氰或无氰提金

2. 黄金尾矿（渣）及废石综合利用（回收有价元素、用于回填、制酸、建材等）

3. 黄金冶炼有价元素高效综合利用〔难处理矿石选冶回收率≥75%；低品位矿石选冶回收率≥65%（不含堆浸）；当黄金与其他矿物共生时，综合利用率≥70%；当黄金与其他矿物伴生时，综合利用率≥50%〕

十一、石化化工

1.矿产资源开发：硫、钾、硼、锂、溴等短缺化工矿产资源勘探开发及综合利用，磷矿和萤石矿的中低品位矿、选矿尾矿、伴生资源综合利用

2.无机盐：废盐酸制氯气等综合利用技术、铬盐清洁生产新工艺的开发和应用，全封闭高压水淬渣及无二次污染磷泥处理黄磷生产工艺，硝酸法和半水-二水法磷酸生产工艺，磷石膏综合利用技术开发与应用，优质钾肥及新型肥料的生产

3.农药：高效、安全、环境友好的农药新品种、新剂型、专用中间体、助剂的开发与生产，定向合成法手性和立体结构农药生产，生物农药新产品、新技术的开发与生产

4.涂料：低 VOCs 含量的环境友好、资源节约型涂料，用于大飞

机、高铁、大型船舶、新能源、电子等重点领域的高性能涂料及配套树脂开发与生产

5.树脂：用于生产乙烯等产品的电加热蒸汽裂解技术，乙烯-乙烯醇共聚树脂等高性能阻隔树脂，聚异丁烯、乙烯-辛烯共聚物、茂金属聚乙烯等特种聚烯烃及高碳α-烯烃等关键原料的开发与生产，芳族酮聚合物、聚芳醚醚腈、满足5G应用的液晶聚合物、电子级聚酰亚胺等特种工程塑料生产以及共混改性、合金化技术开发和应用，可降解聚合物的开发与生产，长碳链尼龙、耐高温尼龙等新型聚酰胺开发与生产

6.橡胶：万吨级液体丁基橡胶、官能团改性的溶聚丁苯橡胶、氢化丁腈橡胶、高乙烯基聚丁二烯橡胶（HVBR）、集成橡胶（SIBR）、丁戊橡胶、异戊二烯胶乳开发与生产，合成橡胶化学改性技术开发与应用，湿法（液相）和低温连续橡胶混炼技术，热塑性聚酯弹性体（TPEE）、氢化苯乙烯-异戊二烯热塑性弹性体（SEPS）等热塑性弹性体材料开发与生产，新型天然橡胶开发与应用

7.新材料：低VOCs含量胶粘剂，环保型水处理剂，新型高效、环保催化剂和助剂，功能性膜材料，超净高纯试剂、光刻胶、电子气体、新型显示和先进封装材料等电子化学品及关键原料的开发与生产，微通道反应技术和装备的开发与应用

8.硅材料：苯基氯硅烷、乙烯基氯硅烷等新型有机硅单体，苯基硅橡胶、苯基硅树脂及杂化材料的开发与生产

9.氟材料：全氟烯醚等特种含氟单体，聚全氟乙丙烯、聚偏氟乙

烯、聚三氟氯乙烯、乙烯-四氟乙烯共聚物等高品质氟树脂，氟醚橡胶、氟硅橡胶、四丙氟橡胶、高含氟量246氟橡胶等高性能氟橡胶，含氟润滑油脂，消耗臭氧潜能值（ODP）为零、全球变暖潜能值（GWP）低的消耗臭氧层物质（ODS）替代品，全氟辛基磺酰化合物（PFOS）、全氟辛酸（PFOA）及其盐类和相关化合物的替代品和替代技术开发和应用

10.轮胎：采用绿色工艺的高性能子午线轮胎（55系列以下，且滚动阻力系数≤9.0N/kN、湿路面相对抓着系数≥1.25），航空轮胎、巨型工程子午胎（49吋以上）、农用子午胎及配套专用材料和设备生产

11.生物材料：以非粮生物质为原料的高分子材料、试剂、芯片、干扰素、传感器、纤维素生化产品开发与生产

12.低碳环保技术：二氧化碳高效利用新技术开发与应用（包括二氧化碳-甲烷重整、二氧化碳加氢制化学品、二氧化碳制聚碳酸酯类和生物可降解塑料等高分子材料等），可再生能源制氢、副产氢替代煤制氢等清洁利用技术，四氯化碳、四氯化硅、甲基三氯硅烷、三甲基氯硅烷、三氟甲烷等副产物的综合利用

十二、建材

1.建筑材料等矿产资源的共伴生矿产综合开发利用、水泥原燃材料替代及协同处置技术；绿色氢能煅烧水泥熟料关键技术的研发与应用；利用清洁能源煅烧水泥熟料技术应用和生产线改造；新型固碳胶凝材料及制品制备技术；窑炉烟气二氧化碳捕集、纯化、利用及贮存技术；水泥行业超低排放技术；水泥生产制备全氧燃烧、富氧燃烧；

新型干法水泥窑生产特种水泥工艺技术及产品的研发与应用；悬浮沸腾煅烧熟料工艺技术的研发与应用；新型低碳凝胶材料研发与应用示范；低钙胶凝材料的开发与应用；粉磨系统节能改造（水泥立磨、生料辊压机终粉磨等）；建材各行业企业生产过程零外购电力、零化石能源消耗、零一次资源消耗、零碳排放、零废弃物排放的工艺技术装备的开发与应用；建材各行业（数字矿山、智能工厂、智慧物流）生产全流程智能化建设及升级改造；用于工程或装备的建材产品质量追溯体系开发与应用

2.规模不超过150吨/日（含）的电子信息产业用超薄基板玻璃、触控玻璃、高铝盖板玻璃、载板玻璃、导光板玻璃生产线、技术装备和产品；航天航空等领域所需的特种玻璃制造技术开发与生产、玻璃成型和表面功能化技术与装备开发；高硼硅玻璃，微晶玻璃；交通工具和太阳能装备用铝硅酸盐玻璃；光电探测技术用紫外玻璃、红外玻璃和特殊色散玻璃；大尺寸（1平方米及以上）钙钛矿、铜铟镓硒和碲化镉等薄膜光伏电池玻璃，TCO镀膜玻璃；节能、安全、显示、智能调控等功能玻璃产品及技术装备；超薄柔性玻璃一次成型技术及装备；智能化连续真空玻璃生产线；大型玻璃熔窑大功率玻璃-电”复合熔化技术，玻璃熔窑用全氧/富氧燃烧技术；玻璃熔窑利用绿色氢能成套技术及装备；一窑多线平板玻璃生产技术与装备；玻璃熔窑用低导热熔铸锆刚玉、长寿命（12年及以上）无铬碱性高档耐火材料；核动力堆高放射性废液固化玻璃开发及应用，大尺寸、多规格锂铝硅玻璃开发及生产

3.适用于装配式建筑、折叠式建筑、海绵城市、地下管廊、生态修复的部品化建材产品及生产设备；低成本相变储能墙体材料及墙体部件；光伏建筑一体化部品部件；全电熔法制备岩（矿）棉；B1 级柔性泡沫橡塑绝热制品；气凝胶材料；A 级阻燃保温材料制品，复合真空绝热保温材料，聚酯纤维类吸音板材，保温、装饰等功能一体化复合板材；长寿命防水防腐阻燃复合材料；高性能、高耐久、高可靠性改性沥青防水卷材、高分子防水卷材、水性或高固含量防水涂料等新型建筑防水材料；蒸压加气混凝土板、秸秆生物质墙板（砖）、生物质建材；功能型、集成化装饰装修材料及制品，超薄陶瓷板、绿色无醛人造板，路面砖（板）、透水砖（板）、装饰砖（砌块）、仿古砖瓦、水工及护坡生态砖（砌块）等产品及绿色低碳建材产品技术开发与生产应用

4.陶瓷集中制粉、陶瓷园区清洁煤制气生产技术开发与集中应用；建筑陶瓷干法制粉技术与装备应用；电烧辊道窑技术与装备开发及应用；单块面积大于 1.62 平方米（含）的陶瓷板生产线和工艺装备技术开发与应用；利用尾矿、废弃物等生产的轻质发泡陶瓷隔墙板及保温板材生产线和工艺装备技术开发与应用；基于氢能利用的节能陶瓷干燥窑及烧成窑炉装备；一次冲洗用水量 6 升及以下的坐便器、蹲便器，节水型生活用水器具及节水控制设备，智能坐便器、卫浴集成系统，满足装配式要求的整体卫浴部品开发与生产

5.8 万吨/年及以上无碱玻璃纤维粗纱（单丝直径＞9 微米）池窑拉丝技术，5 万吨/年及以上无碱玻璃纤维细纱（单丝直径≤9 微米）池窑

拉丝技术，超细（单丝直径≤5 微米）、高强、高模、耐碱、低介电、低膨胀、高硅氧、可降解、异形截面、本体彩色、有机纤维复合等高性能及特种玻璃纤维开发与生产，玻璃纤维毡、布等制品生产；玄武岩纤维池窑拉丝技术；碳化硅纤维；航空航天、环保、海工、电工电子、交通、能源、建筑、物联网、农业等领域用纤维增强复合材料产品及其高效成型制备工艺和装备；连续缠绕成型复合材料管道；生物降解复合材料制造技术及装备；树脂基复合材料废弃物回收利用技术与装备；大型客机高性能次承力复合材料结构件关键技术、深海复合材料耐压舱段开发及应用、航空发动机叶片用大尺寸复杂结构三维机织复合材料预制体的制备与应用

6.碳陶复合摩擦材料及自动变速箱用湿式摩擦材料等新产品的开发与生产，以合成矿物纤维、芳纶纤维、非金属矿物粉体等作为增强材料的环保型密封材料新工艺、新产品开发与生产，高性能石墨密封材料的开发与生产；高能宇宙辐射探测（HERD）用高耦合效率低串扰光纤传像关键技术开发及应用

7.重点非金属矿山高效开采及选矿工艺技术；石墨烯材料、氢燃料电池石墨双极板、高性能天然石墨负极材料、核级石墨生产及应用开发；非金属矿聚合物可陶瓷化阻燃材料；环境治理、节能储能、国防军工、电子信息、生物医药、保温隔热、阻燃防火、农业农村等领域用矿物功能材料生产及其技术装备开发应用；矿物超细材料加工在线检测与控制智能化生产线；新型靶向药物载体矿物功能材料的制备技术开发与示范、非金属矿物凹凸棒替代抗生素产品研发及产业化应

用

8.无机人造石产品及技术装备的研发生产；机械化石材矿山开采及自动化石材加工技术；矿石碎料和板材边角料、石粉综合利用生产及工艺装备开发；石材开采、加工装备的永磁电机驱动控制技术

9.不低于20万块/日（含）新型烧结砖瓦生产线协同处置大宗废弃物工艺技术及产品的研发与应用；工业副产磷石膏高效净化提质及高值化综合利用技术；利用矿山尾矿、建筑废弃物、工业废弃物、城市污泥、江河湖（渠）海淤泥等大宗废弃物无害化生产制备砂石骨料、结构混凝土用高强陶粒、功能陶粒、墙体材料等建材及其工艺技术装备开发

10.高品质人工晶体材料、多功能透明件、特种光学玻璃材料、制品和器件，功能性人造金刚石材料生产装备技术开发；高纯石英原料（纯度大于等于99.999%）、半导体用高端石英坩埚、半导体用石英陶瓷器件（纯度大于等于99.9%）、化学气相合成石英玻璃等制造技术开发与生产；低温共烧陶瓷（LTCC）、高温共烧陶瓷（HTCC）及配套浆料和相关材料；紫外级氟化钙晶体材料；高纯纳米级球形硅微粉、中空球形硅微粉的生产、应用及其技术装备开发与应用；精细陶瓷粉体、适用于增材制造的陶瓷前驱体及陶瓷短切纤维、碳化硅纤维、陶瓷晶须；陶瓷球、陶瓷阀门、陶瓷螺杆等精密成型的陶瓷部件；陶瓷膜、蜂窝陶瓷、泡沫陶瓷；陶瓷基板、陶瓷绝缘部件、电子陶瓷材料及部件；连续陶瓷纤维及纤维增强陶瓷基复合材料；医用精细陶瓷材料及部件；陶瓷墨水材料；高导热纳米及大单晶陶瓷材料；锂电池

隔膜用纳米陶瓷粉体材料；精密研磨及抛光用陶瓷材料等工业陶瓷技术开发与生产应用；信息、新能源、国防、航空航天等领域用高性能陶瓷的制造技术开发与生产；连续氮化物纤维工程化制备技术开发与示范、面向新一代光刻机用碳化硅陶瓷水冷真空吸盘（浸没式）制备关键技术研发与应用、高强韧高导热氮化硅陶瓷弹簧的制备及性能研究、高清超声医疗用高居里温度弛豫铁电单晶材料（PIMNT）研制及产业化

11.具备消纳工业和城市固废能力的绿色智能化预拌混凝土生产线；年产 1000 万吨及以上的超大型高品质机制砂石骨料生产技术装备，短流程低能耗软岩加工、高效硬岩加工、制砂楼站等无污水、淤泥排放、粉尘近零排放的高品质机制砂石骨料生产技术装备，砂石生产用长寿命耐磨材料；海洋工程用混凝土、轻质高强混凝土、超高性能混凝土（UHPC）、混凝土自修复材料的开发和应用

十三、医药

1.医药关键核心技术开发与应用：膜分离、新型结晶、手性合成、酶促合成、连续反应等原料药先进制造和绿色低碳技术，新型药物制剂技术、新型生物给药方式和递送技术，大规模高效细胞培养和纯化、药用多肽和核酸合成技术，抗体偶联、载体病毒制备等技术，采用现代生物技术改造传统生产工艺

2.新型药品开发和生产：拥有自主知识产权的创新药、儿童药、短缺药、罕见病药，重大疾病防治疫苗以及新型抗体药物、基因治疗和细胞治疗药物、重组蛋白质药物、核酸药物、生物酶制剂

3.生物医药配套产业：化学成分限定细胞培养基，新型纯化填料和过滤膜材料，高端药用辅料，疫苗新佐剂的开发和生产，特殊功能性材料等新型药用包装材料与技术，即混即用、智能包装等新型包装系统及给药装置的开发和生产；高端化、智能化制药设备，新型制剂生产设备，大规模生物反应器及附属系统，蛋白质高效分离和纯化设备，药品连续化生产设备；实验动物标准化养殖及动物实验服务

4. 高端医疗器械创新发展：新型基因、蛋白和细胞诊断设备，新型医用诊断设备和试剂，高性能医学影像设备，体外膜肺氧合机等急危重症生命支持设备，人工智能辅助医疗设备，移动与远程诊疗设备，腔镜手术机器人等高端外科设备，高端康复辅助器具，脑起搏器、全降解血管支架等高端植入介入产品，生物医用材料、增材制造技术开发与应用

5.中医药传承创新：中药饮片炮制技术传承与创新，古代经典名方复方制剂、中药创新和改良型新药、民族药的开发和生产，中药高效提取、全过程质量控制和信息追溯等新技术、新设备的开发与应用

十四、机械

1.科学仪器和工业仪表：用于辐射、有毒、可燃、易爆、重金属、二噁英等检测分析的仪器仪表，水质、烟气、空气检测仪器，药品、食品、生化检验用高端质谱仪、色谱仪、光谱仪、X 射线仪、核磁共振波谱仪、自动生化检测系统及自动取样系统和样品处理系统，科学研究、智能制造、测试认证用测量精度达到微米以上的多维几何尺寸测量仪器，自动化、智能化、多功能材料力学性能测试仪器，工业 CT、

三维超声波探伤仪等无损检测设备，用于纳米观察测量的分辨率高于3.0 纳米的电子显微镜，各工业领域用高端在线检验检测仪器设备

2.灾害监测装备：数字化、网络化、智能化的矿井灾害监测仪器仪表和安全报警系统、水文数据采集仪器、地震地质灾害监测仪器仪表、海洋观测探测监测仪器设备及系统，上述仪器的计量检定设备

3.大型发电装备及其关键部件：单机容量 80 万千瓦及以上混流式水力发电设备（水轮机、发电机及调速器、励磁等附属设备），单机容量 35 万千瓦及以上抽水蓄能、5 万千瓦及以上贯流式和 10 万千瓦及以上冲击式水力发电设备及其关键配套辅机；60 万千瓦及以上超临界、超超临界火电机组用发电机保护断路器、泵、阀等关键配套辅机、部件，燃气轮机高温部件（300MW 以上重型燃机用转子体锻件、大型高温合金轮盘、缸体、叶片等）及控制系统，60 万千瓦及以上发电设备用转子（锻造、焊接）、转轮、叶片、泵、阀、主轴护环等关键铸件、锻件；三代、四代核电设备及关键部件，多用途模块化小型堆设备及关键部件；海洋能（潮汐、潮流、波浪、温差、盐差等）发电设备

4.铸造装备：高紧实度粘土砂铸造成套装备，高效自硬砂铸造成套设备，消失模/V 法/实型铸造工艺及装备，壳型铸造、精密组芯造型、硅溶胶熔模精密铸造工艺及装备，砂型 3D 打印/切削快速成型工艺与装备，轻合金高压/低压/挤压/差压/半固态等铸造工艺与装备，自动化智能制芯设备，外热风水冷长炉龄大吨位（10 吨/小时以上）冲天炉，高温合金真空熔炼定向凝固设备，钛合金真空感应熔化设备，金属液

自动化转运及定量浇注设备，金属液（铸铁、铸铝）短流程铸造工艺与设备，铸件高效自动化清理成套设备，铸造专用机器人；铸造用树脂砂、粘土砂等再生循环利用技术及设备，环保树脂、无机粘结剂造型和制芯技术及设备

5.大型石化装备：乙烯裂解三机，40 万吨级（聚丙烯等）挤压造粒机组，50 万吨级合成气、氨、氧压缩机等关键设备

6.热处理装备：数字化移动保温罩型可控气氛井式炉生产线、大型（装炉量 1 吨以上）多功能可控气氛热处理设备、智能化学热处理设备、多功能真空热处理设备及装炉量 500 公斤以上真空热处理设备、全纤维炉衬热处理加热炉

7.沼气发生设备：高固体浓度沼气生产成套设备（半干法厌氧发酵成套设备、干法厌氧发酵成套设备），沼气发酵及储气一体化设备（储气容积 300～2000 立方米系列产品），沼液抽渣设备（抽吸量 1 立方米/分钟以上）

8.工程机械：柴油驱动大型机械的电气化改造部件、动力换挡变速箱、湿式驱动桥、回转支承、液力变矩器，压力 25 兆帕以上液压马达、泵、控制阀和油缸，动力机械电液控制系统、大型动力机械高精度数字液压件及系统、高频响智能化气动元件及系统；12000 米及以上深井钻机、极地钻机、高位移性深井沙漠钻机、沼泽难进入区域用钻机、海洋钻机，以及撬毛台车、天井钻机等成套设备

9.环保装备：危险废物（含医疗废物）集中处理设备；纳滤膜和反渗透膜纯水装备;组合式一体化净水器(处理量 100～2500 吨/小时),

海水淡化装备；燃煤发电机组脱硫、脱硝、除尘等超低排放成套技术装备；钢铁炉窑烟气细颗粒物预荷电袋式除尘技术装备；焦炉烟气SDA 脱硫+SCR 脱硝技术装备；电解铝烟气氧化铝脱氟除尘技术装备；钢铁烧结烟气干法脱硫除尘成套装备；袋式除尘器；电袋复合除尘技术装备（颗粒物排放浓度<10 毫克/立方米）；催化裂化再生烟气除尘脱硫技术装备；VOCs 吸附回收装置；VOCs 焚烧装置；炉窑、料场的无组织排放控制技术装备；复合式饮食业油烟净化装备；安全型蓄热式热力氧化炉。城镇污水处理成套装备（除磷脱氮）；污泥水解厌氧消化技术装备；污泥干燥焚烧技术装备（减渣量 90%以上）；浸没式膜生物反应器（COD 去除率 90%以上）；陶瓷真空过滤机（真空度：0.09~0.098 兆帕，孔隙：0.2~20 微米）；超生耦合法和生物膜法处理高浓度有机废水技术装备；油污水、化学品洗舱水处置技术装备；水体深度除氟成套装备；生活垃圾清洁焚烧技术装备（助燃煤量 20%以下）；厨余垃圾集中无害化处理技术装备（利用率 95%以上）；垃圾填埋渗滤液和臭气处理技术装备（处理量 50 吨/天以上）；生活垃圾自动化分选技术装备（分选率 80%以上）；建筑垃圾处理和再利用工艺技术装备（处理量 100 吨/小时以上）；工业危险废弃物处置处理技术装备（处理率 90%以上）；油田钻井废弃物处理处置技术与成套装备（减容 50%以上，处理率 70%以上）；医疗废物清洁焚烧、高温蒸煮无害化处理技术装备（处理量 150 千克/小时以上，燃烧效率 70%以上）以及医疗废物微波、化学消毒处理技术装备；畜禽粪污集中处理技术装备（处理量 20 吨/天以上）；含油污泥热解处理装备（设备热

解吸率 99.9%以上）；电子束抗生素菌渣无害化处理装备（单台处理量 100 吨/天）；智能好氧发酵一体化装备（发酵产物含水率 40%以下）；破碎筛分一体机、气味抑制设备、直接热解吸设备、间接热解吸设备、土壤淋洗设备、土壤改良机、直推式钻探与采样设备、序批式油泥热解撬装成套化装备

10.关键轴承：时速 200 公里以上动车组轴承，轴重 23 吨及以上大轴重重载铁路货车轴承，大功率电力/内燃机车轴承，使用寿命 240 万公里以上的新型城市轨道交通轴承，使用寿命 25 万公里以上轻量化、低摩擦力矩汽车轴承及单元，耐高温（400℃以上）汽车涡轮、机械增压器轴承，轿车三代轮毂轴承单元，P4、P2 级数控机床轴承，2 兆瓦（MW）及以上风电机组用各类精密轴承，使用寿命大于 5000 小时盾构机等大型施工机械轴承，P5 级、P4 级高速精密冶金轧机轴承，飞机发动机轴承及其他航空轴承，医疗 CT 机轴承，船舶轮缘推进器径向推力一体式轴承，深井超深井石油钻机轴承，海洋工程轴承，电动汽车驱动电机系统高速轴承（转速≥1.2 万转/分钟），工业机器人 RV 减速机谐波减速机轴承、磁悬浮轴承，以及上述轴承的零件

11.关键铸件：高强度、高塑性球墨铸铁件，高性能蠕墨铸铁件，高精度、高压、大流量液压铸件，有色合金特种铸造工艺铸件，高强钢锻件，耐高温、耐低温、耐腐蚀、耐磨损等高性能轻量化新材料铸件、锻件，高精度、低应力机床铸件、锻件，汽车、能源装备、轨道交通装备、航空航天、军工、海洋工程装备关键铸件、锻件

12.关键密封件：大型风力发电密封件（使用寿命 7 年以上，工作

温度-45～100℃），核电站主泵机械密封（适用压力≥17 兆帕，工作温度 26.7～73.9℃），盾构机主轴承密封（使用寿命 5000 小时），轿车动力总成系统以及传动系统旋转密封，石油钻井、测井设备密封（适用压力≥105 兆帕），液压支架密封件，高 PV 值旋转动密封件，超大直径（≥2 米）机械密封，航天用密封件（工作温度-54～275℃，线速度≥150 米/秒），高压液压元件密封件（适用压力≥31.5 兆帕），高精密液压铸件（流道尺寸精度≤0.25 毫米，疲劳性能测试≥200 万次），氢能源储运低温密封，余热回收蒸汽压缩机轴端密封，高性能无石棉密封材料（耐热温度 500℃，抗拉强度≥20 兆帕），高性能碳石墨密封材料（耐热温度 350℃，抗压强度≥270 兆帕），高性能无压烧结碳化硅材料（弯曲强度≥200 兆帕，热导率≥130 瓦/米·开尔文）

13.关键模具：精密模具（冲压模精度≤0.02 毫米、型腔模精度≤0.05 毫米）、多工位自动深拉伸模具、多工位自动精冲模具，匹配 6000 吨以上压铸机的超大型一体化压铸模具（半周长度＞4500 毫米），搭载 10 个以上传感器智能复合材料模具，汽车高真空复合精密压铸模具、大型航空航天关键件压力成形模具、大型风电叶片模具，复合材料模具，热流道、氮气弹性元件、自润滑耐磨滑动元件、精定位模具零件等模具标准件

14.关键紧固件：航空航天钛合金紧固件，高铁防松紧固件，汽车发动机紧固件，核电及重型燃气轮机耐高温高应力紧固件，海上风电大规格耐腐蚀紧固件等高强度精密紧固件

15.关键电机：高效永磁同步电机，大转矩永磁直驱电机，高速直

驱永磁电机，低速直驱永磁电机，同步磁阻电机，超导电机

16.关键传动件：航空、航天、高铁、发动机等用弹簧，新型磁力调速器/缓冲器、永磁柔性联轴器、智能化传动联轴器等高精度传动联结件，智能化传动联轴器，低速大转矩高弹性联轴器，大型轧机联结轴，高速列车、飞机摩擦装置，动车组用齿轮变速箱，船用可变桨齿轮传动系统，3.0 兆瓦以上风电用变速箱，冶金矿山机械用变速箱，水泥工业用回转窑、球磨机、立磨、辊压机等专用减速机，工业机器人高精密减速器，大型拖拉机动力换挡/无级变速器，盾构机高可靠性齿轮驱动装置，汽车动力总成、工程机械、大型农机用链条，内燃机用曲轴和连杆

17.关键泵、阀部件：船舶及储罐除锈用超高压泵(压力≥280MPa)、水刺法非织造布生产线高压泵(压力≥15MPa、流量≥550L/min、平均无故障运行时间≥10000h)，研制超高压聚乙烯催化剂供料泵(压力≥300MPa、流量≥40L/h)，开发太阳能热发电用高效熔盐泵(流量≥830m3/h、扬程≥65m、工作温度 565℃)，串联多级抗气蚀控制阀系列化产品(公称压力 Class600、规格 NPS1～8、节流级数≮3 级)，高集成度 PSA 多通道旋转控制阀(流量≮500N·m3/h、密封性能达 GB/T 13927 C 级要求)，超高压聚乙烯控制阀(设计压力 260MPa、流量和压力控制精度≤1.5%)，70MPa 复合材料储氢气瓶组合阀门(公称工作压力 70MPa、功能组件集成数≥6、泄漏率≤30NmL/h)、高效低噪燃料电池氢气再循环泵(流量≥300L/min、系统效率≥60%、噪声≤70dBA)，加氢站用高压高频严密切断氢气球阀(工作压力 45MPa/90MPa、启闭频次

≥10cycle/h)，18MW 及以上集成式压缩机组、直径 1200 毫米及以上的天然气输气管线配套压缩机、燃气轮机、阀门等关键设备，单线 260 万吨/年及以上天然气液化配套的压缩机及驱动机械、低温设备等，大型输油管线配套的 3000 立方米/小时及以上输油泵等关键设备

十五、城市轨道交通装备

1.关键系统：遵循互联互通标准的 CBTC 信号系统，智能化全自动运行系统，全自动运行系统（FAO），基于车车通信的列车自主运行系统（TACS）；轨道车辆交流牵引传动系统、制动系统及核心元器件（含 IGCT、IGBT、SiC 元器件），网络控制系统，城市轨道交通关键设备设施智能运维系统和检测监测设备；自动售检票系统（AFC），车门、车钩系统、风挡系统，火灾报警和自动灭火系统；城轨列车再生制动吸收装置、能量回馈、能量储存系统

2.关键技术：城市轨道交通减振、降噪技术应用，永磁牵引电机，轴承、联轴节、直流高速开关、真空断路器（GIS）、新型智能开关器件，车体、转向架、齿轮箱及车内装饰材料轻量化应用

十六、汽车

1.汽车关键零部件：汽油机增压器，电涡流缓速器，液力缓速器，随动前照灯系统，电控系统执行机构用电磁阀，低地板大型客车专用车桥，空气悬架，大中型客车变频空调，商用车盘式制动器，商用车轮胎爆胎应急防护装置；电动助力转向系统，线控转向系统，怠速启停系统，高效高可靠性机电耦合系统；混合动力系统专用发动机，低碳、零碳燃料发动机及核心零部件；双离合器变速器（DCT），电控

机械变速器（AMT），7 挡及以上自动变速器（7 挡及以上 AT），无级自动变速器（CVT）；选择性催化还原装置，燃油蒸发控制系统（EVAP）（含车载油气回收装置（ORVR）），三效催化转化器，NOx 和颗粒物浓度传感器，高效柴油机、氢燃料发动机、汽油机颗粒捕捉器，臭氧催化转化换热器；燃气高压直喷（HPDI）发动机及供给系统；电控高压共轨喷射系统及其喷油器，高效增压系统（最高综合效率≥55%）；废气再循环系统；电制动、电动转向及其关键零部件；高原寒区特种动力装备

2.轻量化材料应用：超高强度钢，高强韧低密度钢，ADI 铸铁，高强度铝合金、镁合金、粉末冶金，高强度复合塑料、复合纤维及生物基复合材料；先进成形技术应用：3D 打印成型、激光拼焊板的扩大应用，内高压成形，超高强度钢板（强度≥980MPa、强塑积 20～50GPa·%）热成形，柔性滚压成形，一体化压铸成型，异种材料先进连接技术

3.新能源汽车关键零部件:动力电池正极材料(比容量≥180mAh/g，循环寿命 2000 次不低于初始放电容量的 80%），负极材料（比容量≥500mAh/g，循环寿命 2000 次不低于初始放电容量的 80%），隔膜（厚度≤12μm，孔隙率 35%～60%，拉伸强度 MD≥800kgf/cm^2，TD≥800kgf/cm^2）及负极氧化铝图层材料；电动汽车驱动电机系统（高效区：85%工作区效率≥80%），车用 DC/DC（输入电压 100～400V），大功率电子器件（IGBT，电压等级≥750V，电流≥300A；SiC MOSFET，电压等级≥1200V，电流≥600A）；纯电动重型卡车换电电池板系统；

插电式混合动力机电耦合驱动系统；燃料电池发动机（质量比功率≥350W/kg），燃料电池堆（体积比功率≥3kW/L），膜电极（铂用量≤0.3g/kW），质子交换膜（质子电导率≥0.08S/cm），双极板（金属双极板厚度≤1.2mm，其他双极板厚度≤1.6mm），低铂催化剂，碳纸（电阻率≤3MΩ·cm），空气压缩机，氢气循环泵，氢气引射器，增湿器，燃料电池控制系统，双向 DC/DC，70MPa 氢瓶及输送管阀，车载氢气浓度传感器；电动汽车用热泵空调，电动压缩机；电机驱动控制专用 32 位及以上芯片（不少于 2 个硬件内核，主频不低于 180MHz，具备硬件加密等功能，芯片设计符合功能安全 ASIL C 以上要求）；一体化电驱动总成（功率密度≥2.5kW/kg）；高速减速器（最高输入转速≥12000rpm，噪声＜75dB）

4.车用充电设备：车载充电机（满载输出工况下效率≥95%），双向车载充电机，三相车载充电机（充电功率≥11kW），非车载充电设备（输出电压 250～950V，电压范围内效率≥88%）；高功率密度、高转换效率、高适用性无线充电、移动充换电技术及装备，智能、快速充电及换电设施

5.汽车电子控制系统：发动机控制系统，变速箱控制系统（TCU），电子稳定控制系统（ESC），网络总线控制系统，电控智能悬架，预见性巡航系统（PCC），LIN 控发电机，可视化节油驾驶辅助系统，智能电源管理系统，自适应巡航系统（ACC），车道保持辅助系统（LKA），自动紧急制动系统（AEB），电控制动系统（EBS），自动泊车系统（CPK），车载故障诊断系统（OBD），盲区监测系统（BSD），

弯道预警系统（CSW），载货汽车用轴荷自动测量系统

6.新能源汽车、智能汽车及关键零部件、高效车用内燃机研发试验能力建设

7.智能汽车关键零部件及技术：中高级自动驾驶用高精度传感器，车载高算力人工智能芯片，基础计算平台，中央处理器及域控制器，车载操作系统和信息控制系统，新型电子电气架构，空中下载系统（OTA），车网通信系统设备，视觉识别及显示系统，高精度定位装置，线控底盘系统，智能车用安全玻璃，数字化座舱系统，人机共驾技术，新型智能终端模块，多核异构智能计算平台技术，全天候复杂交通场景高精度定位和地图技术，车路协同技术，传感器融合感知技术，车用无线通信技术，基础云控平台技术；新型安全隔离架构技术，软硬件协同攻击识别技术，终端芯片安全加密和应用软件安全防护技术，无线通信安全加密技术，安全通讯及认证授权技术，数据加密技术，功能安全和预期功能安全技术；测试评价体系架构研发，虚拟仿真，实车道路测试等技术和验证工具，整车级和系统级测试评价方法，测试基础数据库建设

十七、船舶及海洋工程装备

1.绿色智能运输船舶：适应绿色、智能、安全要求并满足国际造船新规范、新标准的船型

2.清洁能源和新能源船舶：LNG 动力、纯电动、燃料电池动力船舶等，甲醇燃料、氨燃料、生物质燃料等替代燃料动力船舶

3.特种船舶和特殊用途船舶：挖泥船、港口作业船、物探船、铺

管船、起重船、三用工作船、守护船、供应船、海上风电安装（运维）船、潜水支持船等工程船，海洋调查船、科学考察船、深海试验船、重型破冰船、医院船、应急救援船、打捞船、公务船、远洋渔业捕捞船、远洋渔业运输（加工）船、潜水器和无人船艇等

4.高性能船舶：气垫船、小水线面双体船、多体船、穿浪船、水翼船、地效翼船等

5.海洋工程装备：深远海油气钻井平台（船）、生产平台、生活平台、浮式生产储卸装置（FPSO）、浮式液化天然气装置（F-LNG）、浮式储存及再气化装置（FSRU）等海洋油气装备，海上风电装备、天然气水合物钻采船（平台）、海洋新能源装备（含潮流能、波浪能、温差能等），深远海网箱式养殖平台、大型养殖工船、大型浮式岛礁平台、深海矿产资源开发装备、海底数据中心等新型海洋工程装备

6.邮轮游艇开发制造及配套产业

7.海底采矿机器人、海底挖沟机等海底矿产资源开发装备及深海采矿系统、深海立管相关配套系统和设备，水下潜器、机器人及探测观测设备，海洋工程用高性能功能化复合材料产品开发及应用，舰船上层建筑及内装用隔热、防腐、助燃复合材料产品开发及应用

8.绿色智能制造技术与装备：精度管理控制、数字化造船、预舾装和模块化、高效焊接、绿色涂装、超高压水除锈、智能焊接生产线、智能化分段流水线、智能管子加工生产线等专用绿色智能制造、维修技术与装备

十八、航空航天

1.航空航天产品：民用航空器（干线飞机、支线飞机、通用飞机、民用直升机、其他飞行器）开发制造，航空发动机（涡喷、涡扇、涡桨、涡轴、活塞、其他航空发动机）开发制造，航空航天用燃气轮机制造，卫星、运载火箭及零部件制造，先进卫星载荷研制及生产，无人机（大型、中型、小型及其他）开发制造，新能源飞机设计与研发

2.航空器及零部件、发动机及零部件、机载系统和设备及零部件维护、维修

3.航空航天系统设备：民用航空器机载系统和设备设计制造，航空器地面模拟训练系统、试验系统开发制造，卫星地面和应用系统建设及设备制造

4.航空航天用新型材料开发生产

十九、轻工

1.单条化学木浆30万吨/年及以上、化学机械木浆10万吨/年及以上、化学竹浆10万吨/年及以上的林纸一体化生产线及相应配套的纸及纸板生产线（新闻纸、铜版纸、餐巾纸原纸、面巾纸原纸、卫生纸原纸、白纸板除外）建设，采用清洁生产工艺、以非木纤维为原料、单条10万吨/年及以上的纸浆生产线建设，先进制浆、造纸设备开发与制造，无元素氯（ECF）和全无氯（TCF）化学纸浆漂白工艺开发及应用

2.生物降解塑料及其系列产品开发、生产与应用，农用塑料节水器材，长寿命（三年及以上）功能性农用薄膜的开发、生产，全生物降解育苗钵、盘及相关农资包装材料

3.新型塑料建材（高气密隔音节能塑料窗、大口径排水排污管道、抗冲击改性聚氯乙烯管、地源热泵系统用聚乙烯管、非开挖用塑料管材、复合塑料管材、塑料检查井），防渗土工膜，塑木复合材料和分子量≥200万的超高分子量聚乙烯管材及板材生产，多腔室高功能塑料异型材

4.动态塑化和塑料拉伸流变塑化的技术应用及装备制造，应用电磁感应加热和伺服驱动系统的塑料加工装备

5.应用于工业、医学、电子、航空航天等领域的特种陶瓷生产及技术、装备开发，陶瓷清洁生产及综合利用技术开发

6.智能缝制机械（采用数字控制、智能感知等先进技术）及关键零部件开发制造

7.用于制笔、钟表等行业的多工位组合机床研发与制造

8.高新、数字、智能印刷技术设备及高清晰度制版系统开发与应用

9.少数民族特需用品制造

10.真空镀铝、喷镀氧化硅、聚乙烯醇（PVA）涂布型薄膜、功能性聚酯（PET）薄膜、无溶剂复合或热复合节能低碳聚丙烯薄膜、定向聚苯乙烯（OPS）薄膜及纸塑基多层复合等新型包装材料

11.新型锂原电池（锂二硫化铁、锂亚硫酰氯等），锂离子电池、半固态和全固态锂电池、燃料电池、钠离子电池、液流电池、新型结构（双极性、铅布水平、卷绕式、管式等）密封铅蓄电池、铅碳电池等新型电池和超级电容器，锂离子电池用三元和多元、磷酸铁锂等正

极材料、中间相炭微球和硅碳等负极材料、单层与三层复合锂离子电池隔膜、氟代碳酸乙烯酯（FEC）等电解质与添加剂，碳纳米管、碳纳米管导电液等关键材料，废旧电池资源化和绿色循环生产工艺及其装备制造，锂离子电池、铅蓄电池、碱性锌锰电池（600 只/分钟以上）等电池产品自动化、智能化生产成套制造装备

12.制革和毛皮加工清洁生产、皮革后整饰新技术开发及关键设备制造，含铬皮革固体废弃物和铬污泥综合利用，皮革及毛皮加工废液循环利用，无灰膨胀（助）剂、无氨脱灰（助）剂、无盐浸酸（助）剂、高吸收铬鞣（助）剂、天然植物鞣剂、水性涂饰（助）剂等功能性皮革化工产品开发、生产与应用，制革、毛皮加工、制鞋自动化智能化设备和系统的开发、生产

13.高效节能固态照明产品及智能控制系统的开发与制造，智能化生产装备及检测设备，废旧灯管回收再利用

14.符合国家 1 级能（水）效家用电器、燃气灶具开发与生产

15.多效、节能、节水、环保型表面活性剂、助剂和洗涤剂的开发与生产

16.采用新型制冷剂替代氢氯氟碳化物（HCFC-22 或 R22）和氢氟碳化物（HFCs）的空调器和配件开发、制造，采用新型发泡剂替代氢氯氟碳化物（HCFC-141b）和氢氟碳化物（HFCs）的家用电器生产，采用新型发泡剂替代氢氯氟碳化物（HCFC-141b）和氢氟碳化物（HFCs）的硬质聚氨酯泡沫的生产与应用

17.节能环保型玻璃窑炉（含全电熔、电助熔、全氧燃烧技术、NOx

产生浓度≤1000mg/m^{3}的低氮燃烧技术）的设计、应用，玻璃熔窑DCS节能自动控制技术，轻量化玻璃瓶罐（轻量化度≤1.0）工艺技术和关键装备的开发与生产

18.水性油墨、能量固化油墨、植物油油墨等节能环保型油墨生产

19.天然食品添加剂、天然香料新技术开发与生产

20.先进的食品生产设备研发与制造，食品质量与安全监测（检测）仪器、设备的研发与生产

21.营养健康型大米、小麦粉（食品专用米、发芽糙米、留胚米、食品专用粉、全麦粉及营养强化产品等）及制品的开发生产，传统主食工业化生产，杂粮加工专用设备开发与生产，粮油加工副产物（稻壳、米糠、麸皮、胚芽、饼粕等）综合利用关键技术开发应用

22.菜籽油生产线：采用膨化、负压蒸发、热能自平衡利用、低消耗蒸汽真空系统等技术，油菜籽主产区日处理油菜籽400吨及以上、吨料溶剂消耗1.5公斤以下（其中西部地区日处理油菜籽200吨及以上、吨料溶剂消耗2公斤以下）；花生油生产线：花生主产区日处理花生200吨及以上、吨料溶剂消耗2公斤以下；棉籽油生产线：棉籽产区日处理棉籽300吨及以上、吨料溶剂消耗2公斤以下；米糠油生产线：采用分散快速膨化，集中制油、精炼技术；玉米胚芽油生产线；油茶籽、核桃等木本油料和胡麻、芝麻、葵花籽、牡丹籽等小品种油料加工生产线以及利用超临界二氧化碳萃取工艺技术生产植物油

23.采用发酵法工艺生产小品种氨基酸（赖氨酸、谷氨酸、苏氨酸除外），以糖蜜为原料年产8000吨及以上酵母制品及酵母衍生制品，

新型酶制剂和复合型酶制剂、多元糖醇及生物法化工多元醇、功能性发酵制品（功能性糖类、功能性红曲、发酵法抗氧化和复合功能配料、活性肽、微生态制剂）等开发、生产、应用，酵素生产工艺技术开发及工业化、规范化生产

24.搪瓷静电粉、搪瓷预磨粉的技术研发和生产

二十、纺织

1.差别化、功能性聚酯（PET）的连续共聚改性〔阳离子染料可染聚酯（CDP、ECDP）、碱溶性聚酯（COPET）、高收缩聚酯（HSPET）、阻燃聚酯、低熔点聚酯、非结晶聚酯、生物可降解聚酯、采用绿色催化剂生产的聚酯等〕，聚对苯二甲酸丙二醇酯（PTT）、聚萘二甲酸乙二醇酯（PEN）、聚对苯二甲酸丁二醇酯（PBT）、聚对苯二甲酸环己烷二甲醇酯（PCT）等新型聚酯及纤维的开发、生产，阻燃、抗静电、抗菌、导电、相变储能、智能温控、光致变色、原液着色、吸附与分离、生物医用等差别化、功能性化学纤维的高效柔性化制备技术，智能化、超仿真等功能性化学纤维生产，原创性开发高速纺丝加工用绿色高效环保化纤油剂

2.采用绿色、环保工艺与装备开发、生产可降解纤维材料〔聚丁二酸丁二酯（PBS）、聚对苯二甲酸-己二酸丁二醇酯（PBAT）、聚己内酯（PCL）、聚3-羟基烷酸酯（PHA）、聚乳酸纤维（PLA）等〕、莱赛尔短纤（单线5万吨以上）及莱赛尔纤维长丝、生物基纤维材料（以竹、麻等新型可再生资源为原料的再生纤维素纤维、海藻纤维、壳聚糖纤维、动植物蛋白纤维、生物基聚酰胺、生物基聚酯等）

3.高性能纤维及制品的开发、生产、应用：碳纤维（CF）（拉伸强度≥4200MPa，弹性模量≥230GPa）、芳纶（AF）、芳砜纶（PSA）、超高分子量聚乙烯纤维（UHMWPE）（纺丝生产装置单线能力≥300吨/年，断裂强度≥40cN/dtex，初始模量≥1800cN/dtex）、聚苯硫醚纤维（PPS）、聚酰亚胺纤维（PI）、聚四氟乙烯纤维（PTFE）、聚苯并双噁唑纤维(PBO)、聚芳噁二唑纤维(POD)、聚醚醚酮纤维(PEEK)、聚2,5-二羟基-1,4-苯撑吡啶并二咪唑纤维（PIPD）等

4.符合绿色低碳要求的动物纤维、麻纤维、桑柞茧丝、彩色棉花、彩色桑茧丝等天然纤维的高品质加工技术与产品

5.采用智能化、连续化纺纱成套装备（清梳联、粗细联、细络联及数控单机，喷气涡流纺、高速转杯纺等短流程先进纺纱设备）生产高品质纱线，采用新型数控装备（高速数控无梭织机、自动穿经机、自动验布机、全成形电脑横机、全成形圆纬机、高速电脑横机、高速经编机、细针距圆纬机等）生产高支、高密、提花等高档机织、针织纺织品

6.采用数字化、智能化、绿色化印染技术〔印染清洁生产技术（酶处理、高效短流程前处理、针织物连续前处理、低温前处理及染色、低盐或无盐染色、低尿素印花、小浴比间歇式织物染色、数码喷墨印花、泡沫整理等）、功能性整理技术、新型染色加工技术、少水/无水和节能低碳印染加工技术、复合面料加工技术〕和装备生产高档纺织面料，智能化筒子纱染色技术装备开发与应用

7.采用非织造、机织、针织、编织等工艺及多种工艺复合、长效

整理等新技术生产功能性产业用纺织品

8.智能化、绿色化、高效率、低能耗纺织机械，及其关键专用基础件、计量、检测仪器、试验装备开发与制造

9.数字化、网络化、智能化服装及家用纺织品生产技术和装备开发、应用

10.麻类生物脱胶技术，无聚乙烯醇（PVA）浆料上浆技术，浆料上高效治理与资源综合利用技术,利用聚酯回收材料生产涤纶工业丝、差别化和功能性涤纶长丝和短纤维、非织造材料等高附加值产品，利用聚酰胺回收材料生产锦纶（PA6）长丝和短纤维技术及应用，利用聚丙烯回收材料生产丙纶（PP）长丝和短纤维技术及应用，利用棉纺织品回收生产的再生纤维素纤维产品，废旧纺织品回收再利用技术、设备的研发和应用

二十一、建筑

1.先进建造技术：智能建造产品与设备的生产制造与集成技术研发，集中供热系统计量与调控技术、产品的研发与推广，高强、高性能结构材料与体系的应用，建筑补强及修复用复合材料技术及应用，先进适用的建筑成套技术、产品和住宅部品研发与推广，钢结构住宅集成体系及技术研发与推广，工厂化全装修技术推广

2.绿色建筑技术研发与应用：既有房屋抗震加固、建筑隔震减震结构体系及产品研发、工程应用与推广，建筑节能、绿色建筑、装配式建筑、太阳能光伏等可再生能源建筑应用相关产业，建筑高性能门窗技术和产品的研发与推广，绿色建造技术体系的研发与推广，建筑

信息模型（BIM）相关技术研发与应用，零碳建筑技术体系及关键技术研发与应用，高性能隔声门、窗和通风隔声窗产品研发与应用

二十二、城镇基础设施

1.城市公共交通：城市公共交通建设，城市道路及智能交通体系建设，城市交通管制系统技术开发及设备制造，城市轨道交通新线建设，既有停车设施改造，停车楼、地下停车场、机械式立体停车库等集约化的停车设施建设，停车场配建电动车充换电设施

2.市政基础设施：城镇供排水工程及相关设备生产，地级及以上城市地下综合管廊建设，地下管网地理信息系统，城市燃气工程，城镇集中供热建设和改造工程（包括长距离集中供热管网应用工程），城市节水技术开发与应用，城市燃气塑料管道应用工程，海绵城市、排水防涝工程技术产品开发生产

3.城市品质提升和住房保障：城镇园林绿化及生态小区建设，城市生态系统关键技术应用，城市照明系统智能化改造，保障性住房（含保障性租赁住房）建设、运营和管理，城乡社区基础服务设施及综合服务网点建设

4.智慧城市建设：城市高精度导航、高精度遥感影像和三维数据生产及关键技术开发，依托基础地理信息资源的城市立体管理信息系统，城市运行管理信息化技术应用，基于大数据、物联网、GIS 等为基础的城市信息模型（CIM）相关技术开发与应用

二十三、铁路

1.铁路建设和改造：铁路新线、既有铁路改扩建、铁路专用线、

城际、市域（郊）铁路建设，线路全封闭和道口平改立，重点口岸扩能改造

2.工程建造技术：混凝土结构物修补和提高耐久性技术、材料开发，铁路旅客列车集便器及污物地面接收、处理工程

3.绿色智能铁路建设：数字铁路与智能运输开发与建设，铁路行车及客运、货运安全保障系统技术与装备，铁路列车运行控制与车辆控制系统开发与建设，铁路运输信息系统开发与建设，行车调度指挥自动化技术开发，铁路智能绿色建造技术开发与应用

4.先进轨道交通系统：客运专线、高速铁路系统技术开发与建设，干线轨道车辆交流牵引传动系统、制动系统及核心元器件（含碳化硅功率模块、IGCT、IGBT 元器件）、新能源动力驱动系统，电气化铁路牵引供电功率因数补偿技术应用，铁路下一代宽带移动通信系统，高速铁路或客运专线、城际、市域（郊）铁路减震降噪技术研发及应用

5.先进轨道交通装备：大功率交流传动电力机车、符合国家污染物排放标准的大功率交流传动内燃机车、时速 200 公里及以上动车组、时速 200 公里及以下动力集中动车组、海拔 3000 米以上高原机车、高原动车组、大型专用货车、冷链运输货运装备、多式联运货车、LNG 专用铁路货车、机车车辆特种救援设备、高速货运动车组，大型养路机械、铁路工程建设机械装备，线桥隧检测设备，牵引供电检测设备，时速 200 公里及以上铁路接触网、道岔、扣配件、牵引供电设备

二十四、公路及道路运输

1.公路交通网络建设：国家高速公路网项目建设，国省干线改造升级，汽车客货运站、城市公交站，城市公共交通

2.公路智能运输系统开发：快速客货运输、公路甩挂运输系统开发与建设，公路集装箱和厢式运输，农村公路和客货运输网络开发与建设，出租汽车服务调度信息系统开发与建设

3.公路工程和特大桥隧等建设养护新技术与新材料开发及应用

4.绿色公路基础设施建设

5.公路安全应急保障技术及应用：公路管理服务、公路应急保障体系建设，运营车辆安全监控记录系统开发与应用

二十五、水运

1.高等级航道建设：沿海港口公共基础设施建设，国境国际通航河流航道、内河高等级航道、通航建筑物、符合国家战略方向的内河水运其他航道及公共基础设施建设

2.港口枢纽建设：码头泊位建设，船舶污染物港口接收处置设施建设及设备制造，港口危险化学品、油品应急设施建设及设备制造，国际邮轮运输及邮轮母港建设，港口岸电系统建设及船舶受电设施改造，船舶 LNG 加注设施和电动船充换电设施建设

3.智慧水运：港口自动化智能化绿色化建设与改造，智慧航道、绿色航道及智能绿色航运建设

4.绿色平安航运：水上交通安全监管、航海保障和救助系统建设，内河船型标准化、绿色化，船舶和码头油气回收设施建设

二十六、航空运输

1.航空基础设施建设：机场及配套设施建设与运营，空中交通管制和通信导航监视气象情报系统建设，航空计算机管理及其网络系统开发与建设，航空油料加油服务及设施建设

2.公共航空运输

3.通用航空、海上空中监督巡逻和搜救服务及设施建设，小型航空器应急起降场地建设

4.可持续航空燃料

二十七、综合交通运输

1.综合交通枢纽一体化建设与改造、枢纽站城融合开发

2.综合交通枢纽运营管理信息系统建设与应用

3.综合交通枢纽防灾救灾及应急疏散系统

4.交通枢纽联运系统：综合交通枢纽便捷换乘设施设备，票务一体化、联运产品的研发推广应用，综合交通枢纽便捷货运换装系统建设，口岸换装转运设施建设，多式联运转运设施建设，多式联运快速转运换装设备、标准化运载单元的研发推广应用

二十八、信息产业

1.新一代通信网络基础设施：100Gb/s 及以上光传输系统建设，155MB/s 及以上数字微波同步传输设备制造及系统建设，卫星通信系统、地球站设备制造及建设，网管监控、时钟同步、计费等通信支撑网建设，移动物联网、物联网（传感网）、智能网等新业务网设备制造与建设，宽带网络设备制造与建设，数字蜂窝移动通信网设备制造与建设，IP 业务网络建设，卫星数字电视广播系统建设，增值电信业

务平台建设，应急广播电视系统建设，灾害现场信息空地一体化获取技术研究与集成应用

2.计算机及相关设备：高性能计算机、便携式微型计算机、每秒十万亿次及以上高端服务器、大型模拟仿真系统、大型工业控制机及控制器制造，打印机（含高速条码打印机）和海量存储器等计算机外部设备，量子、类脑等新机理计算机系统的研究与制造

3.通信设备：基于 IPv6 的下一代互联网技术研发及服务，网络设备、芯片、系统以及相关测试设备的研发和生产，32 波及以上光纤波分复用传输系统设备制造，同温层通信系统设备制造，数字移动通信、移动自组网、接入网系统、数字集群通信系统及路由器、网关等网络设备制造，新型（非色散）单模光纤及光纤预制棒制造，无线局域网技术开发、设备制造，卫星导航芯片、系统技术开发与设备制造，基于时空信息、北斗导航定位服务、通信导航遥感一体化融合、地理信息系统（GIS）基础平台的相关技术开发与应用，量子通信设备，宽带数字集群设备、采用时分双工（TDD）方式载波聚合的 230MHz 频段宽带无线数据传输设备等下一代专网通信设备，基于 LTE-V2X 无线通信技术的车联网直连通信设备等车联网无线通信设备

4.集成电路：集成电路设计，集成电路线宽小于 65 纳米（含）的逻辑电路、存储器生产，线宽小于 0.25 微米（含）的特色工艺集成电路生产（含掩模版、8 英寸及以上硅片生产），集成电路线宽小于 0.5 微米（含）的化合物集成电路生产，和球栅阵列封装（BGA）、插针网格阵列封装（PGA）、芯片规模封装（CSP）、多芯片封装（MCM)、

栅格阵列封装（LGA）、系统级封装（SIP）、倒装封装（FC）、晶圆级封装（WLP）、传感器封装（MEMS）、2.5D、3D 等一种或多种技术集成的先进封装与测试，集成电路装备及关键零部件制造

5.新型电子元器件制造：片式元器件、敏感元器件及传感器、频率控制与选择元件、混合集成电路、电力电子器件、光电子器件、新型机电元件、高分子固体电容器、超级电容器、无源集成元件、高密度互连积层板、单层、双层及多层挠性板、刚挠印刷电路板及封装载板、高密度高细线路（线宽/线距≤0.05mm）柔性电路板、太阳能电池、锂离子电池、钠离子电池、燃料电池等化学与物理电池等

6.电子元器件生产专用材料：半导体、光电子器件、新型电子元器件（片式元器件、电力电子器件、光电子器件、敏感元器件及传感器、新型机电元件、高频微波印制电路板、高速通信电路板、柔性电路板、高性能覆铜板等）等电子产品用材料，包括半导体材料、电子陶瓷材料、压电晶体材料等电子功能材料，覆铜板材料、电子铜箔、引线框架等封装和装联材料，以及湿化学品、电子特气、光刻胶等工艺与辅助材料，半导体照明衬底、外延、芯片、封装及材料（含高效散热覆铜板、导热胶、导热硅胶片）等；先进的各类太阳能光伏电池及高纯晶体硅材料（多晶硅的综合电耗低于 65kWh/kg，单晶硅光伏电池的转换效率大于 22.5%，多晶硅电池的转化效率大于 21.5%，碲化镉电池的转化效率大于 17%，铜铟镓硒电池转化效率大于 18%）

7.电子元器件生产专用设备：半导体照明设备，太阳能光伏设备，片式元器件设备，新型动力电池设备，表面贴装设备（含钢网印刷机、

自动贴片机、无铅回流焊、光电自动检查仪）等

8.显示屏元器件制造及生产专用设备：薄膜场效应晶体管LCD(TFT-LCD)、有机发光二极管（OLED）、Mini-LED/Micro-LED显示、电子纸显示、激光显示、3D显示等新型平板显示器件，液晶面板产业用玻璃基板、电子及信息产业用盖板玻璃等关键部件及关键材料，薄膜晶体管液晶显示（TFT-LCD）、发光二极管（LED）及有机发光二极管显示（OLED）、Mini/Micro-LED显示、电子纸显示、激光显示、3D显示等新型显示器件生产专用设备

9.基础软件和工业软件：软件开发生产（含民族语言信息化标准研究与推广应用），数字化系统（软件）开发及应用，其中包括智能设备嵌入式软件、集散式控制系统（DCS）、可编程逻辑控制器（PLC）、数据采集与监控（SCADA）、先进控制系统（APC）等工业控制系统，制造执行系统（MES），计算机辅助设计（CAD）、辅助工程（CAE）、工艺规划（CAPP）、产品全生命周期管理（PLM）、工业云平台、工业APP等工业软件，能源管理系统（EMS）、建筑信息模型（BIM）系统等专用系统，网络仿真软件，核电仪控系统核心芯片及相关软件

10.智能硬件和应用电子：多普勒雷达技术及设备制造，医疗电子、健康电子、生物电子、汽车电子、电力电子、金融电子、航空航天仪器仪表电子、图像传感器、传感器电子等产品制造

11.促进信息技术深度融合应用：数字电影摄影机，数字电影摄影棚设备，数字电影制作和视效设备及软件，数字电影放映服务器，数字电影放映机，母版制作设备及软件，数字电影编解码设备，高新技

术电影放映系统，演播室设备，音视频编解码设备，音视频广播发射设备，数字电视演播室设备，数字电视系统设备，数字电视广播电频网设备，数字电视接收设备，数字摄录机，数字录放机，数字电视产品，可穿戴智能文化设备

12.电子商务和电子政务系统开发与应用服务

13.防伪技术开发与运用

14.大数据、云计算、信息技术服务及国家允许范围内的区块链信息服务

二十九、现代物流业

1.煤炭、粮食、棉花、食糖、铁矿石、化肥、石油等重要商品现代化物流设施建设

2.农产品物流配送设施建设，农产品、食品、药品冷链物流，食品、药品物流质量安全控制技术服务

3.现代供应链创新与应用，供应链管理服务

4.物流包装及运输技术开发与应用：标准托盘、600mm×400mm标准周转箱（筐）和600mm×400mm包装基础模数推广应用，环保型、可循环利用型材质托盘的制造和使用，搭载RFID等可视化电子标签标准托盘制造与使用，标准托盘、周转箱（筐）循环共用体系建设与运营，冷藏集装箱制冷机制造

5.物流信息技术开发与应用：物流信息服务技术、货物跟踪识别定位技术、智能仓储分拣配送技术、物流信息安全技术、货物温湿度感知技术的研发与应用，物流公共信息平台开发及建设，数字化第三

方物流交付平台建设，智慧物流技术及装备研发应用

6.应急物流、逆向物流、绿色物流设施建设和运营

7.国家物流枢纽、国家骨干冷链物流基地、产销冷链集配中心、城郊大仓基地及国家物流枢纽经济示范区建设与运营，城市物流所需的公共仓储，车辆停靠、装卸、充换电等配套设施建设

三十、金融服务业

1.普惠金融、农村金融服务体系建设及产品研发和应用，对小微企业、农户和新型农业经营主体的融资担保服务、融资租赁服务中的直接租赁服务

2.人民币跨境结算、清算体系建设

3.绿色金融服务体系建设

4 其他金融产品和服务：知识产权、收益权等无形资产贷款质押业务开发，创业投资，资产证券化、不动产投资信托基金（REITs）等盘活存量资产的金融工具和金融产品开发应用，信用评级服务，股票、存托凭证、可转换公司债券、债券发行和交易服务体系建设

5.商业保险：农业保险，责任保险，信用保险，科技保险，商业健康保险，财产保险

6.金融科技：金融机构的金融科技产品研发、应用、服务输出和安全防护，金融监管、金融风险管理技术开发与应用

三十一、科技服务业

1.工业设计、气象、生物及医药、新材料、新能源、节能、环保、测绘、海洋等专业科技服务，标准化服务、计量测试、质量认证和检

验检测服务，科技普及

2.信息技术咨询服务：行业（企业）管理和信息化解决方案开发，基于网络的软件服务平台、软件开发和测试服务、信息系统集成、咨询、运营维护和数据挖掘等服务业务

3.科技咨询服务：科技文献、科技成果、科学数据、科技金融等科技创新要素，地理、国际贸易等领域的信息共享、综合开发利用等服务，信息技术咨询服务、数字内容服务

4.数字化技术、高拟真技术、数字孪生、高速计算技术等新兴文化科技支撑技术建设及服务

5.检验检测认证服务：分析、试验、测试以及相关技术咨询与研发服务，智能产品整体方案、人机工程设计、系统仿真等设计服务

6.技术转移服务：科技信息交流、科技查新与文献信息检索、技术咨询、技术孵化、科技成果评估、科技成果推广、技术交易、技术尽职调查、科技成果转移转化服务和科技鉴证等服务

7.知识产权服务：知识产权代理、转让、登记、鉴定、检索、分析、评估、运营、认证、咨询和相关投融资服务

8.信息技术外包、业务流程外包、知识流程外包等技术先进型服务，服务贸易

9.工业服务：现代高端装备的维护与维修，数字化生产线改造与集成，工业服务网络平台，工业电商，智能装备远程运维管理系统，智慧工厂设备监测诊断平台，预测性维护系统，专业维修服务和供应链服务，工业管理服务〔包括设备运维管理咨询、设备运维与管理服

务、工业 APP 和设备管理软件（SaaS）］，数据及数字化服务（PaaS、IaaS、数据分析服务和其他创新数据服务）

10.科技创新平台建设：国家级工程（技术）研究中心、国家产业创新中心、国家农业高新技术产业示范区、国家农业科技园区、国家认定的企业技术中心、国家实验室、全国重点实验室、国家重大科技基础设施、科技企业孵化器、众创空间、绿色技术创新基地平台、新产品开发设计中心、科教基础设施、产业集群综合公共服务平台、中试基地、实验基地、国家技术创新中心建设

三十二、商务服务业

1.经济、管理、信息、会计、税务、审计、法律、节能、节水、环保等咨询与服务，语言服务（包括翻译、本地化服务、语言文字技术开发应用）

2.工程咨询服务（包括规划咨询、项目咨询、评估咨询等服务，以及全过程工程咨询）

3.资产评估、校准、检测、检验等服务

4.广告创意、策划、设计、制作、代理、发布等广告服务

5.会展服务（不含会展场馆建设）

三十三、商贸服务业

1.农产品现代流通网络：现代化的农产品、生产资料市场流通设施建设，种子、种苗、种畜禽和鱼苗（种）、化肥、农药、农机具、农膜、渔网具等农资连锁经营及综合服务，面向农村的日用品、药品、出版物等生活用品连锁经营，农产品拍卖服务，新农村现代流通服务

网络工程建设，农资物联网应用与示范项目建设

2.商品交易市场网络：商贸企业的统一配送和分销网络建设，利用信息技术改造提升传统商品交易市场，旧货市场、二手商品交易市场、现代化二手车交易服务体系建设

三十四、旅游业

1.旅游装备设备，休闲、登山、滑雪、潜水、探险等各类户外活动用品开发与营销服务

2.旅游新业态：文化旅游、康养旅游、乡村旅游、生态旅游、海洋旅游、森林旅游、草原旅游、湿地旅游、湖泊旅游、冰雪旅游、红色旅游、城市旅游、工业旅游、体育旅游、主题游乐及其他旅游资源综合开发、基础设施建设及信息等服务，智慧旅游、科技旅游、休闲度假旅游、自驾游、低空旅游、邮轮游艇旅游及其他新兴旅游方式服务体系建设

三十五、邮政业

1.寄递末端网络建设：城乡快递营业网点、门店等快递服务网点和智能快件（信包）箱、快递末端综合服务场所、村级寄递物流综合服务站等末端设施建设

2.邮政枢纽布局建设：城市和农村、区域内和区域间的快件分拣中心、转运中心、集散中心、处理枢纽等快递处理设施建设

3.邮政技术研发与应用：数据采集、集装容器、智能终端、智能化仓储、自动分拣、机械化装卸、冷链快递、AGV、无人机、无人车、无人仓、绿色包装、可循环包装、智能安检系统、智能视频监控系统、

智能语音申投诉处理系统和通用寄递地址编码等先进技术和装备的研发与应用

4.邮件快件运输与交通运输网络融合及多式联运、运营平台等技术开发与应用

5.智慧快递物流园区

三十六、教育

1.学前教育

2.特殊教育

3.职业教育

4.“互联网+教育”（面向中小学生的学科类线上培训和面向3至6岁学龄前儿童的线上培训除外）

三十七、卫生健康

1.医疗服务设施建设：预防保健、卫生应急、卫生监督服务设施建设，医疗卫生服务设施建设，传染病、儿童、精神卫生专科医院和康复医院（中心）、护理院（中心）、安宁疗护中心、全科医疗设施与服务，医养结合设施与服务

2.重点人群健康服务：计划生育、优生优育、生殖健康咨询与服务，卫生咨询、医疗知识等医疗信息服务和健康管理服务，婴幼儿健康管理，儿童早期发展，老年医疗卫生

3.“互联网+医疗健康服务”，医疗大数据应用

4.心理咨询服务

5.中医养生保健服务

三十八、文化

1.公共文化、文化艺术、新闻出版、电影、广播电视、网络视听，文化遗产保护利用及设施建设，文物保护装备开发与应用，文化遗产保护利用装备开发和应用

2.文化创意产品开发，数字文化创意（含数字文化创意技术设备、数字文化创意软件、数字文化创意内容制作、新型媒体服务、数字文化创意内容应用服务、沉浸式体验），数字音乐、手机媒体、网络出版等数字内容服务，动漫创作、制作、传播、出版、衍生产品开发

3.电影、广播电视和网络视听制作、发行、交易、播映、出版、衍生品开发、版权保护、监管及相关技术开发应用，互动视频、VR视频、沉浸式视频等高新视频开发和应用，超高清、云转播开发应用，高新视听产业基地（园区）建设

4.新闻出版内容监管技术、版权保护技术、出版物生产技术、出版物发行技术开发与应用，电子纸、阅读器等新闻出版新载体的技术开发、应用和产业化

5.电影数字化服务和监管技术开发及应用

6.非物质文化遗产保护：民族和民间艺术、传统工艺美术和手工艺保护与发展，历史文化名城（镇、村）和历史文化街区、中国传统村落、中国少数民族特色村寨保护，中华老字号的保护与发展，民族文化艺术精品的国际营销与推广

7.智慧博物馆建设，传统媒体和新兴媒体融合发展，出版融合发展，智慧广电建设，移动多媒体广播电视，广播电视数字化，有线无

线卫星广播电视网智能协同覆盖，全国有线电视网络智能化建设和互联互通平台建设，国家文化专网及国家文化大数据体系建设

8.演艺业

三十九、体育

1.体育竞赛表演活动

2.体育健身休闲活动

3.体育场地设施建设与管理

4.体育教育与培训

5.体育传媒与信息服务

6.体育健康与康复

四十、养老与托育服务

1.老龄服务：养老照护服务，养老金融服务，养老设施建设，养老科技和智慧养老服务，老年用品及相关产品制造，老年社会保障，养老公共管理，老年用品及相关产品销售和租赁，老年健康促进与社会参与，其他养老服务

2.托育服务：托育服务设施建设（托育机构、托育综合服务中心、社区托育服务设施），婴幼儿家庭科学育儿指导和服务，社区托育服务

3.养老与托育服务人才培养：养老教育培训和人力资源服务，托育人才培养和从业人员培训

四十一、家政

1.社区家政服务

2.员工制家政服务

3.家政职业教育和技能培训

4.家政综合信息服务

5.家政服务设施（家政服务网点、家政创新融合平台等）建设与运营管理

四十二、环境保护与资源节约综合利用

1.大气污染物治理和碳减排：消耗臭氧层物质和氢氟碳化物替代品开发与利用，消耗臭氧层物质和氢氟碳化物处置技术开发与应用，持久性有机污染物类产品替代和处置技术开发与应用，持久性有机污染物削减与控制技术开发与应用，碳捕集、利用与封存工程、技术装备与技术服务，室内空气污染物监测、分析及治理技术，挥发性有机物减量化、资源化和末端治理及监测技术，先进过滤材料、低氮分级分区燃烧和成熟稳定高效的脱硫、脱硝、除尘技术及装备，不低于20万块/日（含）新型烧结砖瓦生产线或新型干法水泥窑无害化协同处置废弃物，烟气二氧化碳捕集纯化利用技术的研发与应用，氨气排放监测及控制技术开发应用，工业园区恶臭污染在线监测技术开发应用

2.生态环境修复和资源利用：矿山生态环境恢复工程，海洋环境保护及科学开发，海洋生态修复

3.城镇污水垃圾处理：高效、低能耗污水处理与再生技术开发，城镇垃圾、农村生活垃圾、城镇生活污水、农村生活污水、污泥及其他固体废弃物减量化、资源化、无害化处理和综合利用工程，餐厨废弃物资源化利用技术开发及设施建设，垃圾分类技术、设备、设施，

城镇、农村分布式小型化有机垃圾处理技术开发，污水处理厂污泥协同处置工程

4.环境污染监测防治：环境污染监测与防治技术，环境监测体系工程，生态环境保护监管执法技术与装备开发，土壤和地下水污染源头管控工程，有毒有害物质泄露快速检测、在线监测与迁移预警的技术、设备研发及应用，边生产边管控修复的低扰动、低成本土壤和地下水污染防治技术与装备的研发及应用

5.噪声污染和电磁辐射防治：噪声污染监测技术开发与应用，低噪声施工工艺和设备的研发及应用，环境污染治理专用低频吸声隔声材料研发及应用，电网、信息系统电磁辐射控制技术开发与应用

6.危险废弃物处置：危险废物（医疗废物）无害化处置和高效利用技术设备开发制造、利用处置中心建设和（或）运营，放射性废物、核设施退役工程安全处置技术设备开发制造及处置中心建设，含汞废物的汞回收处理技术、含汞产品的替代品开发与应用，废物填埋防渗技术与材料，削减和控制重金属排放的技术开发与应用，有毒、有机废气、恶臭高效处理技术，废硫酸、废硫磺、工业副产石膏、硫化氢、含硫废液等含硫废物回收制硫酸技术

7.废弃物回收：城市典型废弃物回收网络体系建设（包括规范回收站点、符合国家相关标准要求的绿色分拣中心、交易中心建设），废钢破碎生产线（4000 马力以上）、废铜铝破碎分选线（回收率 95%以上）、废塑料复合材料回收处理成套装备（回收率 95%以上），废旧动力电池回收网络建设

8.废弃物循环利用：废钢铁、废有色金属、废纸、废橡胶、废玻璃、废塑料、废旧木材以及报废汽车、废弃电器电子产品、废旧船舶、废旧电池、废轮胎、废弃木质材料、废旧农具、废旧纺织品及纺织废料和边角料、废旧光伏组件、废旧风机叶片、废弃油脂等城市典型废弃物循环利用、技术设备开发及应用，废旧动力电池自动化拆解、自动化快速分选成组、电池剩余寿命及一致性评估、有价组分综合回收、梯次利用、再生利用技术装备开发及应用，低值可回收物回收利用，“城市矿产”基地和资源循环利用基地建设，煤矸石、粉煤灰、尾矿（共伴生矿）、冶炼渣、工业副产石膏、赤泥、建筑垃圾等工业废弃物循环利用，农作物秸秆、畜禽粪污、农药包装等农林废弃物循环利用，生物质能技术装备（发电、供热、制油、沼气）

9.再制造：报废汽车、退役民用飞机、工程机械、矿山机械、农业机械、机床、文办设备、盾构机、航空发动机、工业机器人、火车内燃机车等废旧设备及零部件拆解、再利用、再制造

10.工业“三废”循环利用：“三废”综合利用与治理技术、装备和工程，“三废”处理用生物菌种和添加剂开发与生产，废水高效循环利用技术应用，工业难降解有机废水循环利用、高盐废水循环利用、循环水回收利用、高效分离膜材料、高效催化氧化材料等技术装备，高盐废水和工业副产盐的资源化利用，轻烃类石化副产物综合利用技术装备，硫回收装备（低温克劳斯法）

11.节能技术开发应用：节能、节水、节材环保及资源综合利用等技术开发、应用及设备制造，为用户提供节能、节水、环保、资源综

合利用咨询、设计、评估、检测、审计、认证、诊断、融资、改造、运行管理等服务，冰蓄冷技术及其成套设备制造，余热回收利用先进工艺技术与设备

12.绿色矿山：高效、绿色、低碳采矿、选矿技术（药剂），剥离物回填（充填）技术，低品位、复杂、难处理矿开发及综合利用技术与设备，共生、伴生矿产提取有价元素及资源综合利用技术，离子型稀土原矿绿色高效浸萃一体化技术，矿产资源节约和综合利用先进适用技术的开发和应用

13.高效节能磁悬浮动力装备：磁悬浮离心鼓风机、磁悬浮透平真空泵、磁悬浮离心制冷压缩机、磁悬浮低温余热发电机、磁悬浮空气压缩机、磁悬浮蒸气压缩机、磁悬浮飞轮储能等

四十三、公共安全与应急产品

1.监测预警装备及技术：气象、地震、地质、海洋、水旱灾害、城市及森林火灾灾害监测预警技术及装备开发与应用，生物灾害、动物疫情监测预警技术开发与应用，危险化学品、煤矿、非煤矿山、堤坝、尾库矿等安全监测预警技术及装备开发与应用，生产生活用水、土壤、空气污染物快速安全监测技术与产品，时空安全、交通安全、城市公共安全、恐怖袭击安全、网络与信息系统安全、警用安全、特种设备安全、工程施工安全、火灾、重大危险源安全监控监测预警系统、产品技术开发与应用，突发事件现场信息快速测绘、存储、传输等技术及产品，卫星遥感技术应用场景拓展开发与应用，AI 视觉技术应用场景拓展开发与应用，“低慢小”航空器侦测反制技术和装备，

远洋导航、航空、能源、电力、金融等公共安全气象保障技术开发与应用

2.检验检测装备及技术：食品药品安全快速检验技术、仪器设备开发及应用，放射性、毒品等违禁品、核生化恐怖源等危险物品快速探测检测技术与产品，生命探测装备，消防产品质量快速检测设备，农产品及其产地环境的有害元素监测技术开发与应用

3.应急防护装备及技术：应急抢险救援人员防护用品、家用应急防护产品开发与应用，雷电灾害新型防护技术开发与应用，特殊工种保护产品，重要基础设施安全、社会公共安全、农林气象、生物灾害防范防护技术开发及应用

4.应急救援装备及技术：智能化、大型、特种、无人化、高性能消防灭火救援装备，建（构）筑物全地形废墟救援设备，重大灾害事故应急救援基地化后勤保障重点技术装备，全地形高机动性多功能应急救援特种车辆及设备，航空应急救援器材及装备，水上（水下及深海）应急救援技术与装备，航空应急医疗系统，机动医疗救护系统，卫生应急消毒供应装备，生命支持、治疗、监护一体化急救与后送平台，应急救援基地、公众应急体验基础设施建设，特种设备事故救援技术与装备，重大事故灾害智能无人应急救援关键技术装备，危险化学品灾害应急救援技术及装备，煤矿重大灾害应急救援技术及装备

5.应急处置装备：道路应急抢通装备及设施，海上溢油及有毒有害物质泄漏应急处置技术和装备，有毒有害液体快速吸纳处理技术装备、移动式医疗废物快速处理装置、危险废物特性鉴别专用仪器等突

发环境灾难应急环保技术装备，反恐行动技术装备与侦控技术，反恐综合作战平台技术，反核生化恐怖机器人，应急防爆车，中型反恐排爆机器人，防爆拖车，爆炸物销毁器，大型、多功能型工程抢险装备，防汛抗旱专用器材与装备，核事故应急处置技术及装备，体温异常快速筛查及疫情疫病检测处置技术开发与应用，高原高寒地区灾害现场安置装备关键技术与装备研究应用，雨雪冰冻灾害高效智能除冰除雪装备

6.应急专业技术服务：应急咨询、评估、培训、租赁和保险服务，台风风险区划图编制技术及应用，安全生产模拟实训技术开发与应用

7.应急物资储备：新型防火涂料、防火材料、阻火抑爆装置、建筑耐火构件，应急物资储备、调配技术设施及服务

8.安全生产装备及技术：矿山、危险化学品、烟花爆竹等高危行业领域无人化、智能化生产技术及装备

四十四、民爆和烟花爆竹产品

1.工业炸药：安全环保节能型工业炸药及无雷管感度的散装工业炸药，现场混装生产方式，采用乳胶基质集中制备、远程配送的现场混装生产方式，地下矿山、大型硐室、公路铁路隧道等工程应用现场混装炸药技术，民爆科研、生产、爆破服务“一体化”模式，退役火（炸）药在工业炸药中的应用，特殊用途炸药，工业炸药智能化生产工艺技术及装备，工业炸药无人化车间，生产线在线监测、故障自诊断技术，现场混装生产方式的高精度装药计量技术、在线参数检测技术，现场混装生产方式全流程智能化管控平台，生产、销售（包括仓

储）的信息化、可视化智能网络监管平台，废危险物料及不合格品安全、环保回收再利用的工艺技术及装备

2.工业雷管：新型起爆器材，数码电子雷管，工业雷管成品防殉爆安全技术和基础雷管集约化生产、远程配送安全包装方式，数码电子雷管的电子引火元件（含电子控制模块和点火元件）集中生产远程配送模式，装药量系列化的工业导爆索，高危生产工序的模块化、自动化、连续化设备，安全环保型的废品（料）销毁处理装备，火工药剂、产品的智能化生产工艺和装备，工业雷管生产线无人化车间，生产过程质量控制点工艺参数、人、机、料、环等数据的自动采集、存储和溯源分析系统，无职业危害、安全环保、信息化程度高的产品性能检测方法，工业导爆索生产过程炸药添加药、收线、盘卷、封尾、包装的自动化装备

3.智能生产装备和技术：起爆具生产工艺自动化；可定期失效的稳定可控的震源药柱产品，含水炸药等在震源药柱中的应用；系列化、通用化的射孔弹产品；可靠、多样、高效、环保的人工影响天气用燃爆器材；工艺流程数据可视、生产数据在线采集、安全参数自动检测的工业炸药制品生产工艺；起爆具制造中，本质安全水平高，连续化、智能化的熔化、混药、浇注、退模等工序的工艺装备；震源药柱自动装药、自动装配的工艺装备；射孔弹自动装药、自动压制的工艺装备

4.自动安全生产线：危险工房操作人员总人数不大于3人的工业炸药生产线；起爆具生产实现智能化，熔混注工房无固定作业人员，单个退模检验包装工房操作人员总人数不大于5人（含）的生产线；

震源药柱生产实现连续化、自动化、信息化、柔性化的智能制造，1.1级单个危险工房操作人员人数不大于5人的生产线；射孔弹生产实现自动化、智能化，危险工房操作人员人数不大于6人的生产线；人工影响天气用燃爆器材生产实现自动化、智能化，危险工房操作人员人数不大于5人的生产线；海上救生烟火信号等烟火信息弹制造实现药剂制备、装药工序的自动化，装配工序的机械化，人机隔离，危险工房操作人员人数不大于5人的生产线；单条生产线接触基础雷管和成品雷管的现场操作人员总数不大于3人、单个工业雷管装配工房接触基础雷管和成品雷管的现场操作人员总数不大于6人的工业雷管装配生产线

5.烟花爆竹：钝感烟火药、无（微）烟烟火药、安全环保型烟花爆竹，自动化智能化烟花爆竹生产设备、生产线

四十五、人力资源和人力资本服务业

1.招聘、人力资源测评、人力资源培训、人力资源管理咨询、人力资源服务外包（含薪税事务服务、福利事务服务、社保事务服务等）、高级人才寻访、人力资源科技，人力资源社会保障事务代理，就业和创业指导、灵活就业服务等人力资源服务

2.人力资源数字化建设及数据安全管理

3.人力资源服务产业园、人力资源服务出口基地等平台建设

4.人力资源市场及配套服务设施建设以及农村劳动力转移就业服务平台建设

5.人力资源服务标准化建设、信用体系建设、品牌建设

四十六、人工智能

1.人工智能芯片，工业互联网、公共系统、数字化软件、智能装备系统集成化技术及应用

2.网络基础设施、大数据基础设施、高效能计算基础设施等智能化基础设施

3.人工智能标准测试及知识产权服务平台

4.产业智能化升级：智能家居，智能医疗，医疗影像辅助诊断系统，智能安防，视频图像身份识别系统，智能交通，智能运载工具，智能教育，智慧城市，智能农业，智能口岸建设

四十七、智能制造

1.机器人及集成系统：焊接机器人、喷涂机器人、装配机器人、洁净机器人、重载机器人、协作机器人、复合机器人等工业机器人及集成系统，医疗机器人、农业机器人、矿业机器人、建筑机器人、水下机器人、安防机器人、危险环境作业机器人等专业及特种机器人及集成系统，智能机器人，机器人用高精密减速器、高性能伺服系统、智能控制器、智能一体化关节等关键零部件，机器人用操作系统、工艺软件及数据库、离线仿真软件、云服务平台等，机器人人机交互与自主编程、机器人安全性与可靠性等关键共性技术开发及应用，机器人智能化评估认证体系、机器人应用试验验证中心

2.智能检测装备和仪器：数字化非接触精密测量、在线无损检测、激光跟踪测量等智能检测装备和仪器

3.传感器：微纳位移传感器、柔性触觉传感器、高分辨率视觉传

感器、可加密传感器等具有无线通信功能的低功耗智能传感器

4.增材制造装备和专用材料：金属增材制造装备及专用材料，非金属增材制造装备及专用材料，生物增材制造装备及专用材料，激光器、电子枪、扫描振镜等关键零部件，增材制造专用软件，增材制造综合解决方案和生产服务

5.智能物流装备：智能多层多向穿梭车、智能大型立体仓库等智能物流与仓储装备、信息系统，智能港口装卸设备，农产品智能物流装备等

6.智能产品：可穿戴设备，智能家居；无人自主系统，智能人机交互系统；虚拟现实（VR）、增强现实（AR）、语音语义图像识别、多传感器信息融合等技术的研发和应用

7.工业控制系统：中大型可编程逻辑控制器（PLC），监控采集系统（SCADA），安全仪表系统（SIS），先进过程控制系统（APC），运动控制系统（MCS），大型高性能实时数据库系统，大型高性能时序数据库系统

8.工业软件及系统：计算机辅助设计（CAD）、辅助工程（CAE）等研发设计类软件，高级计划与排程（APS）、制造执行系统（MES）、工艺规划（CAPP）、产品全生命周期管理（PLM）等生产制造类软件，工业操作系统、组态编程软件等控制执行类软件，行业专用工艺库、模型库，基于工业云、工业大数据、工业 AI 等新技术的新型工业软件；基础共性工业 APP、行业通用工业 APP、工业 APP 商店；工艺知识封装技术开发及应用、工艺机理模型研发及应用

9.工业互联网平台：具备设备接入、知识沉淀、应用开发等能力的行业型工业互联网平台，云仿真、数字孪生、数据加工、故障预测与健康管理等专业型工业互联网平台，工业全流程微服务资源池，工业互联网平台监测评价指标体系

10.工业云应用：工业云平台，工业云操作系统，工业资源库与构件库建设，云制造服务平台，工业云边协同、云边端一体化研发及应用

11.工业信息安全：工业互联网威胁深度分析、安全对抗、云安全防护等软硬件产品研发及应用，工业信息安全态势感知、风险预警、事件应急等技术研发及应用，工业控制系统信息安全漏洞挖掘、分析、修复技术开发及应用，工控产品安全检测技术开发及应用，重要智能产品和系统全生命周期安全解决方案、安全单元研发及应用，工业容灾备份及带病作业产品研发及应用

12.智能制造系统集成及应用体验验证服务：智能制造战略、管理、评估、监理等咨询服务，智能制造系统设计开发、集成实施、应用验证、运营维护等服务

13.分行业智能制造标准研制及试验验证平台建设

14.智能制造能力成熟度评价，智能制造发展水平评价体系

15.智能制造场景：互联网+协同设计与制造、机器视觉及智能质检、智能生产排程、预测性维护、智慧库存管理、工业大脑等技术开发及应用

16.智能工厂：信息物理系统（CPS）、数据和知识驱动的优化与

决策、制造装备与生产过程的实时优化与先进控制技术研发及应用，智能工厂综合管理与控制平台，面向离散行业的全生命周期智能工厂系统研发与应用，面向流程行业的全生命周期智能工厂系统研发与应用

四十八、农业机械装备

1. 拖拉机及关键零部件：动力换挡拖拉机，无级变速拖拉机，丘陵山区用拖拉机，水田拖拉机，丘陵山地多用途动力平台，油电混合动力拖拉机，新能源拖拉机，高效低排放智能农用柴油机，非道路移动机械后处理系统，重载变速箱和驱动桥，动力换挡变速箱，无级变速器（CVT），机械液压无级变速器（HMT），农机专用变量泵、多路阀、电液比例阀及电控系统，农用高强度传送皮带和半履带，湿式离合器，电控液压提升器

2. 低损高效收获机械：自走式谷物联合收割机（喂入量 9kg/s 以上），自走式全喂入水稻联合收割机（喂入量 5kg/s 以上），自走式半喂入水稻联合收割机（4 行以上），自走式穗茎兼收玉米收获机（4 行以上），自走式玉米籽粒联合收获机（4 行以上），自走式薯类收获机械，丘陵山区用轻简型收获装备，自走式采摘打包棉花收获机（3 行以上），大型自走式青贮收获机（400 马力以上），秸秆饲草收集打捆机，牧草收获机械，自走式油菜、花生等油料作物联合收获机，大豆玉米间作收获专用机械，自走式甘蔗、甜菜等糖类作物联合收获机，葱姜蒜、甘蓝、小青菜等蔬菜收获机械，自走式辣椒、西红柿等茄果及浆果类果蔬收获机械，自走式红枣、酿酒葡萄、中药材及天然

橡胶等特种经济作物收获机械，杂交构树、蛋白桑、柠条等优质蛋白型饲料收获机械，标准化果园用多功能采摘平台，天然橡胶割胶机，木本粮油、林下经济采摘装备，竹材采伐、竹笋挖掘、无动力竹产品运送等机械

3. 耕种及田间管理机械：农田捡石机，卫星平地机，深松整地联合作业机，液压翻转犁（单体幅宽≥40cm），重型动力驱动耙，动力驱动宽幅旋耕机，高速精量条播机，高速精密播种机，免耕精量播种机，大豆玉米带状复合种植专用播种机，丘陵山区用轻简型播种装备，林下作物小型播种机，自动导航高速水稻插秧机，侧深施肥插秧机，水稻钵苗有序抛栽机，油菜、蔬菜、烟草、中药材、甘薯、甜菜等高效移栽机及开穴机，甘蔗种植机，高地隙喷杆喷雾机，大中型喷灌机，水肥药一体化微滴灌设备，葡萄埋藤开沟施肥机，农用无人机（载荷20kg 以上），残膜回收机，集中育苗（秧）、环境控制、屋面自动清洗等设施种植机械，智能温室，无人化植物工厂

4. 畜禽水产养殖及农产品初加工机械：精准饲喂、智能环控、信息监测、疫病防控、畜产品智能化采集加工、养殖巡检机器人、挤奶机器人、病死畜禽水产无害化处理设备、高效粪污收集与资源化利用、畜禽生产性能测定、集鱼起捕采收和水质净化处理等畜禽水产养殖装备，粮食、油料等大宗农产品脱壳、清选、烘干、储藏和膨化保鲜等初加工装备，杂粮、茶叶、中草药等特色农产品碾磨粉碎、混合调制、切分干制、调理成型、精选分级等初加工装备，果蔬、畜禽、水产等鲜活农产品预冷、保鲜、冷冻、清选、分级、分割、包装等初加工装

备，种子加工成套设备，机采棉加工成套设备，饲料加工设备，农业废弃物发酵成套设备

5. 农业机械专用零部件：高效低排放智能农用柴油机，非道路移动机械后处理系统，重载变速箱和驱动桥，动力换挡变速箱，无级变速器（CVT），机械液压无级变速器（HMT），农机专用变量泵、多路阀、电液比例阀及电控系统，农用高强度传送皮带和半履带，湿式离合器，电控液压提升器，农业用触土部件，精密排种器，大豆专用割台，采棉机摘锭，高可靠性打结器，专用切割刀具，高性能喷头，大排量隔膜泵，农业专用传感器，基于北斗的农机辅助驾驶系统，农机作业信息识别、参数实时测控、故障诊断、作业决策等测控系统与设备

6. 丘陵地带农业机械装备的适宜性研发及产业化

7. 农作物移栽机械：乘坐式盘土机动高速水稻插秧机（每分钟插次350次以上，每穴3～5株，适应行距20～30厘米，株距可调，适应株距12～22厘米），盘土式机动水稻摆秧机（乘坐式或手扶式，适应行距为20～30厘米，株距可调，适应株距为12～22厘米）

8. 节水灌溉设备：大中型喷灌机，微滴灌设备，抗洪排涝设备（排水量1500立方米/小时以上，扬程5～20米，功率1500千瓦以上，效率60%以上，可移动）

四十九、数控机床

1. 高档数控机床：五轴及以上联动数控机床，高速高精度数控机床

2. 等材制造装备：高速精密压力机（180kN 以上)，黑色金属液压挤压机（150 毫米/秒以上），轻合金液压挤压机（10 毫米/秒以下），高速精密剪切机（2000kN 以上，断面斜度 1.5°以下），内高压成形机（10000kN 以上），大型折弯机（60000kN 以上），数字化钣金加工中心（柔性制造系统），高速强力旋压机（径向旋压力/每轮：1000kN 以上），数控多工位冲压机（替换为伺服多工位压力机），大公称压力冷/温锻压力机（10000kN 以上），4 工位以上自动温/热锻造压力机（16000kN 以上），伺服多工位压力机（12000kN 以上），大型伺服压力机（8000kN 以上），级进模压力机（6000kN 以上），复合驱动热成型压力机（12000kN 以上，连杆增力系数≥6），高速复合传动压力机智能化冲压线（30600kN 以上，单机连续行程次数≥12 次/分钟），新一代飞机蒙皮综合拉形智能化成套装备，航空航天大型及超大型钣金零件充液成形装备，径向锻造机和旋锻机（630kN 以上），振动挤压机（630kN 以上），高速镦锻机（锻件重量 1.6kg 以上）

3. 高端数控机床用数控装置与工业软件：数控系统（具备 5 轴运动控制、高精度加工、高速加工、特殊专用加工功能等 2 项以上技术特征的），伺服驱动及电机（包括主轴电机、力矩电机、直线电机及相关组件等），高性能位置反馈元件/编码器/光栅尺（绝对式光栅，直线类定位精度 3μm/m，旋转类分辨率：单圈 23 位、多圈 21 位），用于数控机床与数字化制造的专用工业软件（包括 5 轴及高端加工用 CAD/CAE/CAM 软件、工业母机用 MES 软件等）

4. 高端数控机床用关键部件、附件及工量具：高性能数控转台，

大功率高速电主轴，高精度主轴单元，精密级以上滚动功能部件、进给传动零部件，动静压、静压支承部件，数控摆角头，加工附件头，伺服动力刀塔、刀架，高速换刀机械手、刀库，高速高精度大型卡盘，自动化制造所需特殊功能部件与机床附件，数字化制造系统所需的工业机器人，硬质合金、超硬材料等切削刀具及工具系统，高性能磨料磨具（金刚石和CBN等超硬材料及其微粉，特殊材料磨削用砂轮），量具量仪（具备在线测量功能，精度等级计量级以上）

5. 切割、焊接设备：智能焊接设备，激光焊接、电子束焊接等高能束流焊割设备，搅拌摩擦、复合热源等焊接设备，数字化、大容量逆变焊接电源，大功率、高精度五轴激光切割机（5轴联动加工，光纤激光器功率≥20kW）

五十、网络安全

1.网络安全产品：端点安全产品、设施安全产品、应用安全产品、数据安全产品、身份安全产品、安全管理产品等

2.网络安全服务：安全咨询、设计与开发，安全集成、安全运营、信息的安全处理和存储、测评认证、灾难备份与恢复、网络安全审计、应急响应、实训基础设施服务、教育培训、安全众测、网络安全保险等

3.网络安全技术的研发与转让

4.网络安全检测工具：源代码审计工具、软件负载压力测试工具、网络性能测试仪、漏洞扫描与验证工具、安全配置核查工具、网络流量分析工具、模糊测试工具、渗透测试工具、协议一致性验证工具、

流量仿真工具等

5.网络安全基础设施建设与改造升级：网络安全基础平台设施、网络安全产业园区等

6.数据安全技术产品研发与产业化应用，数据安全服务发展（包括检测评估、认证、教育培训等）

第二类　限制类

限制类主要是工艺技术落后，不符合行业准入条件和有关规定，不利于安全生产，不利于自然资源节约集约利用，不利于实现碳达峰碳中和目标，需要督促改造和禁止新建的生产能力、工艺技术、装备及产品。对能效未达到最新版《工业重点领域能效标杆水平和基准水平》中标杆水平的新建项目，参照限制类管理。

限制类坚持市场化、法治化原则，主要从安全、环保、能耗、水耗、质量等方面设置限制条件，对已经不再产能过剩、市场能够有效调节、放开限制后没有安全环保等隐患、已有明确监管措施的生产能力、工艺技术、装备和产品，不再列入限制类。

对属于限制类的新建项目，禁止投资。投资管理部门不予审批、核准，各金融机构不得发放贷款，自然资源、建设、生态环境、水利、市场监管、消防、海关等部门不得办理有关手续。凡违反规定进行投融资建设的，要追究有关单位和人员的责任。对属于限制类的现有生产能力，允许企业在一定期限内采取措施改造升级，金融机构按信贷原则继续给予支持。国家有关部门要根据产业结构优化升级的要求，遵循优胜劣汰的原则，实行分类指导。

一、农林牧渔业

1. 天然草场超载放牧

2. 单线 5 万立方米/年以下的普通刨花板、高中密度纤维板生产装置

3. 1000 吨/年以下的松香生产项目，松脂初加工项目

4. 兽用粉剂、散剂、混剂生产线项目（持有新兽药证书的品种或自动化密闭式高效率混合生产工艺除外）

5. 转瓶培养生产方式的兽用细胞苗生产线项目（持有新兽药证书的品种和采用新技术的除外）

6. 以优质林木为原料的一次性木制品与木制包装的生产和使用以及木竹加工综合利用率偏低的木竹加工项目

7. 1 万立方米/年以下的胶合板和细木工板生产线

8. 珍稀植物和古树的根雕制造业

9. 以野外资源为原料的珍贵濒危野生动植物加工

10. 不符合生态养殖要求的湖泊、水库投饵网箱养殖

11. 不利于生态环境保护的开荒性农业开发项目

12. 缺水地区、国家生态脆弱区纸浆原料林基地建设

13. 不符合国家规划及产业政策的粮食转化乙醇、食用植物油料转化生物燃料项目

14. 破坏林地、湿地、草地、荒漠的开发项目

二、煤炭

1. 低于 30 万吨/年的煤矿，低于 90 万吨/年的煤与瓦斯突出矿井

2. 采用非机械化开采工艺的煤矿项目

3. 未按国家规定程序报批矿区总体规划的煤矿项目

4. 井下回采工作面超过2个的煤矿项目

5. 开采深度超过《煤矿安全规程》规定的煤矿、质量达不到《商品煤质量管理暂行办法》要求的商品煤、开采技术和装备列入《煤炭生产技术与装备政策导向（2014年版）》限制目录且无法实施技术改造的煤矿

三、电力

1. 大电网覆盖范围内，供电煤耗高于285克标准煤/千瓦时的常规烟煤湿冷发电机组，供电煤耗高于300克标准煤/千瓦时的常规烟煤空冷发电机组（不含燃用无烟煤、褐煤等特殊煤型的机组）

2. 无下泄生态流量的引水式水力发电

3. 达不到超低排放要求的煤电机组（采用特殊炉型的机组除外）和燃煤锅炉

四、石化化工

1. 1000万吨/年以下常减压、150万吨/年以下催化裂化、100万吨/年以下连续重整、150万吨/年以下加氢裂化生产装置

2. 80万吨/年以下石脑油裂解制乙烯、13万吨/年以下丙烯腈、100万吨/年以下精对苯二甲酸、20万吨/年以下乙二醇、20万吨/年以下苯乙烯（干气制乙苯工艺除外）、10万吨/年以下己内酰胺、乙烯法醋酸、30万吨/年以下羰基合成法醋酸、天然气制甲醇（CO2含量20%以上的天然气除外），100万吨/年以下煤制甲醇生产装置，丙酮氰醇法甲

基丙烯酸甲酯（利用丙烯腈副产氢氰酸除外）、粮食法丙酮/丁醇、氯醇法环氧丙烷和氯醇法环氧氯丙烷生产装置，300 吨/年以下皂素（含水解物）生产装置

3．7 万吨/年以下聚丙烯、20 万吨/年以下聚乙烯、乙炔法（聚）氯乙烯、起始规模小于 30 万吨/年的乙烯氧氯化法聚氯乙烯、10 万吨/年以下聚苯乙烯、20 万吨/年以下丙烯腈-丁二烯-苯乙烯共聚物（ABS）、10 万吨/年以下普通合成胶乳-羧基丁苯胶（含丁苯胶乳）生产装置，5 万吨/年以下丁腈胶乳装置，新建、改扩建氯丁橡胶类、丁苯热塑性橡胶类、聚氨酯类和聚丙烯酸酯类中溶剂型通用胶粘剂生产装置

4．30 万吨/年以下硫磺制酸（单项金属离子≤100ppb 的电子级硫酸除外）、20 万吨/年以下硫铁矿制酸、常压法及综合法硝酸、电石（以大型先进工艺设备进行等量替换的除外）、单线产能 5 万吨/年以下氢氧化钾生产装置

5．纯碱（井下循环制碱、天然碱、全部采用工业废盐综合利用制碱除外）、烧碱（全部采用工业废盐综合利用的离子膜烧碱装置除外）、黄磷、磷铵、三聚磷酸钠、六偏磷酸钠、五硫化二磷、磷酸氢钙、少钙焙烧工艺重铬酸钠、碳酸钙、无水硫酸钠（盐业联产及副产除外）、碳酸钡、硫酸钡、氢氧化钡、氯化钡、硝酸钡、碳酸锶、白炭黑（气相法除外）、氯化胆碱生产装置（本条目产能等量或减量置换除外）

6．起始规模小于 3 万吨/年、单线产能小于 1 万吨/年氰化钠（折 100%），单线产能 5000 吨/年以下碳酸锂、氢氧化锂（回收利用除外），干法氟化铝、中低分子比冰晶石生产装置

7. 以石油、天然气为原料的氮肥，采用固定层间歇气化技术合成氨，铜洗法氨合成原料气净化工艺

8. 高毒、高残留以及对环境或农产品质量安全影响大的农药原药〔包括氧乐果、特丁磷、杀扑磷、溴甲烷、灭多威、涕灭威、克百威、敌鼠钠、敌鼠酮、杀鼠灵、杀鼠醚、溴敌隆、溴鼠灵、肉毒素、杀虫双、磷化铝，有机氯类、有机锡类杀虫剂，福美类杀菌剂，复硝酚钠（钾）、甲磺隆、内吸磷、乐果、氟虫腈、丁硫克百威、氟苯虫酰胺、氰戊菊酯、乙酰甲胺磷、多菌灵、丁酰肼等〕生产装置

9. 草甘膦、毒死蜱、三唑磷、百草枯、百菌清、阿维菌素、吡虫啉、乙草胺、氯化苦、甲草胺、2,4-滴、啶虫脒、噻虫嗪、莠去津、丁草胺、二甲四氯、莠灭净、麦草畏、敌草快、草铵膦、烯草酮、代森锰锌、敌百虫、三唑醇、丙环唑、异菌脲、多效唑、石硫合剂生产装置

10. 硫酸法钛白粉（联产法工艺除外）、铅铬黄、3 万吨/年以下氧化铁系颜料、溶剂型涂料（鼓励类的涂料品种和生产工艺除外）、含异氰脲酸三缩水甘油酯（TGIC）的粉末涂料（密闭生产装置除外）、VOCs 含量超 75%的硝基纤维素涂料生产装置

11. 染料、染料中间体、有机颜料、印染助剂生产装置（新型功能性、高性能环境友好型染（颜）料、采用清洁生产、本质安全的新技术除外）

12. 氟化氢（HF，企业下游深加工产品配套自用、电子级及湿法磷酸配套除外）生产装置，初始规模小于 20 万吨/年、单套规模小于

10 万吨/年的甲基氯硅烷单体生产装置，10 万吨/年以下（有机硅配套除外）和 10 万吨/年及以上、没有副产四氯化碳配套处置设施的甲烷氯化物生产装置，没有副产三氟甲烷配套处置设施的二氟一氯甲烷生产装置，可接受用途的六氟化硫（SF6，高纯级除外）生产装置，用作制冷剂、发泡剂等受控用途的二氟甲烷（HFC-32）、1,1,1,2-四氟乙烷（HFC-134a）、五氟乙烷（HFC-125）、1,1,1-三氟乙烷（HFC-143a）、1,1,1,3,3-五氟丙烷（HFC-245fa）生产装置（不含副产设施）

13. 斜交轮胎、力车胎（含手推车胎）、锦纶帘线、5 万吨/年以下钢丝帘线、再生胶（常压连续环保型脱硫工艺除外）、橡胶塑解剂五氯硫酚、橡胶促进剂二硫化四甲基秋兰姆（TMTD）生产装置

五、信息产业

1. 激光视盘机生产线（VCD 系列整机产品）

六、钢铁

1. 钢铁联合企业、独立焦化企业未同步配套建设干熄焦、装煤、推焦除尘、VOCs 治理装置的炼焦项目

2. 钢铁、铁合金、铸造用步进式烧结机，180 平方米以下带式烧结机（铁合金烧结机、铸造用生铁烧结机除外）

3. 有效容积 400 立方米以上 1200 立方米以下炼钢用生铁高炉

4. 公称容量 30 吨以上 100 吨以下炼钢转炉

5. 公称容量 30 吨以上 100 吨（合金钢 50 吨）以下电弧炉

6. 30 万吨/年及以下热镀锌板卷项目

7. 20 万吨/年及以下彩色涂层板卷项目

8. 含铬质耐火材料

9. 普通功率和高功率石墨电极压型设备、焙烧设备和生产（工业硅矿热炉用直径 1200mm 以上石墨电极除外）

10. 直径 600 毫米以下或 2 万吨/年以下的超高功率石墨电极生产线

11. 8 万吨/年以下预焙阳极（炭块）、2 万吨/年以下普通阴极炭块、4 万吨/年以下炭电极生产线

12. 单机 120 万吨/年以下的球团设备（铁合金、铸造用生铁球团除外）

13. 顶装焦炉炭化室高度<6.0 米、捣固焦炉炭化室高度<5.5 米；热回收焦炉捣固煤饼体积<35 立方米；半焦炉单炉生产能力<10 万吨/年(单炉生产能力≥5 万吨/年且使用低阶煤高温热解工艺的镁冶炼配气装置除外）

14. 3000 千伏安及以上，未采用热装热兑工艺的中低碳锰铁、电炉金属锰和中低微碳铬铁精炼电炉

15. 300 立方米以下锰铁高炉；300 立方米及以上，但焦比高于 1320 千克/吨的锰铁高炉；规模小于 10 万吨/年的锰铁高炉企业

16. 1.25 万千伏安以下的硅钙合金和硅钙钡铝合金矿热电炉；1.25 万千伏安及以上，但硅钙合金电耗高于 11000 千瓦时/吨的矿热电炉

17. 1.65 万千伏安以下硅铝合金矿热电炉；1.65 万千伏安及以上，但硅铝合金电耗高于 9000 千瓦时/吨的矿热电炉

18. 2×2.5 万千伏安（总容量 5.0 万千伏安）及以下普通铁合金矿

热电炉；2×2.5 万千伏安（总容量 5.0 万千伏安）以上，没有明确固废及危废处理工艺及设施的新建、扩建铁合金电炉（含所有矿热电炉及精炼电炉）

19. 间断浸出、间断送液的电解金属锰浸出工艺

20. 厂区内无配套炼铁、炼钢工序的独立烧结、热轧生产线

21. 半封闭式锰硅合金、镍铁、高碳铬铁、高碳锰铁矿热炉

七、有色金属

1. 新建、扩建钨金属储量小于 1 万吨的钨矿开采项目（现有钨矿山的深部和边部资源开采扩建项目除外），钨、钼、锡、锑冶炼项目（符合国家环保节能等法律法规要求的项目除外）以及氧化锑、铅锡焊料生产项目，稀土采选、冶炼分离项目（符合稀土开采、冶炼分离总量控制指标要求的稀土企业集团项目除外）

2. 单系列 10 万吨/年规模以下粗铜冶炼项目（再生铜项目及氧化矿直接浸出项目除外）、采用 PS 转炉吹炼工艺的铜冶炼项目

3. 新建、扩建电解铝项目（产能置换项目除外），新建、扩建以一水硬铝石为原料的氧化铝项目

4. 单系列 5 万吨/年规模以下铅冶炼、再生铅项目（和原 8 合并）

5. 单系列 10 万吨/年规模以下锌冶炼项目（含锌二次资源利用除外）

6. 新建、扩建镁冶炼项目（综合利用项目除外）

7. 10 万吨/年以下的独立铝用炭素项目

8. 新建、扩建原生汞矿开采项目

9. 未落实副产品独居石安全有效利用的伴生放射性矿物选矿项目

八、黄金

1. 日处理金精矿200吨（不含）以下的原料自供能力不足50%（不含）的独立氰化项目（生物氰化提金工艺除外）

2. 日处理矿石300吨（不含）以下的无配套采矿系统的独立黄金选矿厂项目

3. 日处理金精矿200吨（不含）以下的无配套采矿系统的独立黄金冶炼厂火法冶炼项目

4. 1500吨/日（不含）以下的无配套采矿系统的独立堆浸场项目

5. 日处理岩金矿石300吨（不含）以下的露天采选项目、100吨（不含）以下的地下采选项目

6. 年处理砂金矿砂30万（不含）立方米以下的砂金开采项目

7. 在林区、基本农田、河道中开采砂金项目

九、建材

1. 2000吨/日（不含）以下新型干法水泥熟料生产线（特种水泥生产线除外），60万吨/年（不含）以下水泥粉磨站

2. 150万平方米/年及以下的建筑陶瓷（不包括建筑琉璃制品）生产线，60万件/年（不含）以下的隧道窑卫生陶瓷生产线

3. 3000万平方米/年（不含）以下的纸面石膏板生产线（西藏除外）

4. 中碱玻璃纤维池窑法拉丝生产线，单窑规模小于8万吨/年（不含）的无碱玻璃纤维粗纱池窑拉丝生产线，中碱、无碱、耐碱玻璃球

窑生产线，中碱、无碱玻璃纤维代铂坩埚拉丝生产线

5. 粘土空心砖生产线（陕西、青海、甘肃、新疆、西藏、宁夏除外）

6. 15 万平方米/年（不含）以下的石膏（空心）砌块生产线、单班 5 万立方米/年（不含）以下的混凝土小型空心砌块以及单班 15 万平方米/年（不含）以下的混凝土路面砖（含透水砖）固定式生产线、5 万立方米/年（不含）以下的人造轻集料（陶粒）生产线

7. 15 万立方米/年（不含）以下的加气混凝土生产线

8. 6000 万标砖/年（不含）以下的烧结砖及烧结空心砌块生产线

9. 3 万吨/年以下岩（矿）棉制品生产线和 8000 吨/年以下保温玻璃棉制品生产线

10. 100 万米/年及以下预应力高强混凝土离心桩生产线；预应力钢筒混凝土管（简称 PCCP 管）生产线（PCCP-L 型：年设计生产能力≤50 千米；PCCP-E 型：年设计生产能力≤30 千米）

十、医药

1. 新建、扩建古龙酸和维生素 C 原粉（包括药用、食品用、饲料用、化妆品用）生产装置，新建药品、食品、饲料、化妆品等用途的维生素 B1、维生素 B2、维生素 B12、维生素 E 原料生产装置

2. 青霉素工业盐、6-氨基青霉烷酸（6-APA）、7-氨基头孢烷酸（7-ACA）、7-氨基-3-去乙酰氧基头孢烷酸（7-ADCA）、青霉素 V、氨苄青霉素、羟氨苄青霉素、头孢菌素 C、土霉素、四环素、氯霉素、安乃近、扑热息痛、林可霉素、庆大霉素、双氢链霉素、丁胺卡那霉

素、麦迪霉素、柱晶白霉素、环丙氟哌酸、氟哌酸、氟嗪酸、利福平、咖啡因、柯柯豆碱生产装置

3. 紫杉醇（配套红豆杉种植除外）、植物提取法黄连素（配套黄连种植除外）生产装置

4. 新建、改扩建药用丁基橡胶塞、二步法生产输液用塑料瓶生产装置

5. 新建、改扩建原料含有尚未规模化种植或养殖的濒危动植物药材的产品生产装置

6. 新建、改扩建充汞式玻璃体温计、血压计生产装置、银汞齐齿科材料，新建2亿支/年以下一次性注射器、输血器、输液器生产装置

十一、机械

1. 装岩机（立爪装岩机除外）制造项目

2. 3立方米及以下小矿车制造项目

3. 直径2.5米及以下绞车制造项目

4. 直径3.5米及以下矿井提升机制造项目

5. 40平方米及以下筛分机制造项目

6. 直径700毫米及以下旋流器制造项目

7. 800千瓦及以下采煤机制造项目

8. 斗容3.5立方米及以下矿用挖掘机制造项目

9. 矿用搅拌、浓缩、过滤设备（加压式除外）制造项目

10. 仓栅车、栏板车、自卸车和普通厢式车等普通运输类专用汽车和普通运输类挂车企业项目；三轮汽车、低速电动车

11. 单缸柴油机制造项目

12. 配套单缸柴油机的皮带传动小四轮拖拉机，配套单缸柴油机的手扶拖拉机，滑动齿轮换档、排放达不到要求的50马力以下轮式拖拉机

13. 30万千瓦级及以下常规燃煤火力发电设备制造项目（综合利用机组除外）

14. 6千伏及以上干法交联电力电缆（陆上用）制造项目

15. 非数控金属切削机床制造项目

16. 6300千牛及以下普通机械压力机制造项目

17. 非数控剪板机、折弯机、弯管机制造项目

18. 普通高速钢钻头、铣刀、锯片、丝锥、板牙项目

19. 白刚玉、棕刚玉、绿碳化硅、黑碳化硅等烧结块项目

20. 直径450毫米以下且磨削速度40米/秒以下的各种结合剂砂轮（钢轨打磨砂轮、超硬材料砂轮除外）

21. 直径400毫米及以下人造金刚石切割锯片制造项目（人造金刚石切割锯片工作部件抗弯强度>1000 Mpa且其与基体结合部分强度≥600 MPa的除外）

22. P0级、直径60毫米以下普通微小型轴承制造项目

23. 220千伏及以下电力变压器（非晶合金、卷铁芯等节能配电变压器除外）

24. 220千伏及以下高、中、低压开关柜制造项目（使用环保型中压气体的绝缘开关柜以及用于爆炸性环境的防爆型开关柜除外）

25. 酸性碳钢焊条制造项目

26. 民用普通电度表制造项目

27. 8.8 级以下普通低档标准紧固件制造项目

28. 一般用途固定往复活塞空气压缩机（驱动电动机功率 560 千瓦及以下、额定排气压力 1.25 兆帕及以下）制造项目

29. 普通运输集装干箱项目

30. 56 英寸及以下单级中开泵制造项目

31. 通用类 10 兆帕及以下中低压碳钢阀门制造项目

32. 10 吨/小时及以下短炉龄冲天炉

33. 有色合金六氯乙烷精炼、镁合金 SF6 保护

34. 无旧砂再生的水玻璃砂造型制芯工艺

35. 盐浴氮碳、硫氮碳共渗炉及盐

36. 电子管高频感应加热设备

37. 亚硝盐缓蚀、防腐剂

38. 铸/锻造用燃油加热炉

39. 锻造用燃煤加热炉

40. 手动燃气锻造炉

41. 蒸汽锤

42. 弧焊变压器

43. 含铅和含镉钎料

44. 全断面掘进机整机组装项目

45. 万吨级以上自由锻造液压机项目

46. 不采用自动化造型设备的粘土砂型铸造项目、水玻璃熔模精密铸造项目、规模小于20万吨/年的离心球墨铸铁管项目、规模小于3万吨/年的离心灰铸铁管项目

47. 动圈式和抽头式手工焊条弧焊机

48. Y系列（IP44）三相异步电动机（机座号80～355）及其派生系列，Y2系列（IP54）三相异步电动机（机座号63～355）

49. 背负式手动压缩式喷雾器

50. 背负式机动喷雾喷粉机

51. 手动插秧机

52. 青铜制品的茶叶加工机械

53. 双盘摩擦压力机

54. 含铅粉末冶金件

55. 出口船舶分段建造项目

56. 镀铜焊丝项目

57. 每小时35蒸吨及以下固定炉排式生物质锅炉

58. 县级及以上城市建成区每小时35蒸吨以下的燃煤锅炉，其他区域每小时10蒸吨以下的燃煤锅炉

59. 处理量小于500kg/小时，且不能达到《医疗废物处理处置污染控制标准》规定的污染物排放要求的医疗废物焚烧设施，以及处理量小于1万吨/年，且不能达到《危险废物焚烧污染控制标准》规定的污染物排放要求的危险废物焚烧设施

十二、轻工

1. 聚氯乙烯普通人造革生产线

2. 年加工能力 30 万标张牛皮以下的生产线

3. 以含氢氯氟碳化物（HCFCs）和氢氟碳化物（HFCs）为制冷剂、发泡剂、灭火剂、溶剂、清洗剂、加工助剂等受控用途的聚氨酯泡沫塑料生产线、连续挤出聚苯乙烯泡沫塑料（XPS）生产线以及冰箱、冰柜、汽车空调器、工业商业用冷藏、制冷设备生产线

4. 聚氯乙烯（PVC）食品保鲜包装膜

5. 普通照明白炽灯

6. 最高转速低于 4000 针/分钟的平缝机（不含厚料平缝机）和最高转速低于 5000 针/分钟的包缝机

7. 电子计价秤（准确度低于最大称量的 1/3000，称量≤15 千克），电子皮带秤（准确度低于最大称量的 5/1000），电子吊秤（准确度低于最大称量的 1/1000，称量≤50 吨），弹簧度盘秤（准确度低于最大称量的 1/400，称量≤8 千克）

8. 电子汽车衡（准确度低于最大称量的 1/3000，称量≤300 吨），电子静态轨道衡（准确度低于最大称量的 1/3000，称量≤150 吨），电子动态轨道衡（准确度低于最大称量的 1/500，称量≤150 吨）

9. 玻璃保温瓶胆生产线

10. 3 万吨/年及以下的玻璃瓶罐生产线

11. 以人工操作方式制备玻璃配合料及秤量

12. 未达到《日用玻璃行业规范条件》规定指标的玻璃窑炉

13. 羰基合成法及齐格勒法生产的脂肪醇产品

14. 热法生产三聚磷酸钠生产线

15. 单层喷枪洗衣粉生产工艺及装备、1.6 吨/小时以下规模磺化装置

16. 100 万吨/年以下北方海盐项目，南方海盐盐场项目，60 万吨/年以下矿（井）盐项目

17. 单色金属板胶印机

18. 单条化学木浆 30 万吨/年以下、化学机械木浆 10 万吨/年以下、化学竹浆 10 万吨/年以下

19. 原糖加工项目及日处理甘蔗 5000 吨（云南地区 3000 吨）、日处理甜菜 3000 吨以下的项目

20. 酒精生产线

21. 糖精等化学合成甜味剂生产线

22. 大豆压榨及浸出项目（黑龙江、吉林、内蒙古大豆主产区除外）；东、中部地区单线日处理油菜籽、棉籽 200 吨及以下，花生 100 吨及以下的油料加工项目；西部地区单线日处理油菜籽、棉籽、花生等油料 100 吨及以下的加工项目

23. 年加工玉米 45 万吨以下、绝干收率在 98%以下玉米淀粉（蜡质玉米、高直链玉米等特种玉米年加工规模 1 万吨以下）

24. 年屠宰生猪 15 万头及以下、肉牛 1 万头及以下、肉羊 15 万只及以下、活禽 1000 万只及以下的屠宰建设项目（少数民族地区除外）

25. 3000 吨/年及以下的西式肉制品加工项目

26. 年产 2000 吨（折干）及以下酵母制品

27. 冷冻海水鱼糜生产线

28. 铅蓄电池生产中铸板、制粉、输粉、灌粉、和膏、涂板、刷板、配酸灌酸、外化成、称板、包板等人工作业工艺

29. 采用外化成工艺生产铅蓄电池

30. 年产 5 万吨以下柠檬酸生产线

31. 10 万吨/年及以下赖氨酸、苏氨酸生产线；20 万吨/年及以下谷氨酸生产线

十三、纺织

1. 单线产能小于 20 万吨/年的常规聚酯（PET）连续聚合生产装置

2. 常规聚酯的对苯二甲酸二甲酯（DMT）法生产工艺

3. 半连续纺粘胶长丝生产线

4. 间歇式氨纶聚合生产装置

5. 常规化纤长丝用锭轴长 1200 毫米及以下的半自动卷绕设备

6. 粘胶板框式过滤机

7. 单线产能≤1000 吨/年、幅宽≤2 米的常规丙纶纺粘法非织造布生产线

8. 25 公斤/小时以下梳棉机

9. 200 钳次/分钟以下的棉精梳机

10. 5 万转/分钟以下自排杂气流纺设备

11. FA502、FA503 细纱机

12. 入纬率小于 600 米/分钟的剑杆织机，入纬率小于 700 米/分钟

的喷气织机，入纬率小于900米/分钟的喷水织机

13. 采用聚乙烯醇浆料（PVA）上浆工艺及产品（涤棉产品，纯棉的高支高密产品除外）

14. 吨原毛洗毛用水超过20吨的洗毛工艺与设备

15. 双宫丝和柞蚕丝的立式缫丝工艺与设备

16. 绞纱染色工艺

17. 亚氯酸钠漂白设备

18. 普通涤纶载体染色

十四、烟草

1. 烟草制品（含电子烟等新型烟草制品）加工

十五、民爆和烟花爆竹产品

1. 非人机隔离的非连续化、自动化雷管装配生产线

2. 非连续化、自动化炸药生产线

3. 高污染的起爆药生产线

4. 高能耗、高污染、低性能工业粉状炸药生产线

5. 危险等级为1.1级的危险品生产厂房现场操作人员总人数大于5人的炸药生产线

6. 危险等级为1.1级的危险品生产厂房现场操作人员人数大于9人的炸药制品生产线

7. 与雷管近距离接触的作业人员数量（含原材料和半成品作业人员，不含成品运送人员）大于5人的基础雷管装填生产线

8. 许可产能为年产12000吨及以下的包装型工业炸药生产线

9. 未实现人药隔离作业的烟花爆竹生产机械设备

十六、建筑

1. 在非固定的专业预制厂（场）或钢筋加工厂（场）内，对直径大于或等于22毫米的钢筋进行连接作业时使用的钢筋闪光对焊工艺

2. 存在下列条件之一的区域使用的基桩人工挖孔工艺：（1）地下水丰富、软弱土层、流沙等不良地质条件的区域；（2）孔内空气污染物超标准；（3）机械成孔设备可以到达的区域

3. 用于地下密闭空间、通风不畅空间、易燃材料附近的防水工程中的沥青类防水卷材热熔工艺（明火施工）

4. 用于搭设满堂承重支撑架体系的门式钢管支撑架

5. 用于建设工地的生产、办公、生活等区域的照明的白炽灯、碘钨灯、卤素灯

6. 用于25米及以上的建设工程中的龙门架、井架物料提升机

7. 在下列任一条件下使用的顶管工作竖井钢木支架支护施工工艺：（1）基坑深度超过3米；（2）地下水位超过基坑底板高度

8. 在下列任一条件下使用的桥梁悬浇挂篮上部与底篮精轧螺纹钢吊杆连接工艺：（1）前吊点连接；（2）其他吊点连接：①上下钢结构直接连接（未穿过混凝土结构）；②与底篮连接未采用活动铰；③吊杆未设外保护套）

9. 在二类以上市政工程项目预制场内进行后张法预应力构件施工时使用的非数控孔道压浆设备

10. 在二类以上市政工程项目预制场内进行后张法预应力构件施

工时使用的非数控预应力张拉设备

11. 用于市政道路工程的九格砖

12. 用于新建和维修广场、停车场、人行步道、慢行车道的防滑性能差的光面路面板（砖）

13. 用于住宅小区、企事业单位和市政管网的埋地排水工程中的平口混凝土排水管（含钢筋混凝土管）

十七、消防

1. 含全氟辛基磺酸及其衍生物的灭火剂

十八、其他

1. 用地红线宽度（包括绿化带）超过下列标准的城市主干道路项目：小城市和重点镇 40 米，中等城市 55 米，大城市 70 米（200 万人口以上特大城市主干道路确需超过 70 米的，城市国土空间总体规划中应有专项说明）

2. 用地面积超过下列标准的城市游憩集会广场项目：小城市和重点镇 1 公顷，中等城市 2 公顷，大城市 3 公顷，200 万人口以上特大城市 5 公顷

3. 别墅类房地产开发项目

4. 高尔夫球场项目

5. 赛马场项目

6. 4 档及以下机械式车用自动变速箱（AT）

7. 排放标准国三及以下的机动车用发动机

8. 低速三轮、四轮电动车生产线

9. 矿产资源开采回采率、选矿回收率和共伴生矿产综合利用率未达到国家规定的项目

10. 国家法律法规不允许新建，不符合生态环境准入清单要求，不符合国家安全、环保、能耗、水耗、质量方面强制性标准，不符合国际环境公约等要求的工艺、技术、产品、装备

第三类　淘汰类

淘汰类主要是不符合有关法律法规，严重浪费资源、污染环境，安全生产隐患严重，阻碍实现碳达峰碳中和目标，需要淘汰的落后工艺技术、装备及产品。对市场能够有效调节、在实际生产生活中已经淘汰的生产能力、工艺技术、装备、产品，在没有安全环保等隐患和“死灰复燃”风险、已经有明确监管措施的前提下，不再列入淘汰类。对能效未达到最新版《工业重点领域能效标杆水平和基准水平》中基准水平、且未在规定期限内完成改造的项目，以及对所生产产品设备能效未达到最新版《重点用能产品设备能效先进水平、节能水平和准入水平》中准入水平或未达到强制性能效标准最低要求的项目，参照淘汰类管理。

淘汰类条目后括号内年份为淘汰期限，如淘汰期限为2023年12月31日是指应于2023年12月31日前淘汰，其余类推；有淘汰计划的条目，根据计划进行淘汰；未标淘汰期限或淘汰计划的条目为国家产业政策已明令淘汰或立即淘汰。

对淘汰类项目，禁止投资。各金融机构应停止各种形式的授信支持，并采取措施收回已发放的贷款；各地区、各部门和有关企业要采取有力措施，按规定限期淘汰。在淘汰期限内国家价格主管部门可提高供电价格。对国家明令淘汰的生产工艺技术、装备和产品，一律不得进口、转移、生产、销售、使用和采用。对不按期淘汰生产工艺技术、装备和产品的企业，地方各级人民政府及有关部门要依据国家有

关法律法规责令其停产或予以关闭，并采取妥善措施安置企业人员、保全金融机构信贷资产安全等；其产品属实行生产许可证管理的，有关部门要依法吊销生产许可证；环境保护管理部门要吊销其排污许可证；电力供应企业要依法停止供电。对违反规定者，要依法追究直接责任人和有关领导的责任。

一、落后生产工艺装备

（一）农林牧渔业

1. 湿法纤维板生产工艺

2. 滴水法松香生产工艺

3. 农村传统老式炉灶炕

4. 以木材、伐根为主要原料的土法活性炭、土法木炭生产

5. 超过生态承载力的旅游活动和药材等林产品采集

6. 严重缺水地区建设灌溉型造纸原料林基地

7. 种植前溴甲烷土壤熏蒸工艺

8. 作坊式胶合板生产

9. 辊长1000毫米以下的皮辊轧花机，锯片片数在80以下的锯齿轧花机，压力吨位在400吨以下的皮棉打包机（不含160吨、200吨短绒棉花打包机）

（二）煤炭

1. 与大型煤矿井田平面投影重叠的小煤矿

2. 长期停产停建的30万吨/年以下（不含30万吨/年）“僵尸企业”煤矿；30万吨/年以下（不含30万吨/年）冲击地压、煤与瓦斯突出等灾害严重煤矿

3. 既无降硫措施又无达标排放用户的高硫煤炭（含硫高于3%）生产矿井，不能就地使用的高灰煤炭（灰分高于40%）生产矿井以及高砷煤炭（动力用煤中砷含量超过80μg/g，炼焦用煤中砷含量超过35μg/g）生产煤矿

4. 6AM、φM-2.5、PA-3 型煤用浮选机

5. PB2、PB3、PB4 型矿用隔爆高压开关

6. PG-27 型真空过滤机

7. X-1 型箱式压滤机

8. ZYZ、ZY3 型液压支架

9. 不能实现洗煤废水闭路循环的选煤工艺、不能实现粉尘达标排放的干法选煤设备

10. 开采范围与自然保护区、风景名胜区、饮用水水源保护区重叠的煤矿（根据法律法规及国家有关文件要求进行淘汰）

11. 采用以掘代采等非正规开采工艺的煤矿

12. 同时生产的水平超过 2 个（不含 2 个）的煤矿

13. 其他煤炭加工中产能 5000 吨以下煤制活性炭，5 万吨以下煤制活性焦

（三）电力

1. 不达标的单机容量 30 万千瓦级及以下的常规燃煤火电机组(综合利用机组除外）、以发电为主的燃油锅炉及发电机组（先立后破，根据发布的年度淘汰计划有序淘汰）

（四）石化化工

1. 200 万吨/年及以下常减压装置（青海格尔木及符合有关条件的除外），采用明火高温加热方式生产油品的釜式蒸馏装置，废旧橡胶和塑料土法炼油工艺，焦油间歇法生产沥青，2.5 万吨/年及以下的单套粗（轻）苯精制装置，5 万吨/年及以下的单套煤焦油加工装置

2. 10 万吨/年以下磷铵（工业级除外）（2025 年 12 月 31 日），10 万吨/年以下的硫铁矿制酸和硫磺制酸（边远地区除外），平炉氧化法高锰酸钾，隔膜法烧碱生产装置（作为废盐综合利用的可以保留），平炉法和大锅蒸发法硫化碱生产工艺，芒硝法硅酸钠（泡花碱）生产工艺，间歇焦炭法二硫化碳工艺

3. 钙法皂化氯醇法工艺（2025 年 12 月 31 日），单台产能 5000 吨/年以下黄磷生产装置，有钙焙烧铬化合物生产装置，单线产能 3000 吨/年以下普通级硫酸钡、氢氧化钡、氯化钡、硝酸钡生产装置，产能 1 万吨/年以下氯酸钠生产装置，单台炉容量小于 1.25 万千伏安的电石炉、开放式电石炉、内燃式电石炉，高汞催化剂（氯化汞含量 6.5%以上）和使用高汞催化剂的乙炔法（聚）氯乙烯生产装置，使用汞或汞化合物的甲醇钠、甲醇钾、乙醇钠、乙醇钾、聚氨酯、乙醛、烧碱、生物杀虫剂和局部抗菌剂生产装置，氨钠法及氰熔体氰化钠生产工艺

4. 单线产能 1 万吨/年以下三聚磷酸钠、0.5 万吨/年以下六偏磷酸钠、0.5 万吨/年以下三氯化磷、3 万吨/年以下饲料磷酸氢钙、5000 吨/年以下工艺技术落后和污染严重的氢氟酸、湿法氟化铝及敞开式结晶氟盐生产装置

5. 单线产能 0.3 万吨/年以下氰化钠（100%氰化钠）、1 万吨/年以下氢氧化钾、1.5 万吨/年以下普通级白炭黑、2 万吨/年以下普通级碳酸钙、10 万吨/年以下普通级无水硫酸钠（盐业联产及副产除外）、0.3 万吨/年以下碳酸锂和氢氧化锂（废旧锂电池进行回收利用除外）、2 万吨/年以下普通级碳酸钡、1.5 万吨/年以下普通级碳酸锶生产装置

6. 半水煤气氨水液相脱硫、天然气常压间歇转化工艺制合成氨、一氧化碳常压变化及全中温变换（高温变换）工艺、没有配套硫磺回收装置的湿法脱硫工艺，没有配套建设吹风气余热回收、造气炉渣综合利用装置的固定层间歇式煤气化装置，没有配套工艺冷凝液水解解析装置的尿素生产设施，高温煤气洗涤水在开式冷却塔中与空气直接接触冷却工艺技术

7. 钠法百草枯生产工艺，敌百虫碱法敌敌畏生产工艺，小包装（1公斤及以下）农药产品手工包（灌）装工艺及设备，雷蒙机法生产农药粉剂，以六氯苯为原料生产五氯酚（钠）装置

8. 用火直接加热的涂料用树脂、四氯化碳溶剂法制取氯化橡胶生产工艺，100 吨/年以下皂素（含水解物）生产装置，盐酸酸解法皂素生产工艺及污染物排放不能达标的皂素生产装置，铁粉还原法工艺〔4,4-二氨基二苯乙烯-二磺酸（DSD 酸）、2-氨基-4-甲基-5-氯苯磺酸（CLT 酸）、1-氨基-8-萘酚-3,6-二磺酸（H 酸）三种产品暂缓执行〕

9. 50 万条/年及以下的斜交轮胎和以天然棉帘子布为骨架的轮胎、干法造粒炭黑（特种炭黑和半补强炭黑除外）、3 亿只/年以下的天然胶乳安全套，橡胶硫化促进剂 N-氧联二（1,2-亚乙基）-2-苯并噻唑次磺酰胺（NOBS）和橡胶防老剂 D 生产装置

10. 用于制冷、发泡、清洗等受控用途的氯氟烃（CFCs）、含氢氯氟烃（HCFCs，作为下游化工产品原料的除外），用于清洗的 1,1,1-三氯乙烷（甲基氯仿），主产四氯化碳（CTC）、以四氯化碳（CTC）为加工助剂的所有产品，以 PFOA 为加工助剂的含氟聚合物生产工艺，

含滴滴涕的涂料、采用滴滴涕为原料非封闭生产三氯杀螨醇生产装置（根据国家履行国际公约总体计划要求进行淘汰）

（五）钢铁

1. 土法炼焦（含改良焦炉），单炉产能 7.5 万吨/年以下（单炉产能≥5 万吨/年且使用低阶煤高温热解工艺的镁冶炼配气装置除外)或无煤气、焦油回收利用和污水处理达不到焦化行业规范条件的半焦（兰炭）生产装置

2. 炭化室高度小于 4.3 米焦炉（3.8 米及以上捣固焦炉除外），未配套干熄焦装置的钢铁企业焦炉,企业生产能力＜40 万吨/年热回收焦炉，未同步配套建设热能回收装置的焦炉

3. 钢铁生产用环形烧结机，步进式烧结机（2025 年 12 月 31 日），90 平方米以下烧结机，8 平方米以下球团竖炉，铁合金生产用 24 平方米以下带式锰矿、铬矿烧结机，铸造用生铁生产用 24 平方米以下烧结机

4. 400 立方米及以下炼钢用生铁高炉（河北省 450 立方米及以下炼钢用生铁高炉），200 立方米及以下铁合金生产用高炉，200 立方米及以下铸造用生铁高炉（其中配套方米及以下铸造工艺的铸造用生铁高炉为 100 立方米及以下）

5. 用于熔化废钢的工频和中频感应炉（根据法律法规和国家取缔“用于熔化有关要求淘汰）

6. 30 吨及以下炼钢转炉（不含铁合金转炉）（河北省 40 吨及以下炼钢转炉），30 吨及以下炼钢电弧炉（不含机械铸造，高温合金、

精密合金等特殊合金材料用电弧炉），化铁炼钢

7. 复二重线材轧机，横列式线材轧机，横列式棒材及型材轧机（不含生产高温合金的轧机），叠轧薄板轧机，普钢初轧机及开坯用中型轧机，600mm 及以下的热轧窄带钢轧机，三辊劳特式中板轧机，直径 76 毫米以下热轧无缝管机组，三辊式型线材轧机（不含特殊钢生产）

8. 环保不达标的冶金炉窑

9. 手工操作的土沥青焦油浸渍装置，矿石原料与固体原料混烧、自然通风、手工操作的土竖窑，以煤直接为燃料、烟尘净化不能达标的倒焰窑

10. 12500 千伏安以下普通铁合金矿热电炉，3000 千伏安以下铁合金半封闭直流电炉、铁合金精炼电炉（钨铁、钒铁等特殊品种的电炉除外）

11. 蒸汽加热混捏、倒焰式焙烧炉、艾奇逊交流石墨化炉、1 万千伏安及以下三相桥式整流艾奇逊直流石墨化炉及其并联机组

12. 单机产能 3 万吨及以下的冷轧带肋钢筋生产装备（高延性冷轧带肋钢筋生产装备除外）

13. 生产预应力钢丝的单罐拉丝机生产装备

14. 预应力钢材生产消除应力处理的铅淬火工艺

15. 每炉单产 5 吨以下的钛铁熔炼炉、用反射炉焙烧钼精矿的钼铁生产线及用反射炉还原、煅烧红矾钠、铬酐生产金属铬的生产线

16. 燃煤倒焰窑耐火材料及原料制品生产线

17. 钢铁行业用一段式固定煤气发生炉项目（不含粉煤气化炉）

18. 电解金属锰用 6000 千伏安及以下的整流变压器、有效容积 250 立方米及以下的化合槽

19. 还原二氧化锰用反射炉（包括硫酸锰厂用反射炉、矿粉厂用反射炉等）

20. 电解金属锰一次压滤用除高压隔膜压滤机以外的板框、箱式压滤机

21. 有效容积 18 立方米及以下轻烧反射窑

22. 有效容积 30 立方米及以下重烧镁砂竖窑

23. 1 万吨/年以下电解金属锰单条生产线（一台变压器），电解金属锰生产总规模为 3 万吨/年以下的企业

24. 采用重铬酸盐钝化技术的电解锰工艺设备（2023 年 12 月 31 日）

（六）有色金属

1. 采用马弗炉、马槽炉、横罐、小竖罐等进行焙烧、简易冷凝设施进行收尘等落后方式炼锌或生产氧化锌工艺装备

2. 采用铁锅和土灶、蒸馏罐、坩埚炉及简易冷凝收尘设施等落后方式炼汞

3. 采用土坑炉或坩埚炉焙烧、简易冷凝设施收尘等落后方式炼制氧化砷或金属砷工艺装备

4. 160kA 以下预焙阳极铝电解槽

5. 鼓风炉、电炉、反射炉炼铜工艺及设备

6. 烟气制酸干法净化和热浓酸洗涤技术

7. 采用地坑炉、坩埚炉、赫氏炉等落后方式炼锑

8. 采用烧结锅、烧结盘、简易高炉等落后方式炼铅工艺及设备

9. 利用坩埚炉熔炼再生铝合金、再生铅的工艺及设备

10. 铝用湿法氟化盐项目

11. 1 万吨/年以下的再生铅项目

12. 再生有色金属生产中采用直接燃煤的反射炉项目

13. 铜线杆（黑杆）生产工艺

14. 未配套制酸及尾气吸收系统的烧结机炼铅工艺

15. 烧结-鼓风炉炼铅工艺及设备

16. 无烟气治理措施的再生铜焚烧工艺及设备

17. 50 吨以下传统固定式反射炉再生铜生产工艺及设备

18. 15 吨以下再生铝用熔炼炉

19. 离子型稀土矿堆浸和池浸工艺

20. 独居石单一矿种开发项目

21. 稀土氯化物电解制备金属工艺项目

22. 湿法生产电解用氟化稀土生产工艺

23. 2 万吨(REO)/年以下混合型稀土矿山开发项目,5000 吨(REO ）/年以下的氟碳铈矿稀土矿山开发项目，500 吨（REO）/年以下的离子型稀土矿山开发项目

24. 2000 吨（REO）/年以下的稀土分离项目

25. 1500 吨/年以下、电解槽电流小于 5000A、电流效率低于 85%的轻稀土金属冶炼项目

26. 原生汞矿开采（2032 年 8 月 16 日）

27. 竖罐炼锌工艺和设备（2025 年 12 月 31 日）

（七）黄金

1. 混汞提金工艺

2. 小氰化池浸工艺，土法冶炼工艺

3. 无环保措施提取线路板中金、银、钯等贵重金属

4. 日处理能力 50 吨（不含）以下采选项目

5. 整体矿石汞齐化；露天焚烧汞合金或经过加工的汞合金；在居民区焚烧汞合金；在没有首先去除汞的情况下，对添加了汞的沉积物、矿石或尾矿石进行氰化物浸出

（八）建材

1. 干法中空窑（生产铝酸盐水泥等特种水泥除外），水泥机立窑，立波尔窑、湿法窑，直径 3 米（不含）以下水泥粉磨设备（生产特种水泥除外）

2. 无覆膜塑编水泥包装袋生产线，水泥包装袋缝底袋（两底需由缝线缝合）的生产和使用

3. 平拉工艺平板玻璃生产线（含格法）

4. 100 万平方米/年（不含）以下的建筑陶瓷砖、20 万件/年（不含）以下卫生陶瓷生产线，建筑卫生陶瓷（不包括建筑琉璃制品）土窑、倒焰窑、多孔窑、煤烧明焰隧道窑、隔焰隧道窑、匣钵装卫生陶瓷隧道窑，建筑陶瓷砖成型用的摩擦压砖机

5. 玻璃纤维陶土坩埚、陶瓷坩埚及其它非铂金坩埚拉丝生产工艺

与装备

6. 1000 万平方米/年（不含）以下的纸面石膏板生产线

7. 500 万平方米/年（不含）以下的改性沥青类防水卷材生产线，沥青复合胎柔性防水卷材生产线，100 万卷/年（不含）以下沥青纸胎油毡生产线

8. 石灰土立窑

9. 砖瓦轮窑以及立窑、无顶及移动顶窑、马蹄窑等土窑

10. 简易移动式混凝土砌块成型机、附着式振动成型台

11. 单班 1 万立方米/年以下的混凝土砌块固定式成型机、单班 10 万平方米/年以下的混凝土路面砖（含透水砖）固定式成型机

12. 人工浇筑、非机械成型的石膏（空心）砌块生产工艺

13. 气炼一步法石英玻璃生产工艺装备

14. 生产人造金刚石用 6×6 兆牛顿六面顶小型压机

15. 手工切割加气混凝土生产线、非蒸压养护加气混凝土生产线

16. 非烧结、非蒸压粉煤灰砖生产线

17. 装饰石材矿山硐室爆破开采技术、吊索式大理石土拉锯、移动式小型圆盘锯

（九）医药

1. 手工胶囊填充工艺

2. 软木塞烫腊包装药品工艺

3. 塔式重蒸馏水器

4. 无净化设施的热风干燥箱

5. 环境、职业健康和安全不能达到国家标准的原料药生产装置

6. 铁粉还原法对乙酰氨基酚（扑热息痛）、咖啡因装置

7. 使用氯氟烃（CFCs）作为气雾剂、推进剂、抛射剂或分散剂的医药用品生产工艺(根据国家履行国际公约总体计划要求进行淘汰）

8. 充汞式玻璃体温计、血压计生产装置（2025 年 12 月 31 日）

（十）机械

1. 热处理铅浴炉(用于金属丝绳及其制品的有铅液覆盖剂和负压抽风除尘环保设施的在线热处理铅浴生产线除外）

2. 热处理氯化钡盐浴炉（高温氯化钡盐浴炉暂缓淘汰）

3. TQ60、TQ80 塔式起重机

4. QT16、QT20、QT25 井架简易塔式起重机

5. KJ1600/1220 单筒提升绞机

6. 3000 千伏安以下普通棕刚玉冶炼炉

7. 4000 千伏安以下固定式棕刚玉冶炼炉

8. 20000 千伏安以下碳化硅冶炼炉

9. 强制驱动式简易电梯

10. 以氯氟烃（CFCs）作为膨胀剂的烟丝膨胀设备生产线

11. 砂型铸造粘土烘干砂型及型芯

12. 焦炭炉熔化有色金属

13. 砂型铸造油砂制芯

14. 重质砖炉衬台车炉

15. 中频发电机感应加热电源

16. 燃煤火焰反射加热炉

17. 仅用于去除金属零部件表面氧化皮的酸洗工艺、酸洗项目（为产品制造配套项目除外）

18. 位式交流接触器温度控制柜

19. 插入电极式盐浴炉

20. 动圈式和抽头式硅整流弧焊机

21. 磁放大器式弧焊机

22. 无法安装安全保护装置的冲床

23. 无磁轭（≥0.25 吨）铝壳中频感应电炉

24. 无芯工频感应电炉

25. 钻采工具接头螺纹磷化处理工艺（2023 年 12 月 31 日）

26. 5 吨/小时及以下冲天炉（重点区域 2023 年 12 月 31 日，其他区域 2025 年 12 月 31 日）

（十一）船舶

1. 废旧船舶滩涂拆解工艺

2. 船长大于 90 米的海洋钢质船舶以及船长大于 120 米的内河钢质船舶的单件组装式整体建造工艺

（十二）轻工

1. 单套 10 万吨/年以下的真空制盐装置、20 万吨/年以下的湖盐和 30 万吨/年以下的北方海盐生产设施

2. 利用矿盐卤水、油气田水且采用平锅、滩晒制盐的生产工艺与装置

3．2 万吨/年及以下的南方海盐生产装置

4．超薄型（厚度低于 0.025 毫米）塑料购物袋生产

5．年加工生皮能力 5 万标张牛皮、年加工蓝湿皮能力 3 万标张牛皮以下的制革生产线

6．300 吨/年以下的油墨生产总装置（利用高新技术、无污染的除外）

7．含苯类溶剂型油墨生产

8．石灰法地池制浆设备（宣纸除外）

9．5.1 万吨/年以下的化学木浆生产线

10．单条 3.4 万吨/年以下的非木浆生产线

11．单条 1 万吨/年及以下、以废纸为原料的制浆生产线

12．幅宽在 1.76 米及以下并且车速为 120 米/分以下的文化纸生产线

13．幅宽在 2 米及以下并且车速为 80 米/分以下的白板纸、箱板纸及瓦楞纸生产线

14．以氯氟烃（CFCs）为制冷剂和发泡剂的冰箱、冰柜、汽车空调器、工业商业用冷藏、制冷设备生产线

15．以氯氟烃（CFCs）为发泡剂的聚氨酯、聚乙烯、聚苯乙烯泡沫塑料生产

16．以四氯化碳（CTC）为清洗剂的生产工艺

17．以三氟三氯乙烷（CFC-113）和甲基氯仿（TCA）为清洗剂和溶剂的生产工艺

18. 脂肪酸法制叔胺工艺，发烟硫酸磺化工艺，搅拌釜式乙氧基化工艺

19. 印铁制罐行业中的锡焊工艺

20. 燃煤和燃发生炉煤气的坩埚玻璃窑，直火式、无热风循环的玻璃退火炉

21. 机械定时行列式制瓶机

22. 生产能力 150 瓶/分钟以下（瓶容在 250 毫升及以下）的碳酸饮料生产线

23. 日处理原料乳能力（两班）20 吨以下浓缩、喷雾干燥等设施；200 千克/小时以下的手动及半自动液体乳灌装设备

24. 3 万吨/年以下酒精生产线（废糖蜜制酒精除外）

25. 等电离交工艺的谷氨酸生产线，5 万吨/年以下味精生产装置

26. 传统钙盐法柠檬酸生产装置

27. 年处理 15 万吨以下、总干物收率 97%以下的湿法玉米淀粉生产线（特种玉米淀粉生产线除外）

28. 桥式劈半锯、敞式生猪烫毛机等生猪屠宰设备

29. 猪、牛、羊、禽手工屠宰工艺

30. 小麦粉增白剂（过氧化苯甲酰、过氧化钙）的添加工艺

31. 元素氯漂白制浆工艺

32. 铅蓄电池生产用开放式熔铅锅、开口式铅粉机

33. 管式铅蓄电池干式灌粉工艺

34. 添加白砒、三氧化二锑、含铅、含氟（全电熔窑除外）、铬

矿渣及其他有害原辅材料的玻璃配合料

（十三）纺织

1. 使用时间达到30年的棉纺、毛纺、麻纺设备、机织设备

2. ZD647、ZD721型自动缫丝机，D101A型自动缫丝机，ZD681型立缫机，DJ561型绢精纺机，K251、K251A型丝织机等丝绸加工设备

3. Z114型小提花机

4. GE186型提花毛圈机

5. Z261型人造毛皮机

6. 未经改造的74型染整设备

7. 蒸汽加热敞开无密闭的印染平洗槽

8. R531型酸性粘胶纺丝机

9. 4万吨/年及以下粘胶常规短纤维生产线

10. 湿法氨纶生产工艺

11. 二甲基甲酰胺（DMF）溶剂法氨纶及腈纶生产工艺

12. 硝酸法腈纶常规纤维生产工艺及装置

13. 常规聚酯（PET）间歇法聚合生产工艺及设备

14. 常规涤纶长丝锭轴长900毫米及以下的半自动卷绕设备

15. 使用年限超过15年的国产和使用年限超过20年的进口印染前处理设备、拉幅和定形设备、圆网和平网印花机、连续染色机

16. 使用年限超过15年的浴比大于1：10的棉及化纤间歇式染色设备

17. 使用直流电机驱动的印染生产线

18. 印染用铸铁结构的蒸箱和水洗设备，铸铁墙板无底蒸化机，汽蒸预热区短的 L 型退煮漂履带汽蒸箱

19. 螺杆挤出机直径小于或等于 90mm，2000 吨/年以下的涤纶再生纺短纤维生产装置

（十四）印刷

1. 全部铅排、铅印工艺

2. 全部铅印机及相关辅机

3. 照相制版机

4. ZD201、ZD301 型系列单字铸字机

5. TH1 型自动铸条机、ZT102 型系列铸条机

6. ZDK101 型字模雕刻机

7. KMD101 型字模刻刀磨床

8. AZP502 型半自动汉文手选铸排机、ZSY101 型半自动汉文铸排机、TZP101 型外文条字铸排机、ZZP101 型汉文自动铸排机

9. QY401、2QY404 型系列电动铅印打样机，QYSH401、2QY401、DY401 型手动式铅印打样机

10. YX01、YX02、YX03 型系列压纸型机，HX01、HX02、HX03、HX04 型系列烘纸型机

11. PZB401 型平铅版铸版机，YZB02、YZB03、YZB04、YZB05、YZB06、YZB07 型系列铅版铸版机

12. JB01 型平铅版浇版机

13. RQ02、RQ03、RQ04 型系列铅泵熔铅炉

14. BB01 型刨版机，YGB02、YGB03、YGB04、YGB05 型圆铅版刮版机，YTB01 型圆铅版镗版机，YJB02 型圆铅版锯版机，YXB04、YXB05、YXB302 型系列圆铅版修版机

15. P401、P402 型系列四开平压印刷机，P801、P802、P803、P804 型系列八开平压印刷机

16. PE802 型双合页印刷机

17. TE102、TE105、TE108 型系列全张自动二回转平台印刷机

18. TY201 型对开单色一回转平台印刷机，TY401 型四开单色一回转平台印刷机

19. TY4201 型四开一回转双色印刷机

20. TT201、TZ201、DT201 型对开手动续纸停回转平台印刷机

21. TT202 型对开自动停回转平台印刷机，TT402、TT403、TT405、DT402 型四开自动停回转平台印刷机，TZ202 型对开半自动停回转平台印刷机，TZ401、TZS401、DT401 型四开半自动停回转平台印刷机

22. TR801 型系列立式平台印刷机

23. LP1101、LP1103 型系列平板纸全张单面轮转印刷机，LP1201 型平板纸全张双面轮转印刷机，LP4201 型平板纸四开双色轮转印刷机

24. LSB201（880mm×1230mm）及 LS201、LS204（787mm×1092 mm）型系列卷筒纸书刊转轮印刷机

25. LB203、LB205、LB403 型卷筒纸报版轮转印刷机，LB2405、LB4405 型卷筒纸双层二组报版轮转印刷机，LBS201 型卷筒纸书、报

二用轮转印刷机

26. K.M.T 型自动铸字排版机，PH-5 型汉字排字机

27. 球震打样制版机（DIA PRESS 清刷机）

28. 1985 年前生产的手动照排机、国产制版照相机

29. 离心涂布机

30. J1101 系列全张单色胶印机（印刷速度每小时 5000 张及以下）

31. J2101、PZ1920 系列对开单色胶印机（印刷速度每小时 4000 张及以下），PZ1615 系列四开单色胶印机（印刷速度每小时 4000 张及以下），YPS1920 系列双面单色胶印机（印刷速度每小时 4000 张及以下）

32. W1101 型全张自动凹版印刷机、AJ401 型卷筒纸单面四色凹版印刷机

33. DJ01 型平装胶订联动机，PRD-01、PRD-02 型平装胶订联动机，DBT-01 型平装有线订、包、烫联动机

34. 溶剂型即涂覆膜机、承印物无法降解和回收的各类覆膜机

35. QZ101、QZ201、QZ301、QZ401 型切纸机

36. MD103A 型磨刀机

（十五）民爆和烟花爆竹产品

1. 密闭式包装型乳化炸药基质冷却机

2. 密闭式包装型乳化炸药低温敏化机

3. 小直径手工单头炸药装药机

4. 轴承包覆在药剂中的混药、输送等炸药设备

5. 起爆药干燥工序采用蒸汽烘房干燥的工艺

6. 延期元件（体）制造工序采用手工装药的工艺

7. 雷管装填、装配工序及工序间的传输无可靠防殉爆措施的工艺

8. 导爆管制造工序加药装置无可靠防爆设施的生产线

9. 危险作业场所未实现远程视频监视的工业炸药和工业雷管生产线

10. 危险作业场所未实现远程视频监视的导爆索生产线

11. 采用传统轮碾方式的炸药制药工艺

12. 起爆药生产废水达不到《兵器工业水污染排放标准火工药剂》（GB14470.2）要求排放的生产工艺

13. 乳化器出药温度大于130℃的乳化工艺

14. 小直径含水炸药装药效率低于1200kg/h、小直径粉状炸药装药效率低于800kg/h的装药机

15. 有固定操作人员的场所，噪声超过85分贝以上的炸药设备

16. 全电阻极差大于1.5Ω的电雷管（钢芯脚线长度2m）生产技术

17. 装箱产品下线未实现生产数据在线采集、及时传输的生产线

18. 全电阻极差大于1.0Ω的电雷管（钢芯脚线长度2m）生产工艺

19. 工序间无可靠防传爆措施的导爆索生产线

20. 制索工序无药量在线检测、自动联锁保护装置的导爆索生产线

21. 最大不发火电流小于0.25A的普通型电雷管生产工艺

22. 雷管装填工序未实现人机隔离的生产工艺

23. 雷管卡口、检查工序间需人工传送产品的生产工艺

24. 年产1万吨及以下的低水平工业炸药生产线

25. 爆竹、组合烟花、喷花等产品的手工装药生产工艺

（十六）消防

1. 火灾探测器手工插焊电子元器件生产工艺

（十七）采矿

1. 集中铲装作业时人工装卸矿岩

2. 未安装捕尘装置的干式凿岩作业

3. 主要无轨运输巷道及露天采场采用人力或畜力运输矿岩

4. 地下矿山使用非阻燃电缆、风筒和输送带

5. 地下矿山主要井巷使用木支护

6. 地下矿山采用空场法采矿（无底柱采矿法）采场内人工装运作业

7. 地下矿山采用横撑支柱采矿法

8. 露天矿山采用扩壶爆破

9. 露天矿山采用掏底崩落、掏挖开采、不分层的“一面墙”开采

10. 露天矿山使用爆破方式对大块矿岩进行二次破碎

（十八）建筑

1. 现场简易制作钢筋保护层垫块工艺

2. 卷扬机钢筋调直工艺

3. 饰面砖水泥砂浆粘贴工艺

4. 竹（木）脚手架

5. 盖梁（系梁）无漏油保险装置的液压千斤顶卸落模板工艺

6. 空心板、箱型梁气囊内模工艺

7. 污水检查井砖砌工艺

8. 桥梁悬浇配重式挂篮设备

（十九）其他

1. 含有毒有害氰化物电镀工艺（电镀金、银、铜基合金及予镀铜打底工艺除外）

2. 含氰沉锌工艺

3. 实体坝连岛技术

4. 超过生态承载力的旅游活动和药材等林产品采集

5. 不符合国家现行城市生活垃圾、医疗废物和工业废物焚烧相关污染控制标准、工程技术标准以及设备标准的小型焚烧炉

6. 虚拟货币“挖矿”活动

7. 以医疗废物为原料制造塑料制品

8. 一段式固定煤气发生炉（2023 年 12 月 31 日）

9. 国家法律法规明令淘汰，不符合生态环境准入清单要求，不符合国家安全、环保、能耗、水耗、质量方面强制性标准，不符合国际环境公约等要求的落后生产工艺装备

二、落后产品

（一）石化化工

1. 改性淀粉、改性纤维、多彩内墙（树脂以硝化纤维素为主，溶剂以二甲苯为主的O/W型涂料）、氯乙烯-偏氯乙烯共聚乳液外墙、焦油型聚氨酯防水、水性聚氯乙烯焦油防水、聚乙烯醇及其缩醛类内外墙（106、107涂料等）、聚醋酸乙烯乳液类（含乙烯/醋酸乙烯酯共聚物乳液）外墙涂料

2. 有害物质含量超标准的内墙、溶剂型木器、玩具、汽车、外墙涂料，含双对氯苯基三氯乙烷、三丁基锡、全氟辛酸及其盐类、全氟辛烷磺酸、红丹等有害物质的涂料

3. 在还原条件下会裂解产生24种有害芳香胺的偶氮染料（非纺织品用的领域暂缓）、九种致癌性染料（用于与人体不直接接触的领域暂缓）

4. 含苯类、苯酚、苯甲醛和二（三）氯甲烷的脱漆剂，立德粉，聚氯乙烯建筑防水接缝材料（焦油型），107胶，瘦肉精，多氯联苯（变压器油）

5. 高毒农药产品：六六六、二溴乙烷、丁酰肼、敌枯双、除草醚、杀虫脒、毒鼠强、氟乙酰胺、氟乙酸钠、二溴氯丙烷、治螟磷（苏化203）、磷胺、甘氟、毒鼠硅、甲胺磷、对硫磷、甲基对硫磷、久效磷、硫环磷（乙基硫环磷）、福美胂、福美甲胂及所有砷制剂、汞制剂、铅制剂、草甘膦含量在30%以下的水剂，甲基硫环磷、磷化钙、磷化锌、苯线磷、地虫硫磷、磷化镁、硫线磷、蝇毒磷、治螟磷、特丁硫磷、甲拌磷、2,4-滴丁酯、甲基异柳磷、水胺硫磷、灭线磷、壬基酚（农药助剂）、三氯杀螨醇、氯磺隆、胺苯磺隆

6. 根据国家履行国际公约总体计划要求进行淘汰的产品：氯丹、七氯、溴甲烷、滴滴涕、六氯苯、灭蚁灵、林丹、毒杀芬、艾氏剂、狄氏剂、异狄氏剂、硫丹、氟虫胺、十氯酮、α-六氯环己烷、β-六氯环己烷、六氯丁二烯、多氯联苯、五氯苯、六溴联苯、四溴二苯醚和五溴二苯醚、六溴二苯醚和七溴二苯醚、六溴环十二烷、全氟辛基磺酸及其盐类和全氟辛基磺酰氟、全氟己基磺酸（PFHxS）及其盐类和相关化合物、全氟辛酸（PFOA）及其盐类和相关化合物、十溴二苯醚、短链氯化石蜡、五氯苯酚及其盐类和酯类、多氯萘（豁免用途为限制类）

7. 软边结构自行车胎，以棉帘线为骨架材料的普通输送带和以尼龙帘线为骨架材料的普通 V 带，轮胎、自行车胎、摩托车胎手工刻花硫化模具

（二）铁路

1. G60 型、G17 型罐车，P62 型棚车，K13 型矿石车，U60 型水泥车，N16 型、N17 型平车，L17 型粮食车，C62A 型、C62B 型敞车，轨道平车（载重 40 吨及以下）

（三）钢铁

1. 热轧硅钢片

2. 普通松弛级别的钢丝、钢绞线

3. 热轧钢筋：牌号 HRB335、HPB235

4. 使用工频或中频感应炉熔化废钢生产的钢坯（锭），及以其为原料生产的钢材产品（根据国家法律法规和国家取缔料生产的钢有关

要求淘汰）

5. 土烧结矿，热烧结矿

（四）有色金属

1. 铜线杆（黑杆）

（五）建材

1. 使用非耐碱玻纤或非低碱水泥生产的玻纤增强水泥（GRC）空心条板

2. 陶土坩埚、陶瓷坩埚及其它非铂金材质坩埚拉丝玻璃纤维和制品及其增强塑料（玻璃钢）制品

3. 25A 空腹钢窗

4. S-2 型混凝土轨枕

5. 一次冲洗最大用水量 8 升以上的坐便器

6. 角闪石石棉（即蓝石棉）

7. 非机械生产的中空玻璃、双层双框各类门窗及单腔结构型的塑料门窗

8. 采用二次加热复合成型工艺生产的聚乙烯丙纶类复合防水卷材、聚乙烯丙纶复合防水卷材（聚乙烯芯材厚度在 0.5mm 以下），棉涤玻纤（高碱）网格复合胎基材料、聚氯乙烯防水卷材（S 型）

9. 含石棉的摩擦材料

（六）医药

1. 铅锡软膏管、单层聚烯烃软膏管（肛肠、腔道给药除外）

2. 安瓿灌装注射用无菌粉末

3. 药用天然胶塞

4. 非易折安瓿

5. 输液用聚氯乙烯（PVC）软袋（不包括腹膜透析液、冲洗液用）

（七）机械

1. T100、T100A 推土机

2. ZP-II、ZP-III 干式喷浆机

3. WP-3 挖掘机

4. 0.35 立方米以下的气动抓岩机

5. 矿用钢丝绳冲击式钻机

6. 直径 1.98 米水煤气发生炉

7. CER 膜盒系列

8. 热电偶（分度号 LL-2、LB-3、EU-2、EA-2、CK）

9. 热电阻（分度号 BA、BA2、G）

10. DDZ-I 型电动单元组合仪表

11. GGP-01A 型皮带秤

12. BLR-31 型称重传感器

13. WFT-081 辐射感温器

14. WDH-1E、WDH-2E 光电温度计，PY5 型数字温度计

15. BC 系列单波纹管差压计，LCH-511、YCH-211、LCH-311、YCH-311、LCH-211、YCH-511 型环称式差压计

16. EWC-01A 型长图电子电位差计

17. XQWA 型条形自动平衡指示仪

18. ZL3 型 X-Y 记录仪

19. DBU-521，DBU-521C 型液位变送器

20. YB 系列（机座号 63～355mm，额定电压 660V 及以下）、YBF 系列（机座号 63～160mm，额定电压 380、660V 或 380/660V）、YBK 系列（机座号 100～355mm，额定电压 380/660V、660/1140V）隔爆型三相异步电动机

21. DZ10 系列塑壳断路器、DW10 系列框架断路器

22. CJ8 系列交流接触器

23. QC10、QC12、QC8 系列起动器

24. JR0、JR9、JR14、JR15、JR16-A、B、C、D 系列热继电器

25. 以焦炭为燃料的有色金属熔炼炉

26. GGW 系列中频无心感应熔炼炉

27. B 型、BA 型单级单吸悬臂式离心泵系列

28. F 型单级单吸耐腐蚀泵系列

29. JD 型长轴深井泵

30. KDON-3200/3200 型蓄冷器全低压流程空分设备、KDON-1500/1500 型蓄冷器（管式）全低压流程空分设备、KDON-1500/1500 型管板式全低压流程空分设备、KDON-6000/6600 型蓄冷器流程空分设备

31. 3W-0.9/7（环状阀）空气压缩机

32. C620、CA630 普通车床

33. C616、C618、C630、C640、C650 普通车床

34. X920 键槽铣床

35. B665、B665A、B665-1 牛头刨床

36. D6165、D6185 电火花成型机床

37. D5540 电脉冲机床

38. J53-400、J53-630、J53-1000 双盘摩擦压力机

39. Q11-1.6×1600 剪板机

40. Q51 汽车起重机

41. 3 吨直流架线式井下矿用电机车

42. A571 单梁起重机

43. 快速断路器：DS3-10、DS3-30、DS3-50（1000、3000、5000A）、DS10-10、DS10-20、DS10-30（1000、2000、3000A）

44. SX 系列箱式电阻炉

45. 单相电度表：DD1、DD5、DD5-2、DD5-6、DD9、DD10、DD12、DD14、DD15、DD17、DD20、DD28

46. SL7-30/10～SL7-1600/10、S7-30/10～S7-1600/10 配电变压器

47. 刀开关：HD6、HD3-100、HD3-200、HD3-400、HD3-600、HD3-1000、HD3-1500

48. GC 型低压锅炉给水泵，DG270-140、DG500-140、DG375-185 锅炉给水泵

49. 热动力式疏水阀：S15H-16、S19-16、S19-16C、S49H-16、S49-16C、S19H-40、S49H-40、S19H-64、S49H-64

50. 固定炉排燃煤锅炉

51. L-10/8、L-10/7 型动力用往复式空气压缩机

52. 8-18 系列、9-27 系列高压离心通风机

53. X52、X62W 320×150 升降台铣床

54. J31-250 机械压力机

55. TD60、TD62、TD72 型固定带式输送机

56. E135 二冲程中速柴油机（包括 2、4、6 缸三种机型），4146 柴油机

57. TY1100 型单缸立式水冷直喷式柴油机

58. 165 单缸卧式蒸发水冷、预燃室柴油机

59. 含汞开关和继电器

60. 燃油助力车

61. 低于国二排放的车用发动机

62. 机动车制动用含石棉材料的摩擦片

63. 非定型竖井罐笼，Φ1.2 米以下（不含Φ1.2 米）用于升降人员的提升绞车，KJ 型矿井提升机，JKA 型矿井提升机，XKT 型矿井提升机，JTK 型矿用提升绞车，带式制动矿用提升绞车，TKD 型提升机电控装置及使用继电器结构原理的提升机电控装置，专门用于运输人员、油料的无轨胶轮车使用的干式制动器，无稳压装置的中深孔凿岩设备

64. 每小时 10 蒸吨及以下燃煤锅炉

65. 国三及以下排放标准营运柴油货车，采用稀薄燃烧技术和“油改气”的老旧燃气车辆

66. 每小时 2 蒸吨及以下生物质锅炉

67. 燃煤热风炉

68. 大气污染防治重点区域全面淘汰炉膛直径 3 米以下的燃料类煤气发生炉及间歇式固定床煤气发生炉（合成氨生产除外）

69. 无机盐制造中内燃式电石炉及单台炉容量小于 20000 千伏安以下的密闭电石炉

70. 每小时 35 蒸吨及以下的燃煤锅炉（大气污染防治重点区域）

71. 直径 3.2 米以下水泥磨机（含矿粉磨机）

（八）船舶

1. 采用单件组装式整体造船法建造的钢质运输船舶

2. 不符合规范的改装船舶和已到报废期限的船舶

3. 单壳油船

（九）轻工

1. 汞电池（氧化汞原电池及电池组、锌汞电池）

2. 含汞糊式锌锰电池、含汞纸板锌锰电池、含汞圆柱型碱锰电池、含汞扣式碱锰电池、含汞扣式锌氧化银电池和锌空气电池

3. 含汞浆层纸、含汞锌粉

4. 开口式普通铅蓄电池、干式荷电铅蓄电池

5. 含镉高于 0.002%的铅蓄电池

6. 含砷高于 0.1%的铅蓄电池

7. 民用镉镍电池

8. 直排式燃气热水器

9. 螺旋升降式（铸铁）水嘴

10. 用于凹版印刷的苯胺油墨

11. 进水口低于溢流口水面、上导向直落式便器水箱配件

12. 铸铁截止阀

13. 半自动（卧式）工业用洗衣机

14. 开启式四氯乙烯干洗机和普通封闭式四氯乙烯干洗机，分体式石油干洗机和普通封闭式石油干洗机

15. 烷基酚聚氧乙烯醚（包括壬基酚聚氧乙烯醚、辛基酚聚氧乙烯醚和十二烷基酚聚氧乙烯醚等）的生产和使用

16. 一次性发泡塑料餐具、一次性塑料棉签；含塑料微珠的日化用品；厚度低于0.025毫米的超薄型塑料袋；厚度低于0.01毫米的聚乙烯农用地膜

17. 用于电子显示的冷阴极荧光灯和外置电极荧光灯：（1）长度较短（≤500毫米）且单支含汞量超过3.5毫克；（2）中等长度（＞500毫米且≤1500毫米）且单支含汞量超过5毫克；（3）长度较长（＞1500毫米）且单支含汞量超过13毫克；（4）上述列明的产品以外的各种长度的用于电子显示的冷阴极荧光灯和外置电极荧光灯

18. 化妆品（含汞量超过百万分之一），包括亮肤肥皂和乳霜，不包括以汞为防腐剂且无有效安全替代防腐剂的眼部化妆品

19. 生产含汞的气压计、湿度计、压力表、温度计（体温计除外）等非电子测量仪器（无法获得适当无汞替代品、安装在大型设备中或用于高精度测量的非电子测量设备除外）

20. 含汞体温计和含汞血压计（2025 年 12 月 31 日）

21. 含汞电池，不包括含汞量低于 2%的扣式锌氧化银电池以及含汞量低于 2%的扣式锌空气电池

22. 用于普通照明用途的不超过 30 瓦且单支含汞量超过 5 毫克的紧凑型荧光灯

23. 用于普通照明用途的直管型荧光灯：（1）低于 60 瓦且单支含汞量超过 5 毫克的直管型荧光灯（使用三基色荧光粉）（2）低于 40 瓦（含 40 瓦）且单支含汞量超过 10 毫克的直管型荧光灯（使用卤磷酸盐荧光粉）

24. 用于普通照明用途的高压汞灯

25. 以一氟二氯乙烷（HCFC-141b）为发泡剂生产冰箱冷柜产品、冷藏集装箱产品、电热水器产品

26. 含二甲苯麝香的日用香精

（十）消防

1. 二氟一氯一溴甲烷灭火剂（简称 1211 灭火剂）、灭火系统及设备

2. 三氟一溴甲烷灭火剂（简称 1301 灭火剂）、灭火系统及设备（原料及必要用途除外）

3. PVC 衬里消防水带

（十一）民爆和烟花爆竹产品

1. 导火索

2. 铵梯炸药

3. 纸壳雷管

4. 含起爆药等敏感药剂成分的烟火药及烟花爆竹产品

（十二）建筑

1. 氧化钠当量含量大于1.0%且小于生产厂控制值的有碱速凝剂

（十三）其他

1. 59、69、72、TF-3型防毒面具

2. ZH15隔绝式化学氧自救器，一氧化碳过滤式自救器

3. 国家法律法规明令淘汰，不符合生态环境准入清单要求，不符合国家安全、环保、能耗、水耗、质量方面强制性标准，不符合国际环境公约等要求的落后产品