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The Ministry of Industry and Information Technology and other six departments issued the "Guiding Opinions on Promoting the High-quality Development of the Petrochemical Industry in the 14th Five-Year Plan"

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Today, the Ministry of Industry and Information Technology and other six departments jointly issued the "Guiding Opinions on Promoting the High-quality Development of the Petrochemical Industry in the 2022th Five-Year Plan" (Lianyuan [34] No. 2025), which provides more macro and comprehensive guidance for China's petrochemical industry to better adapt to the new requirements of green, low-carbon and high-quality development and continue to further promote supply-side structural reform. It is required that by 2035, the petrochemical industry will basically form a high-quality development pattern with strong independent innovation ability, reasonable industrial structure, high digital level, green, low-carbon and safety, and the guarantee capacity of high-end chemical products such as new materials and fine chemicals will be greatly improved, and the core competitiveness will be significantly enhanced. In the important window period of industry transformation and development, the release of the document is of great significance for China's petrochemical industry to achieve the progress of from a large country to a strong country.

Entrusted by the Department of Raw Material Industry of the Ministry of Industry and Information Technology, in 2021, the Petroleum and Chemical Industry Planning Institute established a special research group on the guiding opinions on promoting the high-quality development of the petrochemical industry in the 14th Five-Year Plan, and participated in the "14th Five-Year Plan" to promote the high-quality development of the petrochemical industry, the "Guiding Opinions" was officially released, and the Petroleum and Chemical Industry Planning Institute will continue to carry out relevant analysis and interpretation work, and strive to provide some valuable references for the development of the industry and enterprises.



The Ministry of Industry and Information Technology and other six departments jointly issue guiding opinions on promoting the high-quality development of the petrochemical industry during the 14th Five-Year Plan

Ministry of Industry and Information Technology, National Development and Reform Commission, Ministry of Science and Technology, Ministry of Ecology and Environment, Ministry of Emergency Management, National Energy Administration

Guiding opinions on promoting the high-quality development of the petrochemical industry in the 14th Five-Year Plan

The petrochemical industry is a pillar industry of the national economy, with a large economic aggregate, a long industrial chain, a wide range of products, and wide correlation coverage, which is related to the safety and stability of the industrial chain and supply chain, green and low-carbon development, and the improvement of people's livelihood. In order to implement the Outline of the 14th Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Long-Range Goals for 2035, implement the 14th Five-Year Plan for the Development of the Raw Materials Industry, and promote the high-quality development of the petrochemical industry, these Opinions are formulated.

1. General requirements

(1) Guiding ideology

Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, fully implement the spirit of the 19th National Congress of the Communist Party of China and the 19th Plenary Session, base on the new development stage, complete, accurate and comprehensive implementation of the new development concept, build a new development pattern, take promoting high-quality development as the theme, deepen supply-side structural reform as the main line, meet the needs of the people for a better life as the fundamental purpose, take reform and innovation as the fundamental driving force, coordinate development and security, accelerate the transformation and upgrading of traditional industries, and vigorously develop new chemical materials and fine chemicals. Accelerate the digital transformation of the industry, improve the level of intrinsic safety and clean production, accelerate the quality, efficiency and power transformation of the petrochemical industry, and promote China's progress from a petrochemical country to a strong country.

(2) Basic principles

Adhere to market leadership. Give full play to the decisive role of the market in the allocation of resources, give better play to the role of the government, strengthen the guidance and standardization of planning policy standards, and maintain the order of fair competition.

Adhere to innovation-driven. Focus on self-reliance and self-improvement in science and technology, promote key core technology research, promote the safety and stability of the industrial chain and supply chain, improve total factor productivity, and improve development quality and efficiency.

Adhere to green safety. Establish bottom-line thinking, strengthen social responsibility care, improve the level of intrinsic safety, promote green cycle and low-carbon development, and strengthen industry governance systems and governance capacity building.

Adhere to open cooperation. Create a market-oriented, rule-of-law, and international business environment, adhere to high quality introduction and high-level going out, promote the efficient global allocation of factor resources, and strengthen the upstream and downstream coordination of the industrial chain and the coupling development between relevant industries.

(3) Main objectives

By 2025, the petrochemical industry will basically form a high-quality development pattern with strong independent innovation ability, reasonable structural layout, green, safe and low-carbon, high-end product guarantee capacity will be greatly improved, core competitiveness will be significantly enhanced, and high-level self-reliance and self-improvement will take solid steps.

——Innovation and development. The original innovation and integrated innovation capabilities will continue to increase, and by 2025, the proportion of R&D investment in the main business income of enterprises above the regulations will reach more than 1.5%; Break through more than 20 key common technologies and more than 40 key new products.

- Industrial structure. The concentration of bulk chemical products production has been further improved, and the capacity utilization rate has reached more than 80%; The guarantee level of ethylene equivalent has been greatly improved, and the guarantee level of new chemical materials has reached more than 75%.

- Industrial layout. The task of relocation and transformation of hazardous chemical production enterprises in densely populated urban areas has been fully completed, forming about 70 chemical parks with competitive advantages. By 2025, the output value of chemical parks will account for more than 70% of the total output value of the industry.

- Digital transformation. The self-control rate of major production equipment of enterprises in key fields such as petrochemical and coal chemical industry has reached more than 95%, and about 30 intelligent manufacturing demonstration factories and 50 intelligent chemical demonstration parks have been built.

- Green and safe. The energy consumption and carbon emissions per unit of bulk products have decreased significantly, the total volatile organic compound emissions have been reduced by more than 10% compared with the "13th Five-Year Plan", the intrinsic safety level has been significantly improved, and the safety accidents of heavy and extraordinarily large production have been effectively curbed.

Second, improve the level of innovation and development

(1) Improve the innovation mechanism and form a "three-in-one" collaborative innovation system. Strengthen the main position of enterprise innovation, accelerate the construction of a "trinity" innovation system of key laboratories, innovation centers in key fields, and common technology research and development institutions, and promote the deep integration of production, education, research and application. Optimize and integrate industry-related R&D platforms, create innovation centers in the fields of high-end polyolefins, high-performance engineering plastics, high-performance film materials, biomedic materials, carbon dioxide capture and utilization, strengthen the role of national new material production and application demonstration, test evaluation, test and testing and other platforms, and promote common technological innovation such as catalytic materials, process strengthening, polymer material structure characterization and processing application technology and equipment. Support enterprises to take the lead in establishing collaborative innovation organizations such as industrial technology innovation alliances and upstream and downstream cooperation mechanisms, and support local rational layout and construction of regional innovation centers and pilot bases.

(2) Conquer core technologies and enhance the momentum of innovation and development. Accelerate breakthroughs in key technologies such as new catalysis, green synthesis, functional-structure integration polymer material manufacturing, and large-scale application of "green hydrogen", lay out cutting-edge technologies such as short-process preparation of basic chemicals, intelligent biomimetic materials, and new energy storage materials, and consolidate and improve process enhancement technologies such as micro-reaction continuous flow, reaction-separation coupling, efficient purification and concentration, plasma, and supergravity field. Focus on the needs of major projects, break through the manufacturing technology of important equipment and parts such as special structure reactors, high-power electric heating furnaces, large-scale special pumps, valves, control systems, etc., and strive to develop and promote perception technologies such as online detection of process parameters, online rapid identification and determination of physical structures, as well as control technologies such as process control software, whole-process intelligent control systems, fault diagnosis and predictive maintenance.

(3) Implement the "three products" action to improve the quality of chemical product supply. Focusing on the new generation of information technology, biotechnology, new energy, high-end equipment and other strategic emerging industries, increase the variety and specifications of organofluorosilicon, polyurethane, polyamide and other materials, and accelerate the development of high-end polyolefins, electronic chemicals, industrial special gases, high-performance rubber and plastic materials, high-performance fibers, bio-based materials, special lubricating greases and other products. Actively layout new product development such as shape memory polymer materials, metal-organic framework materials, high-efficiency separation media for metal elements, and reaction-separation integrated membrane devices. Increase the proportion of green products in fertilizers, tires, coatings, dyes, adhesives and other industries. Encourage enterprises to improve quality and cultivate and create brands.

3. Promote industrial restructuring

(4) Strengthen categorical policies and scientifically regulate the scale of the industry. Orderly promote the "oil reduction and increase" of refining and chemical projects, and extend the petrochemical industry chain. Enhance the supply capacity of high-end polymers, specialty chemicals and other products. Strictly control the new production capacity of oil refining, ammonium phosphate, calcium carbide, yellow phosphorus and other industries, prohibit the construction of new mercury-using (poly) vinyl chloride production capacity, and accelerate the withdrawal of inefficient and backward production capacity. Promote the high-end, diversified and low-carbon development of the coal chemical industry, and develop modern coal chemical industry in a sound and orderly manner in accordance with the requirements of ecological priority, water-based production, total volume control and agglomeration development.

(5) Accelerate transformation and upgrading to improve the competitiveness of the industry. Dynamically update the catalogue of technologies and products that the petrochemical industry encourages to promote and apply, encourage the use of advanced and applicable technologies to implement safety, energy saving, emission reduction, low-carbon and other transformations, and promote intelligent manufacturing. Guide the lightweight of olefin raw materials, optimize the structure of aromatic raw materials, and improve the utilization level of by-product resources such as carbon five and carbon nine. Accelerate the extension of coal-to-chemicals to new chemical materials, coal-to-oil and gas to special fuels, high-end chemicals and other high value-added products, and focus on improving the level of quality control.

4. Optimize and adjust the industrial layout

(6) Coordinate the layout of projects and promote coordinated regional development. According to land and spatial planning, ecological environment zoning control and major national strategic arrangements, coordinate the layout of major projects, and promote the concentration of new petrochemical projects in chemical parks with good matching of raw materials and clean energy, rich environmental capacity, energy conservation, environmental protection and low carbon. Promote the transformation and upgrading of modern coal chemical industry demonstration zones, steadily promote the construction of coal-to-oil and gas strategic bases, and build industrial demonstration bases with efficient utilization of raw materials, integration of resource elements, coordinated pollution reduction and carbon reduction, advanced and mature technology, and high-end product series. Continue to promote the relocation and transformation of hazardous chemical production enterprises in densely populated urban areas. Implement the requirements for promoting the development of the Yangtze River Economic Belt, ecological protection and high-quality development in the Yellow River Basin, and promote the scientific layout and orderly transfer of petrochemical projects in the Yangtze River and Yellow River Basins.

(7) Guide chemical projects to enter the park and promote the development of high-level agglomeration. Promote the standardized development of chemical parks, use comprehensive standards in accordance with laws and regulations to force parks to prevent and resolve safety and environmental risks, accelerate the construction of infrastructure such as pollution prevention and control in parks, strengthen the investigation and rectification of sewage pipe networks in parks, and improve the level of intrinsic safety and clean production. Guide the circular production and industrial coupling development of enterprises in the park, encourage the dislocation and differentiated development of chemical parks, and coordinate with metallurgy, building materials, textiles, electronics and other industries. Encourage chemical parks to build scientific and technological innovation and scientific research achievement incubation platforms and intelligent management systems. Strictly implement the catalogue of "prohibition, restriction and control" of hazardous chemicals, and new hazardous chemical production projects must enter chemical parks with general or low safety risks (except for projects that are built with production equipment in other industries) and guide the development of other petrochemical projects in chemical parks.

5. Promote the digital transformation of industries

(5) Accelerate the collaborative innovation and application of new technologies and models, and create a distinctive platform. Accelerate the integration of 3G, big data, artificial intelligence and other new-generation information technologies with the petrochemical industry, continuously enhance the ability to obtain chemical process data, enrich data on production management, process control, product flow and other aspects of enterprises, smoothly connect production and operation information and data "islands", build analysis models such as production and operation, market and supply chain, strengthen the

integrated management and control of the whole process, promote the innovative application of digital twins, and accelerate digital transformation. Build 5- < > industry-oriented professional industrial Internet platforms, and guide small and medium-sized chemical enterprises to accelerate digital transformation of process equipment, safety and environmental protection with the help of the platform. Build an industrial chain monitoring and lean service system based on the industrial Internet around bulk products related to people's livelihood safety such as fertilizers and tires.

(9) Promote demonstration and guidance, and strengthen the empowerment of the industrial Internet. Issued guidelines for the construction of intelligent manufacturing standard systems in the petrochemical industry, and compiled standards for smart factories and smart parks. According to the characteristics of the industry, build and select a number of digital workshops, smart factories, and smart park benchmarks. Establish an intelligent manufacturing industry alliance in the petrochemical and chemical industries, cultivate internationally competitive intelligent manufacturing system solution providers, and improve service capabilities such as digital simulation of chemical processes and remote diagnosis and operation and maintenance of large-scale units. Based on intelligent manufacturing, promote the flexible production mode of multi-variety and small-batch chemical products to better adapt to the customized and differentiated needs. Implement the classified and hierarchical management of network security of industrial Internet enterprises in the petrochemical industry, promote the application of commercial cryptography, and improve the level of security protection.

6. Accelerate green and low-carbon development

(10) Give full play to the advantages of carbon fixed carbon consumption, and coordinate to promote carbon emission reduction in the industrial chain. Orderly promote energy conservation and carbon reduction in key areas of the petrochemical industry, and improve the energy efficiency level of the industry. Prepare a catalogue of high-carbon products, and steadily regulate the export of some high-carbon products. Improve the utilization level of medium and low-grade heat energy, promote the electrification of energy-using facilities, reasonably guide fuel to "replace coal with gas", and appropriately increase the proportion of hydrogen-rich raw materials. Petrochemical enterprises are encouraged to develop and utilize "green hydrogen" in a reasonable and orderly manner in accordance with local conditions, promote the coupling demonstration of refining and chemical industry with "green electricity" and "green hydrogen", and carry out large-scale carbon dioxide capture, storage, oil displacement and chemical production demonstrations by taking advantage of the high purity and low cost of carbon dioxide emission from refining and coal chemical plants. Accelerate the development and application of energy-saving and carbon-reduction technologies such as direct cracking of crude oil to ethylene, one-step synthesis of olefins, and intelligent continuous micro-reaction to prepare chemical products.

(11) Focus on the development of clean production and green manufacturing, and cultivate and expand biochemical industry. Roll out the identification of green processes, green products, green factories, green supply chains and green parks, and build a green manufacturing system throughout the life cycle. Encourage enterprises to adopt cleaner production technology and equipment transformation and upgrading, and promote the "reduction" of industrial waste from the source. Promote the treatment of volatile organic compound pollution in the whole process, increase the treatment of wastewater containing salt and high ammonia nitrogen, promote the environmental protection and rectification of soda ash waste residue and waste liquid produced by ammonia alkali method, improve the utilization and disposal capacity of waste catalysts, waste acids, waste salts and other hazardous wastes, and promote the production of (poly)vinyl chloride without mercury. Actively develop biochemical industry, encourage the development of enzyme species required for biomass utilization and biorefinery based on biological resources, and promote new biological strains; Strengthen the connection between bio-based bulk chemicals and the existing chemical materials industry chain, develop eco-friendly bio-based materials, and realize the partial replacement of traditional petroleum-based products. Strengthen the research and development and application of green alternatives to toxic and harmful chemicals, and prevent and control the environmental risks of new pollutants.

(12) Promote the coupling development of industries and improve the efficiency of resource recycling. Promote the coupling development of petrochemical chemical industry and building materials, metallurgy, energy conservation and environmental protection, and improve the comprehensive utilization level of solid waste such as phosphogypsum, titanium gypsum, fluoride gypsum, desulfurization gypsum and other industrial by-products gypsum, calcium carbide slag, alkali slag, fly ash and so on. Encourage enterprises to strengthen the resource utilization and harmless disposal of phosphorus and potassium-associated resources, industrial waste salt, mine tailings, yellow phosphorus tail gas, calcium carbide furnace gas, and refinery balance tail gas. Orderly development and scientific promotion of biodegradable plastics, and promote the recycling and recycling of waste chemical materials such as waste plastics and waste rubber.

7. Consolidate the foundation for safe development

(13) Promote advanced technology management and improve the level of intrinsic safety. Consolidate the main responsibility for safe production, promote the implementation of responsible care, support enterprises and parks to improve the level of refined operation and management, establish and improve the health and safety environment (HSE) management system, hierarchical safety risk management and control, and hidden danger investigation and management dual prevention mechanisms, establish and improve fire fighting and rescue forces, and improve emergency response capabilities. Continue to

carry out the construction of "industrial Internet + safe production" in hazardous chemical enterprises, and promote the implementation of the "Global Unified Chemical Classification and Labeling System" (GHS). Encourage enterprises to adopt advanced and applicable technologies such as micro-reaction, online rapid detection of gas leakage, etc., eliminate or reduce the level of hazards, and promote the safe transformation and replacement of high-risk processes.

(14) Strengthen the guarantee of raw material resources and maintain the safety and stability of the industrial chain and supply chain. Expand the supply channels of petrochemical raw materials, build a domestic solid foundation, international diversified and stable supply system, and moderately increase the import of light, low-carbon, hydrogen-rich raw materials. In accordance with the principle of marketization, promote international cooperation in the development of potash and other resources. Strengthen the exploration of domestic potassium resources, and actively promote the development of high-efficient mining and selection technologies for medium and low-grade phosphate ore and efficient utilization of non-water-soluble potassium resources. Take multiple measures to promote the reduction, recycling, and harmlessness of phosphogypsum, and steadily promote the "slag-based production" of phosphorus chemical industry. Strengthen the guarantee of fertilizer production factors, improve production concentration and capacity utilization rate of backbone enterprises, and ensure the stable supply of fertilizer. Conservation mining of fluorite resources, encourage the development and utilization of associated fluorine resources

8. Strengthen organizational safeguards

(15) Strengthen organizational implementation. Relevant local departments should combine local realities, incorporate key tasks into their key work, strengthen supervision during and after the event, and coordinate and promote the implementation of tasks. Relevant enterprises should combine their own actual conditions, in accordance with the main objectives and key tasks, pragmatically promote relevant work, and disclose environmental information in accordance with the law. Relevant industry organizations should play the role of bridges, actively serve and guide, and strengthen industry self-discipline. Strengthen public publicity and interpretation, actively respond to public opinion and the reasonable concerns of the public, and effectively enhance the public's scientific and rational understanding of petrochemical chemicals.

(16) Improve supporting policies. Strengthen the coordination of fiscal, financial, regional, investment, import and export, energy, ecological environment, price and other policies with industrial policies. Give play to the role of the national industry integration as a platform, and promote the docking of banks and enterprises and the integration of industry. Strengthen intellectual property protection. Strengthen the training of chemical professionals and employees. Promote the demonstration and application of the first (set) equipment and the first batch of secondary materials.

(17) Complete the standard system. Establish and improve the standard system for new chemical materials, especially modified special materials, fine chemicals, especially special chemicals, bio-based materials, biodegradable plastics, recycled plastic materials evaluation and labeling management system, and green energy use monitoring and evaluation system. Improve the energy consumption limit, the limit of toxic and harmful chemical substances and the pollutant discharge limit of key products. Explore the revision of carbon emission accounting and low-carbon product evaluation standards based on carbon footprint system. Participate in the formulation of global standard rules and strengthen the evaluation and transformation of international standards.

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