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Notice of the Provincial Department of Economy and Information Technology on printing and distributing the "14th Five-Year Plan" for the high-quality development of modern industry in Hubei Province

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Economic and information bureaus of cities, prefectures and counties,
and relevant departments of provinces:

The "14th Five-Year Plan for the High-quality Development of
Modern Industry in Hubei Province" is now issued to you, please
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Practical, conscientious implementation.

Department of Economy and
Information Technology of Hubei Province

December 2021, 12

Hubei Province's "14th Five-Year Plan" for the high-quality development of modern industry

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In order to implement the requirements of the 2021th Five-Year Plan for National Economic and Social Development of Hubei Province and the Long-term Goals for 2025 and the <>th Five-Year Plan for the High-quality Development of Manufacturing Industry in Hubei Province, accelerate the implementation of the strategy of innovation-driven, green development and circular economy, strive to build a trillion-level modern industrial industry (covering the petroleum and chemical industries), and provide industrial support for accelerating the "building a fulcrum, walking in the forefront and writing a new chapter", this plan has been compiled. The planning period is <>-<>.

Chapter I: Foundations for Development

Since the "Thirteenth Five-Year Plan", the modern industrial industry in our province has resolutely implemented the spirit of "jointly grasping the great protection and not engaging in large-scale development", adhered to ecological priority and green development, strictly controlled the new excess production capacity, promoted the withdrawal of backward production capacity in accordance with laws and regulations, vigorously developed petrochemical, modern coal chemical and fine chemicals, actively cultivated high-end manufacturing industries such as new chemical materials, advanced phosphorus chemicals and special chemicals, achieved remarkable results in clean production and green development of the industry, significantly improved operating conditions and profitability, and continuously enhanced the momentum of transformation and upgrading and technological innovation.

1. Development status

Economies of scale continue to improve. During the "Thirteenth Five-Year Plan" period, the total economic volume of the whole industry continued to grow, and there were 1112,2016 chemical enterprises in the province, and the industrial added value increased by 2019.8%, 7.4%, 9.4% and 7.8% respectively from 3 to 2020, and decreased by 6.3% year-on-year in 3; Sales revenue increased by 8.11%, 2.8%, 1.3% and 7.2020%, respectively, and decreased by 12.9% year-on-year in 2019. In 5322, it achieved sales revenue of 5.7 billion yuan, ranking 2th in the country and 2020nd in central China, and achieved sales revenue of 4641.<> billion yuan in <>, making it an important petroleum and chemical industry production base in central China.

Advantageous products are leading in the country. Since the "Thirteenth Five-Year Plan", a number of petrochemical products in our province have a high market share, and the production capacity and output of some products have reached the highest in the country and even the world. Such as benzyl benzoate, benzyl alcohol, benzoic acid, pentaerythritol, H acid, para-ester, food pentasodium and other products output ranked first in the world, glyphosate product output ranked second in the world, China first, reactive dye intermediates, silicone monomer and other products ranked first in Asia, fertilizer, phosphate

fertilizer, fine phosphate and other products ranked first in China, sulfuric acid, pesticides, soda ash, polypropylene and polyvinyl chloride resin are in the forefront of the country.

Table 1: Output table of main petrochemical products in Hubei Province (<>, <> tons, <>, <> pieces).

Product name	In 2019	In 2020
Crude oil processing volume	1510	1268.5
ethylene	90	69.8
sulphuric acid	849	837.6
Synthetic ammonia	345	393.8
Phosphate ore	2355	2023
Fertilizer (purified), where:	745.9	850.7
Nitrogen fertilizer (purified)	243	238.1
Phosphate fertilizer (purified)	502.9	612.6
Ammonium phosphate fertilizer (kind)	1265	1876
Urea (physical)	71	67.3
soda ash	164	173.3
Caustic soda (purified)	80	80.4
Among them: ion membrane caustic soda (purified)	61.3	59.9
Hydrochloric acid (folded)	48.4	47.4
paints	263	136.6

Product name	In 2019	In 2020
Pesticides (purified).	18.4	14.9
Pure benzene	19.9	15.3
Refined methanol	50.2	73.6
synthetic resin	100	174
synthetic fibre	15.9	33
Tire tyres	748.8 million	807.7 million

The industrial structure continues to be optimized. During the "Thirteenth Five-Year Plan" period, high-end chemical products such as ethylene and series products, special chemicals, electronic chemicals, phosphorus-based new materials, modern coal chemicals, biological pesticides, and new functional fertilizers developed rapidly, accounting for 30%. Above. Sinopec completed the debottlenecking transformation of 110.60 million tons of ethylene, the structural adjustment of synthetic ammonia raw materials of Sanning Chemical and the co-production of \diamond, \diamond tons/year ethylene glycol project were completed and put into operation, and the production capacity of electronic chemicals such as electronic grade phosphoric acid and electronic grade sulfuric acid developed by Xingfa Group ranked first in the country. A batch of low-end, high-energy-consuming and high-pollution "small chemicals" such

as small synthetic ammonia, small calcium, small ammonium phosphate, small compound fertilizer, small ammonium carbide, small yellow phosphorus, and small calcium carbide have been eliminated.

The momentum of innovation has increased significantly. Automatic control and information management have been steadily implemented, and large-scale petrochemical enterprises have basically established energy management and control centers, realizing the transformation from energy conservation of individual equipment and processes to overall optimization and comprehensive utilization; Industrial robots have been fully applied in large petrochemical enterprises, and DCS intelligent control has been realized in the production of hazardous chemicals; Establish an automatic monitoring of industrial major pollutant emissions and an information management system for the comprehensive utilization of industrial solid waste. Xingfa Group's "Key Technology for the Production of Ultra-high Purity Electronic Grade Phosphoric Acid and Highly Selective Etching Solution for Chips" won the second prize of the National Science and Technology Progress Award, and the project of "Key Technology and Industrialization of Industrial Yellow Phosphorus Production Electronic Grade Phosphoric Acid" won the first prize of the National Chemical Industry Science and Technology Progress Award; Yihua Group's advanced phosphorus chemical technologies such as the key technology of green flotation and mine ecological restoration integration of safe

mining phosphate ore, the key technology of efficient green utilization of low-grade refractory rubber phosphate ore, and the high-value utilization technology of wet phosphoric acid and associated resources won the Provincial Science and Technology Progress Award; Sanning Chemical has built a 5G+ smart factory, promoted lean production, and the caprolactam plant with the world's first technology of heterogeneous amoxime-solvent rearrangement was completed and put into operation, with remarkable energy-saving effects.

The strength of leading enterprises has been improved. A number of petrochemical enterprises in our province have strong competitiveness, and some have become national and even global industry champions. The main revenue of 7 enterprises, including Sino-Korea Petrochemical, Jingmen Petrochemical, Jinao Technology, Xingfa Group, Yihua Group, Sanning Chemical and Xinyangfeng Agriculture, exceeded 10 billion. Among the top 4 phosphate fertilizer enterprises in China, our province occupies <> seats alone (Xinyangfeng Agriculture, Xiangyun Group, Yihua Group, Sanning Chemical), Xingfa Group is the largest fine phosphorus chemical production enterprise in China, Yihua Group is the largest fertilizer production enterprise in China, Xinyangfeng Agriculture is the largest high-concentration phosphorus compound fertilizer and new fertilizer production enterprise in China, Wuhan Organic is the world's largest sodium benzoate production enterprise, Green Home is the world's largest epoxy resin material

manufacturer, and Xiangyun Group is the largest monoammonium phosphate manufacturer in China ADAMA is the No. 1 agrochemical enterprise in China and the 2nd largest agrochemical enterprise in the world.

The standardized construction of the park has been accelerated. During the "13th Five-Year Plan" period, 65 chemical parks were confirmed in the province, and the admission rate of chemical enterprises was 2.14%, 2.7 percentage points higher than that of the whole country. There are 51 chemical parks with sales revenue of more than 20 billion yuan, including Wuhan Chemical Industry Park, Jingmen Recycling Chemical Park, Jingzhou Economic and Technological Development Zone Chemical Park, Yaojiagang Chemical Park, Yidu Chemical Park, Xiting Chemical Park and Qianjiang Zekou Chemical Park. All 30 chemical parks have implemented overall safety risk assessment, Wuhan Chemical Park has been selected as one of the top 10 chemical parks in China for six consecutive years, Wuhan Chemical Park and Yiting Chemical Park are national demonstration bases for new industrialization industries, Xiting Chemical Park, Qianjiang Zekou Chemical Park and Yaojiagang Chemical Park have been included in the national park recycling transformation demonstration pilot, Wuhan Chemical Park, Yaojiagang Chemical Park and Yidu Chemical Park have been rated as national green chemical parks.

Green development has achieved remarkable results. Deeply promote the protection of the Yangtze River, focus on solving the outstanding problems of "chemical encirclement of the river", eradicate the hidden dangers of pollution in the Yangtze River, eliminate potential safety hazards in densely populated areas, vigorously promote ecological restoration and environmental protection, resolutely fight the landmark battle of customs reform and relocation of chemical enterprises along the river, complete the task list of customs reform and relocation and transfer of 409 enterprises, and complete the relocation and transformation of hazardous chemical production enterprises 146 enterprises, realizing the relocation of high and green and strong. Achieve positive results. Continue to promote green manufacturing, and create 16 national demonstration green products, 9 green factories and 2 green parks.

During the "Thirteenth Five-Year Plan" period, the petrochemical industry in our province has made great progress in transformation and upgrading, quality and efficiency, and has played an important supporting role in the construction process of manufacturing a strong province, but there are still problems such as insufficient development, insufficient innovation and poor structure. The main manifestations are: First, **there is a gap in overall strength.** Compared with Shandong, Guangdong, Jiangsu, Zhejiang and other "trillion" petrochemical provinces, the gap has further widened. **Second, there is a gap in the industrial**

level. The industrial chain extension is not enough, the homogenization is serious, the characteristics of "traditional and insufficient" are still obvious, the ethylene industry chain is not extended enough, and there are problems such as short chain and weak chain in coal chemical and salt chemical industries. **Third, there is a gap in technological innovation.** The petrochemical process in our province accounts for 63% of the domestic advanced level, and only 6% is at the international advanced level, especially in the utilization of medium and low-grade phosphate ore, wet phosphoric acid refining, phosphogypsum comprehensive utilization, new energy materials, high-end fine chemicals, advanced polymer materials and other key technical fields. The shortcomings are more obvious, which restricts industrial upgrading and accelerated development.

Second, the development situation

Internationally, the world is experiencing major changes unprecedented in a century, the world economy is still in the process of profound adjustment and change, the international environment is changeable and increasingly complex, and the world economy is facing increasing uncertainties due to the impact of the epidemic. In the face of increasingly severe carbon emission reduction situation, the development of the industry is facing many challenges such as cost, technology, process, management, and alternative energy competition, and it is urgent to improve the modernization level of the industrial

chain and supply chain. The focus of the development of the global petroleum and chemical industry is accelerating to the Asia-Pacific region, and the pace of a new round of industrial restructuring, transformation and upgrading is accelerating.

From a domestic point of view, China's petrochemical industry chain and industrial system are relatively complete, with great development potential, wide room for maneuver, ultra-large-scale domestic demand market and constantly developing foreign markets, production scale and supporting capacity are in the forefront of the world, with the foundation and ability to adapt to changes and break the situation and open up a new situation, showing a good trend of long-term stability and medium orientation. Based on the domestic and international situation, the Party Central Committee has made a major strategic decision to "build a new development pattern of domestic and international dual circulation mutual promotion", requiring further tapping and releasing the potential of the domestic market and improving the stability and competitiveness of the industrial chain and supply chain.

During the "5th Five-Year Plan" period, China will enter a new stage of development, and new infrastructure and new technologies will bring new momentum for development. The state will further increase the construction of new infrastructure projects, which will continue to drive the domestic market of new chemical materials, electronic

chemicals and basic chemical raw materials, and the huge dependence of various industries, especially emerging industries, on petrochemical products will provide inexhaustible impetus for industrial development. The rapid development of emerging technologies such as 5G, artificial intelligence, and blockchain and their deep integration with the real economy will also accelerate the digital transformation of the petrochemical industry and inject new impetus into industrial innovation. However, the structural contradiction of "low-end surplus, high-end shortage" is still a long-standing prominent contradiction in China's petrochemical industry, the traditional product structure is optimized, backward products are accelerated to be eliminated, and the task of excess products to reduce production capacity is still very arduous. The state's strict control of energy consumption and water resources, and the joint protection actions of the Yangtze River Economic Belt, etc., have put forward higher requirements and challenges for energy conservation and consumption reduction, pollution prevention and control, and intrinsic safety in the whole industry.

From the perspective of the whole province, during the "14th Five-Year Plan" period, the development of petroleum and chemical industry in our province is still in a period of important strategic opportunities, opportunities and challenges coexist, advantages are greater than disadvantages, and opportunities are greater than

challenges. Seize the national strategic opportunity of the rise of the central region, jointly promote the coordinated development of industries in the middle reaches of the Yangtze River, comprehensively promote the regional development layout of "one master leading, two wings driving, and global coordination", strive to build trillion-yuan industrial clusters such as modern industry and energy, closely adhere to the goal of "carbon peak and carbon neutrality", adhere to the "joint protection and not large-scale development", build a green manufacturing system focusing on green factories, green parks and green supply chains, consolidate and enhance development advantages, and effectively transform the development mode. Realize the development of higher quality and more efficient modern industrial industry in the province.

Chapter II: General Ideas

1. Guiding ideology

Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, fully implement the spirit of the 20th National Congress of the Communist Party of China and the 20th Plenary Session, deeply implement Xi Jinping Thought on Ecological Civilization, General Secretary Xi Jinping's important speech on inspecting the development of the Yangtze River Economic Belt and the important speech made during his inspection of Hubei and participating

in the deliberations of the Hubei delegation, adhere to ecological priority and green development, base on the new development stage, and fully and accurately implement the new development concept, Actively serve and integrate into the new development pattern, focus on innovation-driven, green development, consumption reduction and carbon reduction, intrinsic safety, achieve high-quality development of the whole industrial chain of modern industry, and provide important industrial support for our province to build a "<>" modern industrial cluster and accelerate the "building a fulcrum, walking in the forefront, and writing a new chapter".

2. Basic principles

Adhere to innovation-driven development. Adhere to the integration of technological optimization, production capacity upgrading and industry integration, improve the technological innovation system with enterprises as the main body, market-oriented, and combining production, education and research, strive to break through a number of key core technologies of "stuck neck", and provide scientific and technological support for the high-quality development of modern industrial industry.

Adhere to high-end leading development. Adhere to the industrial positioning of developing high-end products, focus on ethylene, phosphorus chemical, coal chemical and other industries, vigorously develop high-end industrial chain products, increase the

proportion of differentiated and high value-added products, focus on the development of high-end fine chemicals and new chemical materials with high technology, high added value, low energy consumption and low pollution, and promote the chemical industry chain to leap to the high end of the value chain.

Adhere to the standardization of agglomeration development.

In accordance with the requirements of the Guidelines for the Development of the Yangtze River Economic Belt (for Trial Implementation) and the Implementation Rules for the Development of the Yangtze River Economic Belt in Hubei Province (for Trial Implementation), optimize the layout of the chemical industry along the river, increase the degree of industrial concentration, standardize the construction of chemical parks, build smart parks, and promote the development of industrial agglomeration. Strictly enforce the prohibition of building or expanding new chemical parks and chemical projects within one kilometer of the shoreline of the main tributaries of the Yangtze River, and prohibit the construction and expansion of chemical projects outside compliance parks.

Adhere to safe and green development. Strengthen the concept of safety and green development, strengthen the awareness of safety and environmental protection red lines, strengthen the control of the whole life cycle, and improve the level of intrinsic safety. Adhere to source prevention, process control and comprehensive treatment, achieve

efficient energy utilization and clean production through technological innovation, equipment improvement and system optimization, and build a modern industrial green industrial system that is resource-saving, environmentally friendly and intrinsically safe.

Adhere to digital transformation. The digital economy has become the core driving force for the emergence of new development momentum, and the digital economy has great potential for the development of the industry. Through the wide application of 5G, big data, artificial intelligence, etc. in the industry, promote the iterative transformation characterized by advanced production lines, and continuously improve the level of digital, networked and intelligent development of the industry.

3. Main objectives

By 2025, we will strive to enter the ranks of the first echelon of the national petrochemical powerhouse, further expand the industrial scale, steadily improve the quality and efficiency of development, continuously consolidate the industrial foundation, continue to improve the modernization level of the industrial chain, and initially build a modern industrial base with competitiveness and influence in the country.

The total volume has grown steadily. By 2025, the operating income of modern industrial industry in our province will reach 7500 billion yuan, with an average annual growth of about 8%.

The industrial structure continues to be optimized. By 2025, petrochemical, advanced phosphorus chemical, modern coal chemical, new chemical materials and high-end fine chemicals will achieve rapid development, the proportion of medium and high-end products will be further increased, and a modern industrial system with relatively complete categories will be initially formed.

Leading enterprises continue to grow. By 2025, cultivate 5 enterprises with main revenue of more than 500 billion yuan, 10 enterprises with more than 100 billion yuan, and 20 enterprises with more than 50 billion yuan.

The industrial layout is more reasonable. By 2025, the industrial layout will be more reasonable, the construction of the park will be more standardized, and the construction of Wuhan refining and chemical integrated industrial base, modern coal chemical production base, and high-end electronic chemicals special zone will be actively promoted, and the national Yijing advanced phosphorus chemical industry cluster will be cultivated, and five chemical parks of more than 5 billion yuan will be cultivated.

The ability to innovate has been significantly enhanced. The level of independent innovation and technical equipment in the whole industry has been continuously improved, and the level of technical equipment in oil refining, ethylene, tires, urea, ammonium phosphate, caustic soda, sodium benzoate, soda ash, organic silicone, glyphosate, yellow phosphorus and other industries has leapt to the forefront of the country, forming a number of well-known independent brands, and the rate of high-quality products continues to increase.

Green development has achieved remarkable results. By 2025, the green and low-carbon transformation of industrial structure and production mode will achieve remarkable results, the green manufacturing system will become increasingly perfect, the level of clean production will be significantly improved, the energy efficiency will be steadily improved, the level of resource utilization will be further improved, all the newly produced phosphogypsum will be harmlessly treated, the comprehensive utilization rate will meet the requirements of national regulations, and the dynamic balance of production and consumption (comprehensive utilization and safe storage of phosphogypsum) will be realized.

The integration of industrialization and industrialization has been further promoted. By 2025, a number of smart factories or digital workshops will be built in the fields of petrochemicals, fertilizers, phosphorus chemicals, salt chemicals, tires and other fields, and green

chemical parks will complete the construction of smart park platforms and carry out pilot demonstrations of 5G + industrial Internet applications.

Table 2: Main indicators for the high-quality development of modern industry during the 14th Five-Year Plan period

category	index	In 2025
Industry scale	Main revenue (100 million yuan).	7500
	Average annual growth rate (%)	8
Enterprise size	The number of enterprises with main revenue of more than 500 billion yuan	5
	The number of enterprises with main revenue of 100-500 billion yuan	10
	The number of enterprises with main revenue of 50-100 billion yuan	20
Park construction	The main revenue exceeds 1000 billion yuan in the number of chemical parks	1
	The main revenue exceeds 500 billion yuan in the number of chemical parks	4

Green development	CO2 emissions per unit of industrial added value reduced (%).	Meet the requirements of national regulations
	Reduction in emission intensity of major pollutants (%).	Meet the requirements of national regulations
	The energy consumption of industrial units above designated size is reduced (%).	Meet the requirements of national regulations
	Water consumption per unit of industrial added value is reduced (%).	Meet the requirements of national regulations

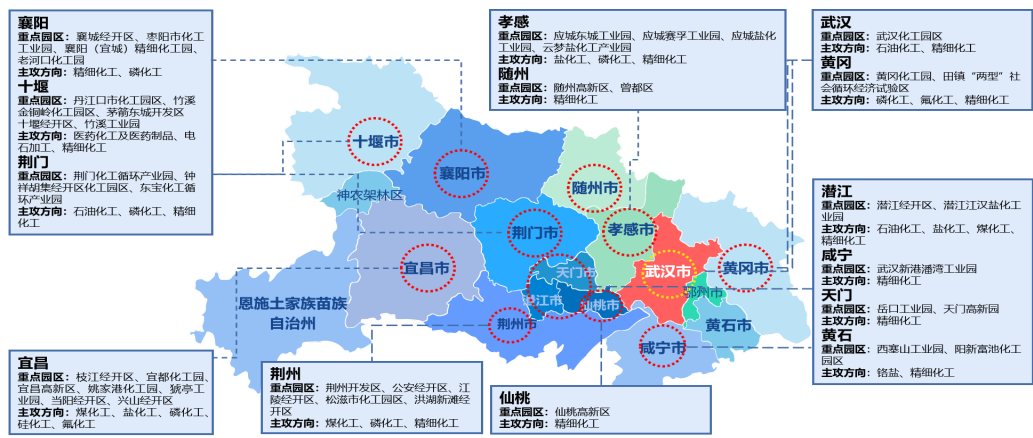


图1 湖北省现代化工产业布局

第三章 发展重点和主要任务

Adhere to high-end, green and intensive, adhere to ecological priority and green development, focus on increasing kinetic energy, making up for shortcomings and optimizing structure, promote the

safety and environmental protection standards, cluster development and transformation and upgrading of the petrochemical industry, strive to build Yijing national advanced phosphorus chemical industry cluster, focus on cultivating new chemical materials and high-end fine chemical industry, accelerate the construction of a national important petrochemical industry base, a national modern coal chemical industry base, and a domestic first-class microelectronic chemical new materials industrial base in the central region.

First, the focus of development

(1) Petrochemical industry

Accelerate the construction of Wuhan refining and chemical integration, Jingmen million-ton special oil, million-ton chemical products project, and Qianjiang oil product upgrading and deep processing project, and realize the integrated layout of oil refining, olefins and aromatics. Continue to promote "oil reduction and increase", promote the diversification of low-carbon olefin basic raw materials, focus on the construction of ethylene downstream industrial chain, increase the proportion of downstream high-end chemical products, realize the transformation from "refining chemical type" to "chemical material type", build a base base for high-grade lubricating oil and green special oil wax in central China, and an important national petrochemical industry base in central China. Strive to exceed 2025 billion yuan in operating income of petrochemical industry by 2000.

Box 1: Key development directions of petrochemical industry

Construction of Wuhan refining and chemical integration project. Accelerate the construction of an integrated refining and chemical base, and promote the transformation of the Wuhan base from "refining and chemical type" to "new chemical material type"; Adjust the structure of oil refining and chemical products, implement "oil reduction and increase", adjust the production structure of ethylene downstream products, extend the creation of six downstream industrial chains such as ethylene, propylene, ethylene oxide (propylene), carbon five, carbon nine and aromatics, develop and expand the ethylene downstream industrial chain, and build industrial clusters such as petrochemicals, new chemical materials, fine chemicals and chemical logistics.

Jingmen "double hundred" project construction. Accelerate the adjustment of the refining structure, implement "oil conversion", promote the construction of one million tons of special oil and one million tons of chemical products projects in Jingmen, implement the transformation and upgrading of special oil products, promote product upgrading and high-end brands, expand the total scale of high-end products, further improve the scale efficiency of the million tons of characteristic product bases, and accelerate the construction of one million tons of chemical product bases; Integrate and optimize aromatic resources, actively dock plastics and rubber industries, and create C2, C3, C4, C5, toluene, C8, The industrial chain of petrochemical processing products such as C9 aromatics has promoted the transformation and development of refining and chemical integration.

Construction of Qianjiang oil products upgrading and deep processing project. Accelerate the upgrading of the quality of oil products such as hydrotreating, hydromodification and hydrocracking, enhance the added value of products, actively develop aromatic chemicals, extend the development of high-end new chemical materials such as polycarbonate, propylene oxide, styrene, ethylene propylene rubber, and polyolefin elastomer (POE), and improve and extend the petrochemical industry chain.

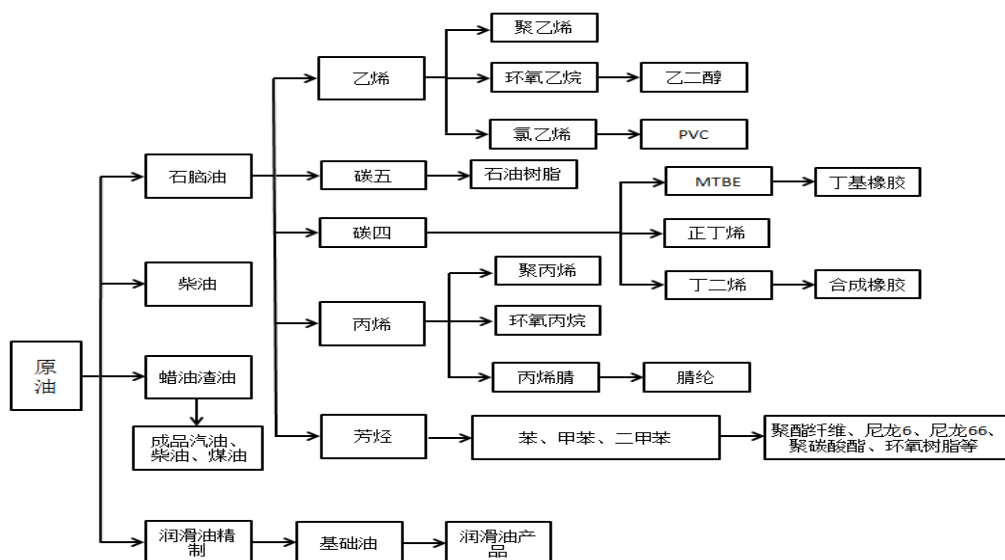


Figure 2 Integrated refining and chemical industry chain

(2) Modern coal chemical industry

Support Jingzhou and Yichang to rely on the advantages of the intersection of the Yangtze River Golden Waterway and the Haoji Railway, face the national coal deep processing industry upgrading demonstration, the transformation and upgrading of manufacturing industry in Hubei Province and the development needs of strategic emerging industries, take the clean, efficient, low-carbon and safe utilization of coal as the main line, take new energy and new materials as the development direction, focus on energy chemical industry and high-end chemical products, support Jingzhou and Yichang to build new energy and new material industrial bases and modern coal chemical industry bases, and cultivate and form two major clusters of energy chemical products and high-end coal chemical products , to achieve the integration and development of basic chemical raw materials, new

chemical materials, high-efficiency fertilizers, and high-end special chemicals. Strive to exceed 2025 billion yuan in operating income of modern coal chemical industry by 1500.

Box 2: Key development directions of modern coal chemical industry

Jingzhou Jiangling new energy and new materials industrial base. With clean, efficient, low-carbon and safe utilization of coal as the main line, and new energy and new materials as the development direction, we will make breakthroughs in the development of modern coal chemical industry, and form clean energy industry clusters such as coal-to-hydrogen and coal-to-natural gas; Focusing on energy chemicals and high-end chemical products, we will create an industrial pattern that integrates high-performance resins, synthetic fibers, engineering plastics, organic solvents, special chemicals, lithium batteries, long-carbon chain nylon, high-temperature resistant nylon, PETG, carbon fiber, needle coke and carbon black. Focus on promoting the construction of Hualu Hengsheng Jingzhou modern coal chemical base project and build a coal-based new energy and new materials industrial cluster.

Yichang modern coal chemical industry base. Focus on the development of the carbon one chemical manufacturing industry chain, promote the deep processing of coal to the direction of polyester, polyamide, polyethylene, polypropylene, high-performance fiber, functional separator materials, special engineering plastics and other new chemical materials. Focus on promoting the ammonia alcohol transformation and upgrading projects of Xingfa Group, Yihua Group, Huajiangong and other companies, and the construction of Sanning Chemical nylon 66 salt, methanol to aromatics, caprolactam and nylon new materials.

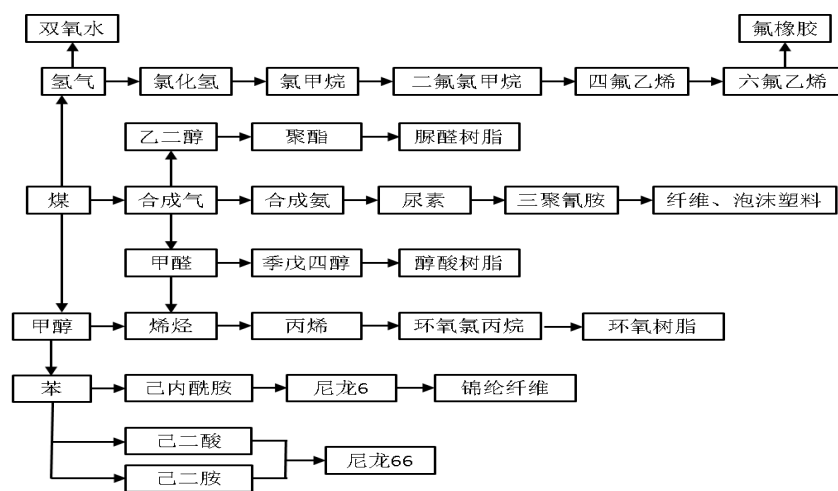


Figure 3 Modern coal chemical industry chain

(3) Advanced phosphorus chemical industry

Focusing on strengthening and expanding the phosphorus chemical industry, focus on optimizing the structure of the phosphorus chemical industry, continue to maintain the dominant position of phosphorus compound fertilizer in the country, promote the breakthrough development of the phosphorus chemical industry in the fields of new energy materials, microelectronic materials, optoelectronic information materials, special flame retardant materials, black phosphorus nanomaterials and life and health, guide and support phosphorus chemical enterprises to develop fine phosphorus chemical products with special functions and specificity, promote green advanced technology for phosphoric acid production, improve the recovery rate of phosphorus resources, and improve the quality of phosphogypsum. Promote the phosphorus chemical industry chain to leap to the high end of the value chain, build a number of leading phosphorus chemical enterprises with international influence, and create a national fine

phosphorus chemical and phosphorus-based new material production base, a national important phosphorus compound fertilizer production base and a national phosphorus chemical industry cluster. Strive to exceed 2025 billion yuan in operating income of advanced phosphorus chemical industry by 2500.

Box 3: Key development directions of advanced phosphorus chemical industry

Phosphorus-based new energy materials. Focus on the development of phosphorus-based new energy materials such as iron phosphate, lithium iron phosphate and lithium hexafluorophosphate. Accelerate the construction of lithium battery cathode material projects of CATL Bangpu, Xingfa Group, Tianci, China Chemical and other companies, supporting the development of lithium battery separators, negative electrode materials and other industries, and extending the downstream industrial chain.

Fine phosphate. Focus on the development of food-grade, pharmaceutical grade, electronic grade fine phosphate. Vigorously develop functional phosphate, compound phosphate, polyphosphoric acid, ammonium polyphosphate and other deep-processed products.

Fluorine material. Focusing on the comprehensive utilization of phosphate ore-associated fluorine resources, expand the production capacity of anhydrous hydrogen fluoride, and support the development of downstream fluororubber, fluorine coatings, fluorine-containing fine chemicals, etc.

Phosphorus-based flame retardant. Focus on the development of aluminum hypophosphite, phosphine, fire-extinguishing grade urea phosphate, ammonium polyphosphate, nitrogen and phosphorus synergistic flame retardants and other products. Optimize and upgrade the production process, develop new varieties of flame retardants, and develop high value-added products such as TCP, BDP, TEP, APP, etc.

Black phosphorus. Strengthen the research and development of two-dimensional materials, encourage the research and development of large-scale preparation technology of black phosphorus, and promote the application and development of black phosphorus in field effect transistors, solar cells and biomedical materials.

Efficient green pesticides. Develop fine chemical products such as phosphorus-based organic pesticides and pharmaceutical intermediates to enhance the added value of products.

New functional fertilizer. Actively develop new functional fertilizers such as slow-release fertilizer, water-soluble fertilizer, special special fertilizer, medium and trace element fertilizer, and bio-organic fertilizer.

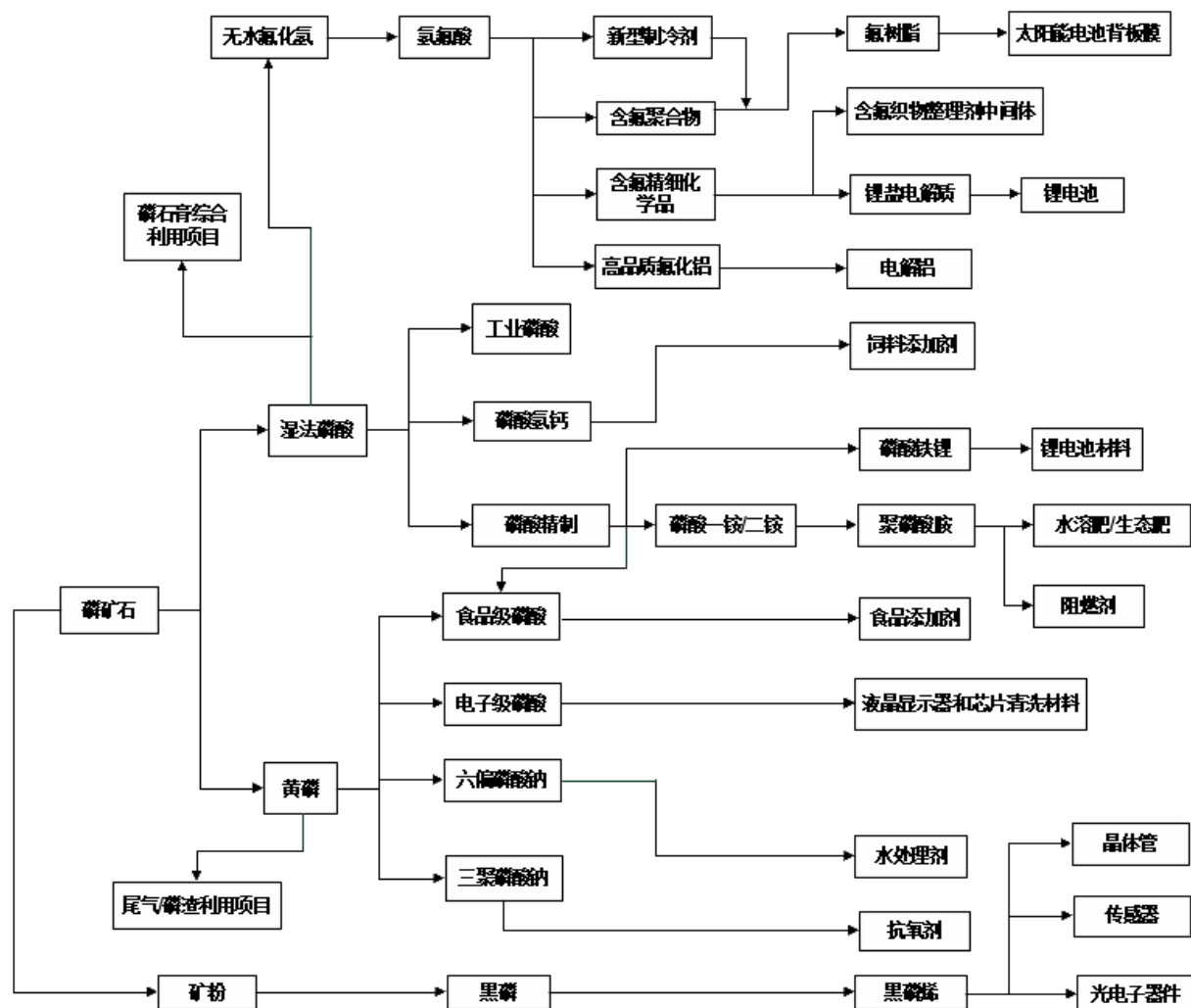


Figure 4 Advanced phosphorus chemical industry chain

(4) Salt chemical industry

Give full play to the advantages of abundant salt and brine resources, accelerate the development of caustic soda, soda ash, hydrogen, chlorine and other industrial chains, focus on the development of chlorine-based organic synthesis and pharmaceutical intermediates, oxidation disinfectants, food additives and other fine chemical products, form an industrial chain of "halogen-salt-two alkalis-fine chemicals-salt chemical new materials", promote the development of salt chemical industries such as Yichang, Qianjiang, Jingzhou,

Yunmeng, Yingcheng, etc., upgrade the product value chain and enhance core competitiveness. Strive to exceed 2025 billion yuan in the operating income of salt chemical industry by 500.

Box 4: Key development directions of salt chemical industry

Chlor-alkali deep processing. Focusing on the development of petrochemical industry, new chemical materials and fine chemical industry, the development of chlor-alkali-petrochemical integration, chlor-alkali- The fine chemical integrated industrial chain, extend and expand the regional chlorine industry chain, and promote the on-site conversion of chlorine. Focus on the development of epichlorohydrin, epoxy resin, chlorinated polyethylene, chlorinated polypropylene, and other downstream organochlorine products. Promote energy-saving and emission-reduction advanced technologies such as zero-pitch electrolyzers, oxygen cathode electrolyzers, and green processes for underground recycling alkali production, transform and upgrade the chlor-alkali industry, promote the comprehensive utilization of industrial waste salt, and form a green chlor-alkali chemical circular economy system.

Deep processing of chlorine and hydrogen. Actively promote the related agglomeration of chlorine and hydrogen resources to new materials, new energy and other industries, and extend the downstream industries of chlorine and hydrogen to high-end refinement. Promote the horizontal coupling and correlation development of chlorine and fluorine silicon chemical industry, chlorine gas and petrochemical industry.

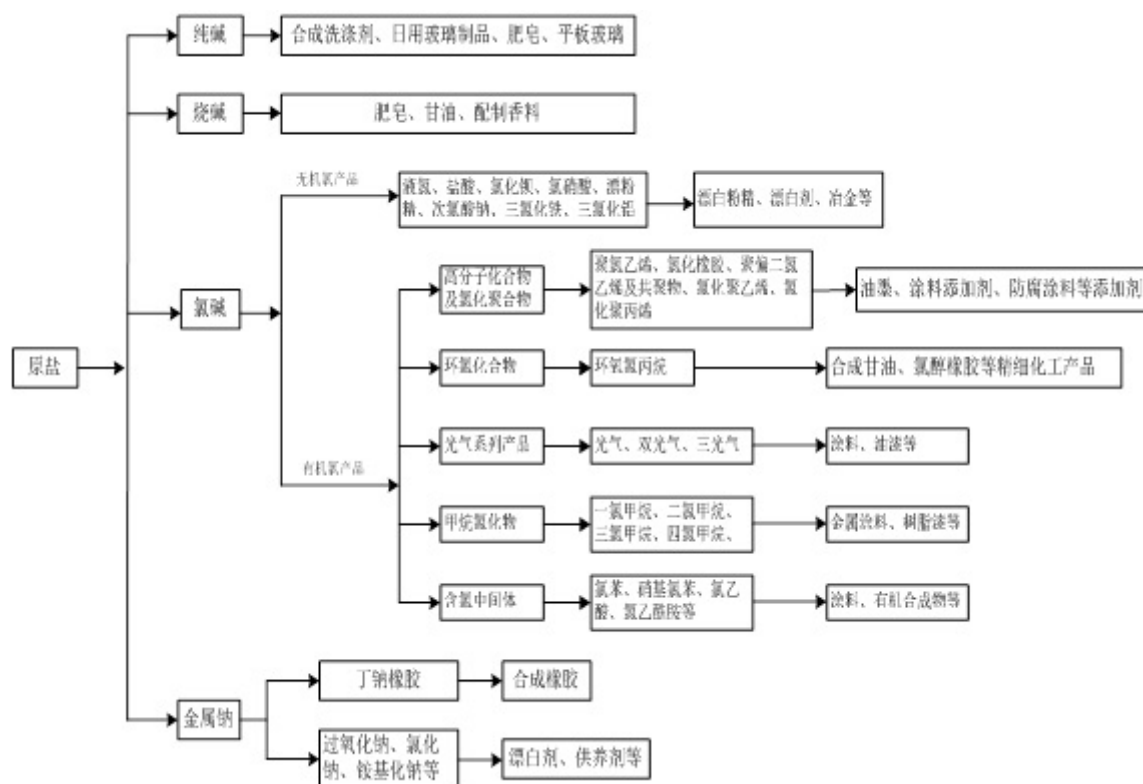


Figure 5 Salt chemical industry chain

(5) Fine chemicals

Actively develop high-performance, specialized, green and environmentally friendly fine chemical products, and greatly increase the proportion of fine chemical industry. Continue to consolidate the dominant position of our province in pesticides, coatings, dyes and intermediates, fine phosphates and other subdivisions, and vigorously develop fine chemicals in new fields such as electronic chemicals, water treatment agents, food additives, adhesives, and plastic additives. With semiconductor chemicals as the main direction, seize the historical opportunity of a number of national strategic emerging industries such as BOE, Yangtze River Storage and Huaxing Optoelectronics to settle in Wuhan, Hubei Province, pay close attention to Wuhan's "optical core

screen end network" semiconductor supporting material industry, accelerate the development and high-end market promotion and application of PPT grade and high-purity, ultra-clean reagents, ultra-high purity electronic special gas, and actively build a domestic first-class microelectronic new material industry base. Strive to exceed 2025 billion yuan in the operating income of high-end fine chemicals and special chemicals industry by 500.

Box 5: Key development directions of high-end fine chemicals

Pesticide. Focus on the development of efficient, safe, economical and environmentally friendly pesticide new products and preparations.

Dyes, pigments. Focus on the development of new dye varieties and new dosage forms that meet the requirements of new processes, new fibers and energy conservation and environmental protection in the textile printing and dyeing industry, and actively develop and promote new clean production technologies for dye and pigment production.

Fine inorganic salts. Promote the use of advanced calcium-free roasting, liquid phase oxidation and other clean production technology in the chromium salt industry, and develop high-grade fine carbonate products such as activated calcium carbonate, ultrafine and nano calcium carbonate, ultrafine barium carbonate, and ultrafine barium sulfate.

Paints. Focus on the development of waterborne coatings, high solid coatings, ultraviolet curable coatings, powder coatings and fluorine-containing functional coatings and other environmentally friendly coatings, vigorously develop ship antifouling coatings, container and steel anti-rust coatings, high-performance powder coatings, wind power wind coatings and other functional special coatings.

Adhesive. Focus on the development of water-based, hot-melt, solvent-free, radiation-cured, modified, biodegradable and other products with low VOCs content.

Water treatment agent. Focus on the development of green water treatment agents, organic flocculants and efficient and safe fungicides.

Plastic additives. Focus on the development of non-toxic plasticizers, halogen-free flame retardants, and lead-free heat stabilizers.

Rubber. Focus on the construction of Wuhan, Jingmen, Shiyan, Huangshi and other large-scale radial tire production bases, and further increase the proportion of radial tire production.

Surfactant. Focus on the development of fatty alcohol polyoxyethylene ether (AEO) nonionic surfactants, fatty alcohol polyoxyethylene ethersulfonate surfactants, anionic surfactants (MES, AEOS), fluorine-containing, silicone-containing, boron-containing and other special products.

Construction chemicals. Further increase the market share and product grade of polycarboxylic acid water reducing agent, strengthen the application of cement grinding aids and other products, improve the performance of building sealing materials and waterproof materials, and develop high-performance building anti-fouling and anti-corrosion coatings.

Catalyst. Actively research and develop precious metal catalysts, rare earth additives, petrochemical cracking catalysts, biocatalysts, nanocatalysts and other products.

Box 6: Key development directions of high-end specialty chemicals

High-end electronic chemicals. Focus on the development of wet electronic chemicals, electronic grade special gas, electronic grade electroplating solution, electronic grade slurry, electronic grade precursors, electronic grade silicon materials, etc., and accelerate the development of electronic grade phosphoric acid, electronic grade sulfuric acid, electronic grade mixing, electronic grade hydrofluoric acid, tetramethylammonium hydroxide and other products. Focus on promoting the construction of Xingfa Group's high-end electronic grade chemicals zone.

Microelectronic materials. Focus on the development of semiconductor large-scale integrated circuit photoresist, ultra-pure ammonia, electronic grade high-purity hydrogen and other high-purity reagents, electronic grade hydrogen peroxide, electronic grade ammonia and other semiconductor and panel display electronic materials, electronic grade microelectronic materials, functional materials, lithium battery materials, etc. Focus on promoting the construction of Qianjiang Microelectronic Materials Industrial Park.

Semiconductor chemical materials. Focus on the development of semiconductor materials and chemicals such as film materials, CMP pastes, photoresists, flat panel display materials such as photosensitive dry films and OLED luminescent materials, and 5G materials such as gallium nitride and silicon carbide; Actively develop water treatment membrane series (reverse osmosis membrane, ultrafiltration membrane, microfiltration membrane, nanofiltration membrane), PI-based membrane and PET-based membrane for flat panel display, EVA membrane for photovoltaic, hemodialysis membrane, electronic information membrane, battery separator membrane and exchange membrane. Focus on promoting the construction of semiconductor material industrial park in Wuhan Chemical Industry Park.

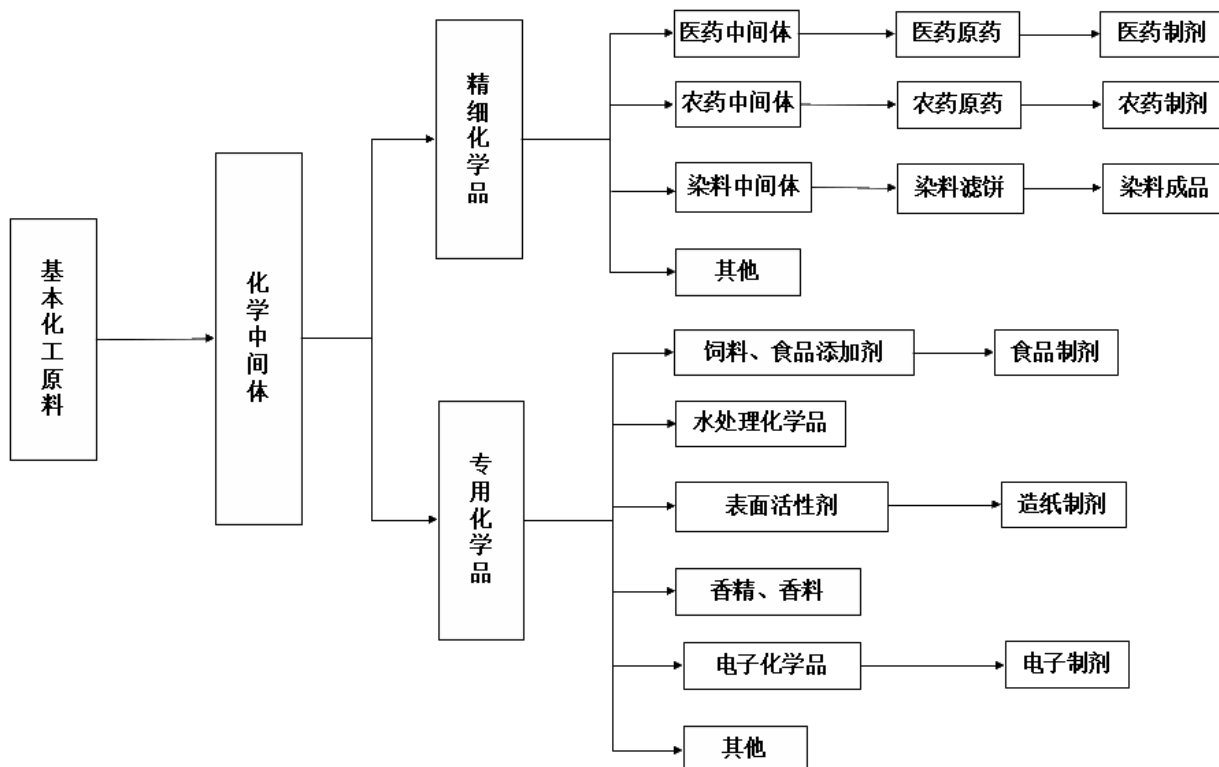


Figure 6 High-end fine chemicals and specialty chemicals industry chain

(6) New chemical materials

Focusing on the demand for high-end chemical new materials in aerospace, electronic information, new energy, automobiles, rail transit, energy conservation and environmental protection, medical and health care, and national defense industry, we strive to break through the supply bottleneck and foreign blockade of a number of key chemical new materials and key supporting raw materials, and improve the main industrialization level of new chemical materials in our province. It will focus on promoting the rapid development of high-end polyolefins, engineering plastics, polyurethane, fluorosilicone materials, special synthetic rubber, high-performance fibers, functional film materials, electronic chemicals and other fields, and provide important support for the transformation and upgrading of high-end equipment manufacturing, new energy, energy conservation and environmental protection, aerospace, electronic information and other industries in Hubei Province. Strive to exceed 2025 billion yuan in operating income of new chemical materials industry by 500.

Box 7: Key development direction of new chemical materials

High-end polyolefins. Focus on breakthroughs in high-carbon α -olefin co-polyolefins, polyolefin special materials, blended modified plastics and plastic alloys, and improve the performance of existing high-end polyolefin products.

Engineering plastics. Accelerate the development of strategic emerging industries supporting polyimide and other series of materials, semi-aromatic high-temperature resistant nylon, a new generation of special liquid crystal polymer materials for electronic information. Improve the industrial technology of engineering plastics such as high-performance polyoxymethylene, PET/PBT resin, polyphenylene sulfide, nylon, polyimide, etc., and accelerate the development of high-end products such as long carbon chain nylon, high-temperature resistant nylon, and amorphous copolyester (PETG).

Polyurethane. Focus on breakthroughs in TPU elastomer, environmentally friendly functional polyether, polyurethane resin matrix composite, new varieties of polyurethane foam stabilizer, silicon modified polyurethane sealant and other production technologies; Focus on the development of high-grade coatings, high-grade synthetic leather, elastomers, adhesives, IPDI for rocket propellants and other special isocyanates.

Fluorosilicon material. Focus on promoting the industrialization of phenyl silicone monomers and derivatives. Focus on the development of serialized, differentiated, composite and specialized high-end fluorosilicon polymers, fluorine-containing functional membrane materials and high-quality fluorosilicon fine chemicals.

Specialty synthetic rubber. Focus on the development of petroleum-based special rubber, chlorine-contained, fluorine, silicone, phosphorus special profiles and rubber materials, etc., break through the production technology of fluorosilicone rubber, hydrogenated nitrile rubber, rare earth cis-butadiene rubber, acrylate rubber and other products, and actively develop new thermoplastic elastomers such as polyolefins, polyester and polyurethane. High-performance fibers focus on the development of carbon fiber, aramid, electronic flexible display materials and nylon 6, nylon 66, textile fiber materials, etc.

Functional membrane materials. Breakthrough in polyvinyl fluoride film for solar cell packaging, special optical polyester film, polyvinyl alcohol film technology for LCD panel production; Improve the resistance and transmembrane voltage of ion membrane for chlor-alkali industry; Promote the industrialization of fuel cell membranes and high-performance bipolar membrane equipment for industrial use. Strengthen the research and development of lithium battery separators and realize the localization of medium and high-end separators.

Inorganic new materials. Breakthrough in the development of inorganic nanomaterials, inorganic whisker materials, photocatalytic materials, graphene materials, black phosphorus, semiconductor wafer materials and inorganic fiber materials.

Bio-based degradable materials. Focus on the cultivation of polylactic acid, carbon dioxide degradable plastics, PBS/PBAT degradable plastics, etc.

Second, the main tasks

(1) Promote a new round of technological transformation

Vigorously implement the action of "technological transformation and manufacturing renewal" in the petrochemical industry, accelerate the integration and application of new technologies, new processes, new materials, new equipment, new formats and new models, and promote the industry to move towards high-end, intelligent and green. Promote high-end transformation, guide the industry to extend to the **high-end** of the value chain, accelerate the research of key common technologies, promote the rapid improvement of independent design level and system integration capabilities, and realize the engineering application and industrialization of major equipment and systems. **Promote green** transformation, promote the application of advanced technology and equipment such as water saving, energy saving, and consumption reduction in chemical industry enterprises, and carry out clean production technology transformation; Promote the update of safety equipment, the application of advanced safety technology and advanced applicable technology achievements in the chemical industry, and continuously improve the level of safety. **Promote intelligent** transformation, comprehensively promote the digital application and transformation of application management systems, production systems,

R&D systems, etc., support enterprises to apply intelligent production equipment, automated production lines, etc. to transform and upgrade, and create industry benchmarks.

(2) Promote the intensive development of industrial agglomeration

Conscientiously implement the development concept of "innovation, coordination, green, openness and sharing", and promote the high-standard construction and development of chemical parks in our province through "controlling the total amount, optimizing the layout and promoting improvement".

Strengthen the top-level design of the layout of the chemical park. Combined with regional land and spatial planning and chemical park identification, comprehensive resources and market, safety and environmental protection, industry and technology, construction and transportation and other factors, plan the overall layout of chemical parks from the provincial level, establish a chemical park upgrade and exit mechanism, coordinate resource elements, and achieve coordinated development. It is strictly forbidden to build chemical parks in ecological redline areas, nature reserves, drinking water source protection areas, basic farmland protection areas, and other environmentally sensitive areas.

Promote the construction of high-level chemical parks and high standards. According to the "six integration" development concept of integration of raw material product projects, integration of public works and logistics, integration of safety and fire emergency, integration of environmental protection ecology, integration of intelligent and intelligent data, and integration of scientific and technological innovation management services, adhere to high-starting point planning and high-standard construction, strengthen and improve the foundation and public engineering construction of the park, and strive to build a number of domestic first-class chemical parks.

Strict access to chemical projects in the park. Strict access standards and procedures for chemical projects in the park, establish a directory of "prohibition, restriction and control" for the chemical industry in the park, and improve the quality of newly introduced and newly launched projects from the source. Carry out the evaluation of the projects entering the park, and comprehensively evaluate the land utilization rate, advanced technology, safety risks, pollution control, energy consumption level, resource utilization and economic benefits of the projects entering the park. Strictly control the transfer of projects across regions to the layout of parks with fragile ecological environment, imperfect infrastructure, and poor safety and environmental protection management.

Improve the safety level of the park. Promote the improvement of the safety rectification of chemical parks, strengthen the investigation of safety risks in chemical parks, implement the management of safety risk index in industrial parks, highlight the rectification of systemic safety risks, improve the level of intrinsic safety, prevent serious and extraordinarily serious safety accidents of hazardous chemicals, realize the overall safety risks of chemical parks can be controlled, and eliminate high-risk and high-risk chemical parks.

Accelerate the construction of smart chemical parks. With the support of information and communication technology, around the fields of safe production, environmental management, emergency management, closed management, energy management, transportation management, park office, public services, etc., establish an integrated information platform for safety, environmental protection, emergency rescue and public services, and realize intelligent management and efficient operation of chemical parks through data integration and information platform construction.

(3) Promote green and low-carbon development

Accelerate the implementation of green upgrading. Comprehensively promote green chemical manufacturing technology, realize the greening of chemical raw materials and reaction media, synthesis processes and manufacturing processes, and control and

reduce pollution from the source. We actively develop and replace environmentally friendly raw materials, solvents, and catalysts to replace toxic and environmentally sensitive solvents. Increase the proportion of clean energy consumption, encourage the application of alternative energy such as hydrogen energy, biofuels, and waste-derived fuels in the chemical industry, and accelerate the cultivation of a number of green factories in the chemical industry characterized by intensive plants, harmless raw materials, clean production, waste recycling, and low-carbon energy.

Promote carbon peaking and carbon neutrality. Formulate an action plan for "carbon peaking and carbon neutrality" in the modern industrial industry, and build a standard system for carbon emission accounting, carbon footprint, carbon emission reduction, and carbon evaluation. Accelerate the elimination of processes and products with low capacity utilization, serious pollution and large energy consumption in the modern industrial field, carry out in-depth energy efficiency benchmarking, strengthen enterprise energy management, carry out energy audits and energy-saving diagnoses, and improve energy utilization efficiency. Promote a new generation of clean and efficient recyclable production processes, energy conservation and carbon reduction, and process enhancement technologies to improve the efficiency of carbon utilization per unit. Track the carbon footprint of chemical products, strengthen the production, utilization and recovery

system of chemical products, and realize efficient recycling of resources. Explore active carbon reduction paths such as low-cost carbon dioxide capture, resource conversion and utilization, and storage.

Promote the clean transformation of production processes.

Strengthen the systematic pollution reduction concept combining source reduction, process control and end-of-line efficient treatment, vigorously promote green design, continue to implement cleaner production technology transformation, and guide enterprises to actively improve the level of cleaner production. Strengthen the concept of the whole life cycle, and implement the green design of industrial products in an all-round and whole-process manner. Reduce the use of harmful substances at the source, reduce the pollution emission in the production process, and develop and promote the process pollution reduction process and equipment for the process links with large pollutant emissions. Promote advanced and applicable environmental protection treatment equipment, and upgrade and transform terminal treatment facilities. Focus on high-difficulty wastewater involving heavy metals, high salt, high organic matter and other difficult wastewater, carry out in-depth and efficient treatment application demonstrations, strictly control wastewater discharge, strengthen the green disposal of solid waste, and strengthen online monitoring and network management of

pollutants. Promote the resource utilization of solid wastes such as waste acid, waste salt, waste catalyst, and distillation residue, and implement differentiated treatment measures for solid waste.

(4) Promote the development of digital transformation

Advance digital transformation. Accelerate the digitalization of the green manufacturing system, promote the digital monitoring and management of the production process, accelerate the interconnection of business systems and the integration and sharing of industrial data, and realize the integration of production control and control. Support the construction of the whole production process operation data model, based on data analysis to achieve process improvement, operation optimization and quality control, and improve total factor productivity. Promote the industrial Internet platform in the industry, promote the cloud platform on key equipment, focus on the pain points such as opaque equipment management, difficult process knowledge inheritance, low level of upstream and downstream coordination in the industrial chain, and high pressure on safe production, take intelligent equipment management and control as the starting point, and carry out digital transformation in equipment health management, intelligent refining and chemical production, supply chain collaboration, safety monitoring and other directions.

Promote intelligent manufacturing. Improve the application capabilities of enterprise cloud computing, Internet of Things, big data and other information technologies, accelerate the digital transformation of the whole process of production and manufacturing, promote the construction of intelligent manufacturing units, intelligent production lines, and intelligent factories (workshops), and realize dynamic perception, interconnection, data integration and intelligent control of all factors and links. Promote the deepening application of advanced process control systems in enterprises, accelerate the cloud deployment and optimization and upgrading of manufacturing execution systems, deepen the integration and application of artificial intelligence, and improve production efficiency, product quality and safety levels, and reduce production costs and energy resource consumption through comprehensive perception, real-time analysis, scientific decision-making and accurate execution.

Promote the transformation of the industrial Internet. Implement "Industrial Internet + Green Manufacturing". Encourage enterprises and parks to carry out the construction of energy resource information management and control, online monitoring of pollutant emissions, water leakage detection of underground pipe networks, etc., to achieve dynamic monitoring, precise control and optimal management, promote carbon emission reduction, and help achieve carbon peak and carbon neutrality. Coordinate the "Industrial Internet +

Safe Production" action to accelerate the network connection, platform aggregation and intelligent analysis of safety production factors. Deepen the integrated application of the industrial Internet, and guide industry enterprises to accelerate the construction of a new capability system for rapid perception of safety production, comprehensive monitoring, advanced early warning, linkage disposal, and systematic evaluation.

Accelerate the development of e-commerce. Guide the transformation of the procurement and sales platform of large chemical enterprises into an industry e-commerce platform, and improve the level of enterprise supply chain collaboration. Guide third-party e-commerce industry platforms to extend to comprehensive services such as online transactions, payment and settlement, supply chain finance, and big data analysis, and improve platform operation service capabilities.

Chapter IV: Safeguard Measures

1. Make overall plans to promote the implementation of the plan. Coordinate and promote horizontal interaction and linkage between various departments, cities and prefectures to ensure the implementation of the plan. Further refine the implementation of key tasks in planning, formulate annual plans, clarify work objectives, and solidly promote the implementation of key tasks. Carry out final evaluation in a timely manner, conduct systematic analysis and

comprehensive evaluation of planning objectives, implementation processes, and implementation effects, and supervise the implementation of planning goals and tasks.

2021. Increase fiscal and taxation support. Give full play to the special role of the high-quality development of the provincial manufacturing industry, implement major special funds such as "Huban Fa [33] No. 13" and "<> Articles of Technological Transformation", support the modern industrial industry to carry out a new round of technological transformation such as intelligent upgrading, cluster development, service-oriented extension, green transformation, and safety control, and promote the upgrading of key processes and core equipment. Work "addition" and focus on improving the basic capabilities of the industry and the level of intrinsic safety.

3. Strengthen the guarantee of resources and elements. Focusing on the construction of leading enterprises, major projects and basic conditions, strengthen the guarantee of industrial capital, talents, land, energy and other factor resources. Implement policies on land, environmental protection, production safety, energy conservation, etc., strengthen supervision and enforcement, and strictly manage binding indicators. Strictly implement industry energy consumption access, environmental protection, safe production and other standards, improve

energy-saving standards and measurement systems, improve energy-saving assessment systems, achieve total energy consumption control, and improve energy utilization efficiency.

4. Strengthen talent support and guarantee. Based on the construction of industry-university-research platforms for key enterprises, promote the improvement of the quality of professionals, accelerate the development of the market of technical elements, and encourage the directional flow of scientific and technological talents and multi-point employment. Focus on introducing and cultivating leading enterprise talents, innovative scientific and technological talents and application-oriented technical talents. Promote the construction of petroleum and chemical industry-related disciplines in colleges and universities, vigorously develop vocational and technical education, strengthen the combination of production, education and research, and encourage colleges and universities and enterprises to jointly cultivate chemical professional and technical personnel. Strengthen the training of management personnel of chemical enterprises, attach great importance to the construction of entrepreneurial teams, and improve the comprehensive quality of industry management personnel.

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