



ADVANCING CHEMISTRY, TRANSFORMING LIVES

2022

Wanhua Chemical Group Co., Ltd.
2022 Environmental, Social and Governance
(ESG) Report



Advancing Chemistry,
Transforming Lives

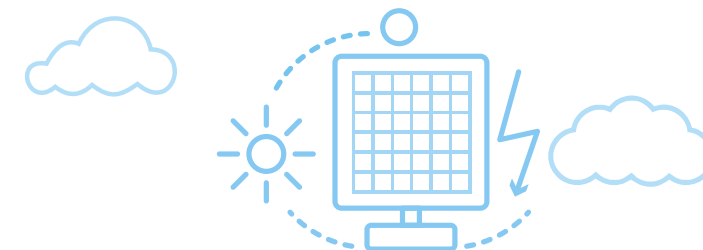
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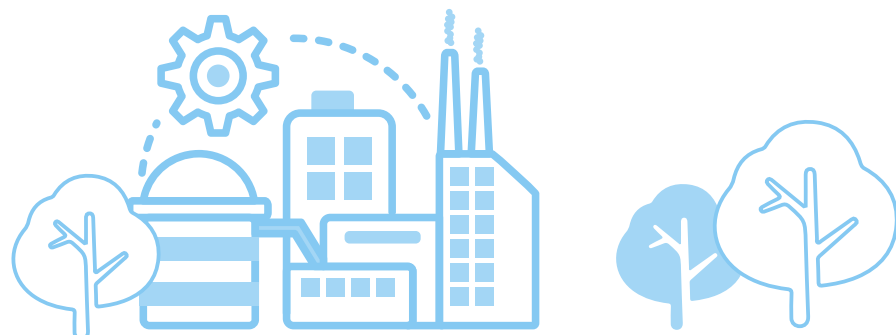
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ADDRESS BY CHAIRMAN

Over the past year, Wanhua Chemical has remained committed to its grand mission of "Advancing Chemistry, Transforming Lives!" All Wanhua employees persevered through the challenges posed by the global chemical industry downturn. Through company-wide efforts to integrate the concept of sustainable development into the company's development strategy and taking environmental, social, and governance (ESG) actions, we have further strengthened the foundation of the company's sustainable development. These efforts have empowered Wanhua Chemical to stride forward on its grand journey, further solidifying our image in the industry.

Over the course of this year, our production base employees have worked tirelessly to ensure stable equipment operations and meet customer needs. Both our marketing team and domestic and international supply chain personnel, have gone extra mile to understand and foresee customer needs, delivering high-quality products. At Wanhua Chemical, we are customer oriented and strive to practice this core value in all that we do to build trust with customers worldwide.

This year, we've pioneered and innovated to achieve win-win cooperation. Key breakthroughs have been made in the innovation of high-performance engineering plastic products. Independent research and development have enabled the successful production of silicon copolymerized PC and nylon 12, and we are proud to have contributed significantly to the independent control of advanced chemical materials. Moreover, our collaborations with academia are consistently deepening. We've joined forces with esteemed universities like Peking University, East China University of Science and Technology, and Beijing University of Chemical Technology to conduct scientific research and explore cutting-edge technologies in the field of new chemical materials.

This year, Wanhua Chemical has made significant progress in the construction of new projects. The second phase of the ethylene project and the fine chemical integration project in the eastern area have been fully launched. These, combined with the completed and operational bisphenol A plant have added new momentum to the construction of our world-leading chemical park. Furthermore, the Fujian MDI integration project and the Sichuan acetylene industry chain project were successfully launched on their first attempt, and the first phase of the Penglai Industrial Park project is fully underway. The hard work and sweat of the courageous Wanhua employees have played a crucial role in achieving these milestones.

As we transition into a new year, Wanhua Chemical remains steadfast in our commitment to excellence. S4/HANA has been fully launched and is gradually integrating into our global business, while "Smart Wanhua" has reached a new level, providing digital support for operational excellence. The dual-carbon strategy is making steady progress, with significant economic, social, and environmental benefits that empower a "Green Wanhua". Wanhua Chemical is continuously exploring and expanding its boundaries, establishing Battery Materials Technology Co., Ltd., integrating internal and external resources to accelerate the in-depth development of our new energy business and creating a second growth curve. Additionally, Wanhua has continued to deepen its regime and mechanism reform, successfully implementing the employee co-investment plan, stimulating the entrepreneurial spirit and driving for innovation.



This year also saw momentum building in talent development at Wanhua Chemical. With more than 5000 new employees joining, the company has gained new vitality. Wanhua University has fully integrated internal and external resources to accelerate the improvement of students' leadership and professional and vocational abilities with the mission of cultivating "talents with six dimensions". Wanhua Chemical has effectively implemented the "Three steps, three goals" talent training plan, strengthening the skills and proficiency of production talents and forging a high-level production team backbone.

Looking ahead, we will build on our commitment to green, low-carbon, and safe sustainable development. We will expedite the transition of our industrial energy structure towards new energy sources such as wind power, photovoltaics, and green hydrogen, reducing our dependence on traditional energy sources. Through technological innovation, we will promote the continuous iterative upgrading of our chemical production technology, moving towards low energy consumption and zero emissions. We will also constantly innovate our energy management technologies, improving the comprehensive utilization efficiency of energy and building a low-carbon and zero-carbon industrial park. We will execute long-term initiatives centered around R&D and innovation. We will fully integrate sustainable development into our business and continue our journey to move towards a sustainable future with the support of our stakeholders.

Chairman of Wanhua Chemical Group Co., Ltd.

INTRODUCING WANHUA

4 Product Categories

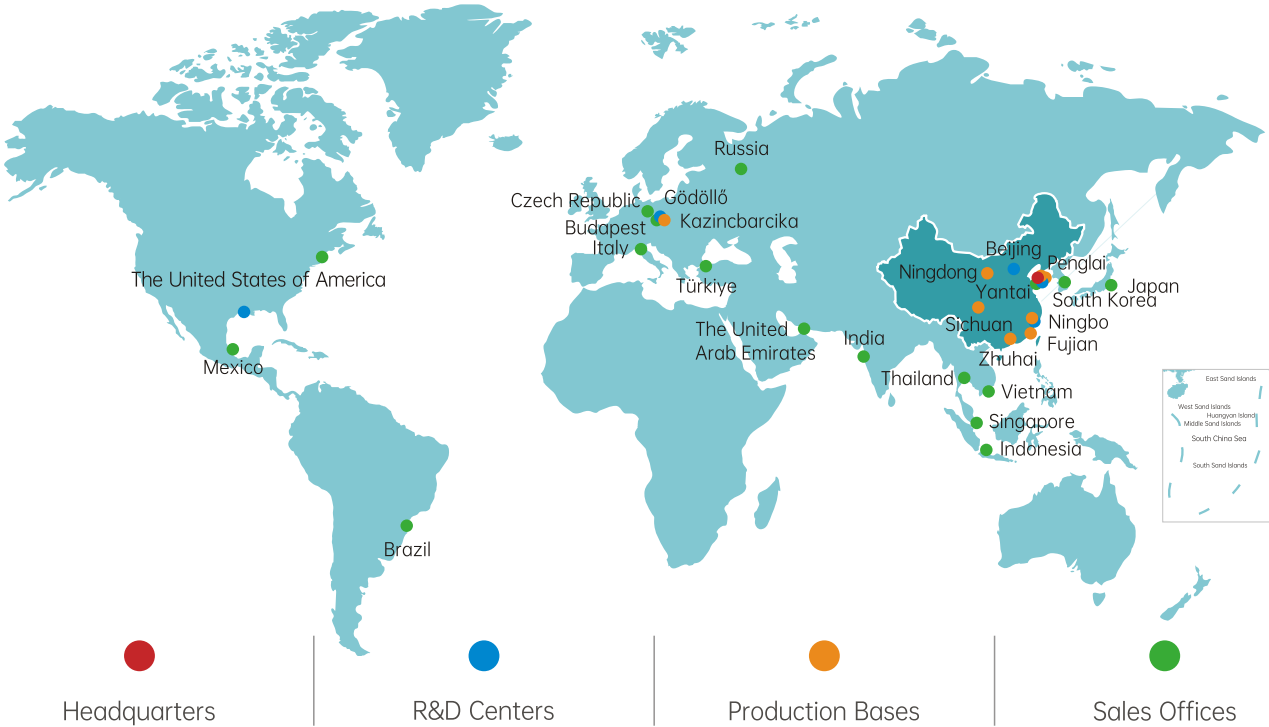
Polyurethanes, petrochemicals, performance chemicals, emerging materials.

7 Fields of Application

Homeware and furniture, sports and leisure, automobiles and transportation, building and construction, electronics and electrical appliances, personal care, green energy.



Global Layout



Company Introduction

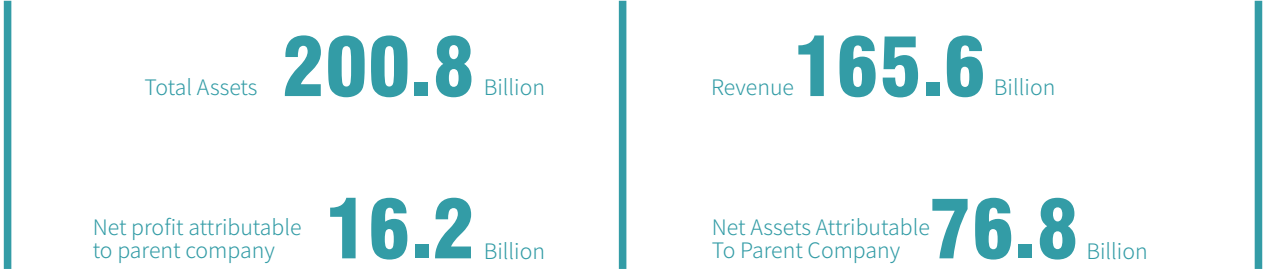
Wanhua Chemical Group Co., Ltd. is among the global leading suppliers of chemical innovative products. Relying on the continuous innovation, commercialized facilities and efficient operation, the company provides customers with more competitive products and solutions.

Wanhua Chemical has always been adhering to innovation and optimizing industrial structure. Our business covers polyurethanes, petrochemicals, performance chemicals and emerging materials. The industries include homeware and furniture, sports and leisure, automobiles and transportation, building and construction, electronics and electrical appliances, personal care, and green energy.

Wanhua Chemical has built up nine key production complexes in Yantai, Penglai, Ningbo, Sichuan, Fujian, Zhuhai and Ningxia in China,

and Hungary, which are integrated with complete supporting facilities. To provide our customers worldwide with competitive products and comprehensive solutions, Wanhua has established R&D centers in Yantai, Ningbo, and Beijing in China, as well as in North America and Europe, set up subsidiaries and offices in more than ten countries and regions across Asia, Europe, the United States, etc.

Wanhua Chemical will take "Advancing Chemistry, Transforming Lives" as the first mission. We are committed to providing customers with stable, high-quality, competitive products and efficient services, and to being a responsible supplier and industry leader. We will continue to innovate in the field of chemical new materials, lead the development of the industry, and create a better life for mankind!



*RMB

MISSION, VISION, CORE VALUES

Mission:
Advancing Chemistry, Transforming Lives!

The mission of Wanhua Chemical Group Co., Ltd. is to use chemistry to promote social prosperity while realizing corporate development. Wanhua Chemical honors the symbiosis between chemistry and human civilization, recognizing it as a vital approach for comprehending and transforming the material world. Wanhua Chemical's mission is to take the path of green development, continuous innovation, and pursuit of excellence to bring greater value to customers, employees, and shareholders. Ultimately, the company strives to create a better life for mankind.

Vision:
To become an innovative, world-class chemical company, admired by our employees and respected by the community.

Wanhua Chemical's vision prioritizes being respected by society, which is linked to the company's sense of historical responsibility.

We are committed to being a responsible corporate citizen, prioritizing the safety, health, and environmental protection of employees, related parties, and the community by adhering to "zero injuries, zero accidents, zero emissions" . Wanhua Chemical also focuses on the efficient use of various resources and follows the path of circular economy and sustainable development to build a green and ecological modern chemical enterprise.

We are committed to being a responsible supplier, serving customers through a customer-oriented cultural environment that provides them with high-quality, stable products and efficient, convenient, and comprehensive services.

We are committed to being a responsible industry leader through independent innovation, continuous promotion of industrial upgrades, and active exploration of high-tech and high value new chemical materials.



DEVELOPMENT STRATEGY

Wanhua Chemical is driven by customer needs, technological innovation, talent, operational excellence, and passionate culture as well as committed to developing into a leading company in the chemical products and new materials industry, the company adopts development strategies for integration, the relevant diversification (in marketing, technologies, etc.), streamlining, and a low-cost approach.

In 2020, with the rapid development of the company and an increase in personnel, talent training has become crucial for achieving leapfrog development. To this end, Wanhua Chemical has proposed the "Six Traits of Talents" and incorporated them into the company's strategic driving forces, forming Wanhua's four strategic drivers.



INTRODUCTION OF ORGANIZATION

Wanhua Chemical has expanded its business segments and extended the upstream and downstream industrial chains, leading to the establishment of ten business divisions/subsidiaries. This allows us to meet customers' needs more efficiently and quickly by providing professional and personalized solutions.

Polyurethanes Business Unit

Mainly in charge of sales, production and R&D of diisocyanates and its derivatives, polyether polyols for flexible and rigid foam and PU systems as well as ethylene oxide derivatives (EOD).

(Yantai) Petrochemical Co., Ltd.

Mainly engaged in the construction and operation of platform for the petrochemical industry and responsible for the procurement, production, sales, operation, and management of major raw materials for petrochemical products.

Chlorine Products Business Unit

Mainly involves domestic and international sales of PVC and caustic soda, also includes R&D, production and sales of specialty PVC and other chlorine products.

Performance Chemicals Business Unit

The portfolio includes aliphatic isocyanate products (HDI, HDI adducts, HMDI, IPDI, XDI, H6XDI), special amine products (MDA, MDBA, H12MDA, IPDA, and PU catalysts), and performance chemicals (IP, MIBK, and CDT).

Performance Materials Business Unit

Mainly produces thermoplastic polyurethane (TPU), polymethyl methacrylate (PMMA), membrane material, polypropylene compounds, POE, BDO, polyester polyol and PEBA.

Performance Polymers Business Unit

Dedicated to R&D, production, and sales for polycarbonate (PC), biodegradable materials (PBAT/PLA), and nylon 12 (PA12).

Surface Materials Business Group

Dedicated to R&D, production, sales, and service for environmental-friendly surface materials. It has established 10 R&D technology platforms for PUD, PA, PUA, UV materials, 2K, EP, HEUR and HASE, organosilicons, soft bioderived beads, and SAP.

Nutrition Technology Co., Ltd.

Mainly responsible for the sales, production and technical optimization of nutrition products and aroma related products.

Wanhua Battery Technology Co., Ltd.

Its products cover a wide range, including power battery, energy storage, digital products and other electric devices.

Electronic Materials Co., Ltd.

The main products include CMP Pad, CMP Slurry, chip packaging materials (TIM1, UF, AD), and OLED display packaging materials (INK, Fill, DAM).



2022 MAJOR HONORS

Owing to our standout performance in areas such as environmental stewardship, responsible care, sustainable development, and the ongoing refinement of our ESG management system, Wanhua Chemical was awarded numerous ESG-related accolades both at home and abroad in 2022. These included:

January

Wanhua Chemical was awarded the "2021 Corporate Citizenship Model Award of China Petroleum and Chemical Industry".

July

Wanhua Yantai Industrial Park was awarded the "2022 Shandong Province Green Factory".
Wanhua Chemical was ranked 17th in the "C&EN Global Top 50 Chemicals".

September

Wanhua Chemical won the "2022 Carbon Neutral Model Enterprise" award at the International Green Zero Carbon Festival.

October

Wanhua Chemical once again was awarded the EcoVadis "Gold Medal". This is the second consecutive year Wanhua Chemical has won this award, ranking in the top 5% of 75,000 companies.

November

The MDI waste brine recycling technology was shortlisted for the best recycling project for sustainable development in Chemical Week.

December

Wanhua Chemical was recognized as the "Enterprise Contributing to Sustainable Development in 2022" at the Fifth Social Responsibility Conference.

Wanhua Chemical (Ningbo) won the honorary title of "No Waste Factory".

Wanhua Chemical received the "2022 ESG Practice Model Award" at the 12th Public Welfare Festival.

Wanhua Chemical was awarded "B" rating for climate change and water security by CDP and won the "2022 Leap Progress Award".

Wanhua Chemical was awarded the "New Chinese Enterprise" Annual Jury Award by the Harvard Business Review.

China Energy News recognized Wanhua Chemical as the "Carbon Neutral Green Brand Influence Co-construction Company".



01 WAY OF WANHUA

Over the years, Wanhua Chemical has been focusing on the United Nations Sustainable Development Goals (SDGs), exploring possibilities for human's sustainable development. This year, we launched a new sustainable development strategy, opening a new chapter with the whole society, for drawing a bright future with infinite possibilities!



SUSTAINABLE DEVELOPMENT MANAGEMENT

Wanhua Chemical has developed a new sustainable development strategy for the company, with the company's mission of "Advancing Chemistry, Transforming Lives!" as the vision of the sustainability strategy, it carries out through specific topics from the E/S/G perspectives, and following three sub-visions of "empowering green chemistry", "creating social value" and "abiding by governance standards" respectively.

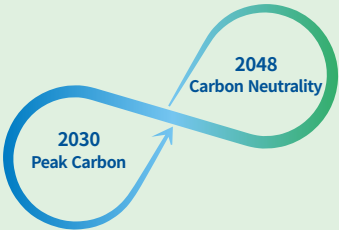
Advancing Chemistry, Transforming Lives!

Wanhua Chemical is committed to promoting its own transformation and circular economy through the power of chemistry, while providing sustainable products and solutions for common challenges the mankind are facing, and contributing to a sustainable future.

Energize Green Chemistry	Create Social Value	Abide by Governance Standards
Contributing to Global Net Zero Through continuous technological innovation and operational optimization, we strive to reduce the impact of our business on the climate, environment and resources, and will work with partners to actively drive down the carbon value chain.	Actively practicing social responsibility We are committed to creating value for all stakeholders such as employees, customers, suppliers and partners, fully guaranteeing safety and health, fully supporting talent development, and actively creating positive social impact.	Ensure efficient and strict governance We strictly comply with business ethics and compliance standards, continue to optimize the corporate governance structure, improve the ESG management mechanism, and support the sustainable development of enterprises with efficient governance level.

Key Action Commitments

Climate Neutral	Achieve net zero emissions from our own operations Actively promote emission reduction in value chains	Safety and Health	Fully ensure the safety of chemicals Zero injuries and zero accidents
Environmental Protection	Reduce the intensity of resource consumption Manage environmental footprint effectively	Talent Development	Build a culture of diversity and equality Empower employees to innovate and grow
Industrial Innovation	Expand green solutions Circular economy	Social Responsibility	Create positive impact Sustainable procurement
Corporate Governance	Improve the governance structure Improve the ESG mechanism	Business Ethics	Fully compliant operation Anti-corruption



Dual-carbon goal

Wanhua Chemical is committed to achieving peak carbon no later than 2030 and carbon neutrality by 2048.

* Scope 1+2

STAKEHOLDER COMMUNICATION

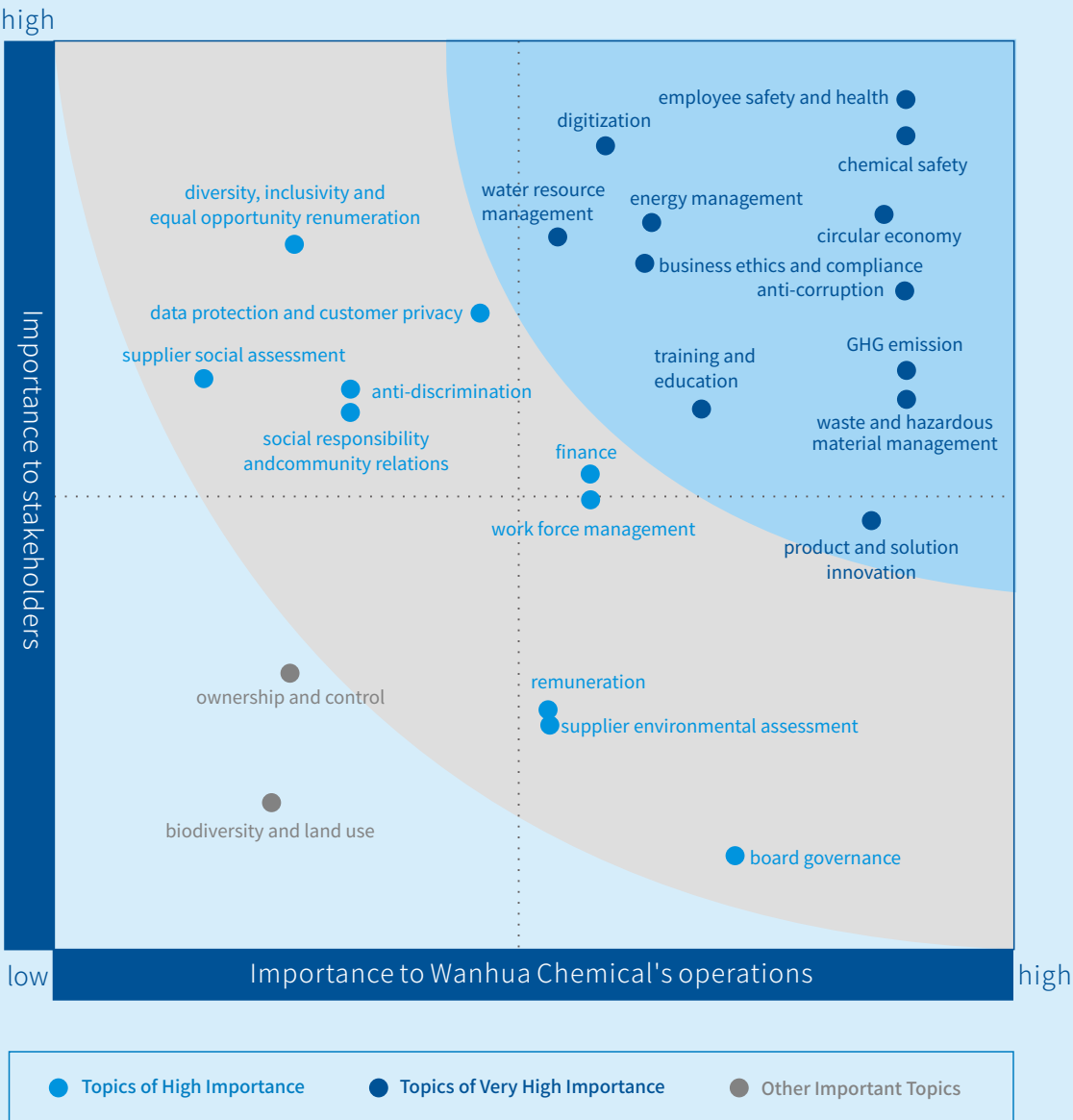
Wanhua Chemical's ESG management system embodies a collaborative framework that integrates all stakeholders. We have identified our main stakeholders as customers, suppliers, employees, shareholders and investors, government and regulatory agencies, communities and the public, and scientific research institutions. Wanhua Chemical values the concerns and requirements of its stakeholders and has established communication channels with all stakeholders. This allows us to understand the requirements of all parties and take timely actions, making necessary corrections along the journey of sustainable development.

Stakeholders	Communication channel	Main concerns	Action
Customer	· Customer satisfaction survey · Customer meeting · Review and assessment	· Customer relationship · Circular economy · Product safety	· Annual customer satisfaction survey · Annual review and assessment
Supplier	· Vendor assembly · Review	· Supply chain management · Procurement practice	· Annual Vendor assembly
Employees	· Employees congress · Management coffee time · Team building activities · Family day events · Internal mailboxes, forums	· Health and safety · Training development · Labor rights · Diversification and equal opportunities	· Employees congress · Management coffee time · Team building activities · Family day events
Shareholder and investors	· General meeting of shareholders · Annual financial report	· Recycling economy · Climate change and carbon emissions	· General meeting of shareholders · Annual financial report
Government and regulatory agencies	· Supervision and inspection · Periodic reports	· Health and safety · Pollutant control · Climate change and carbon emissions	· Sustainable development report · Other periodic reports
Communities and public	· Open day activities	· Pollutant control · Green products	· Sustainable development report
Scientific research institution	· Scientific research forum · Academic exchanges	· Innovative R&D · product safety	· Forum for Co-construction of schools and enterprises · Global conference on process safety

SUBSTANTIVE ISSUES

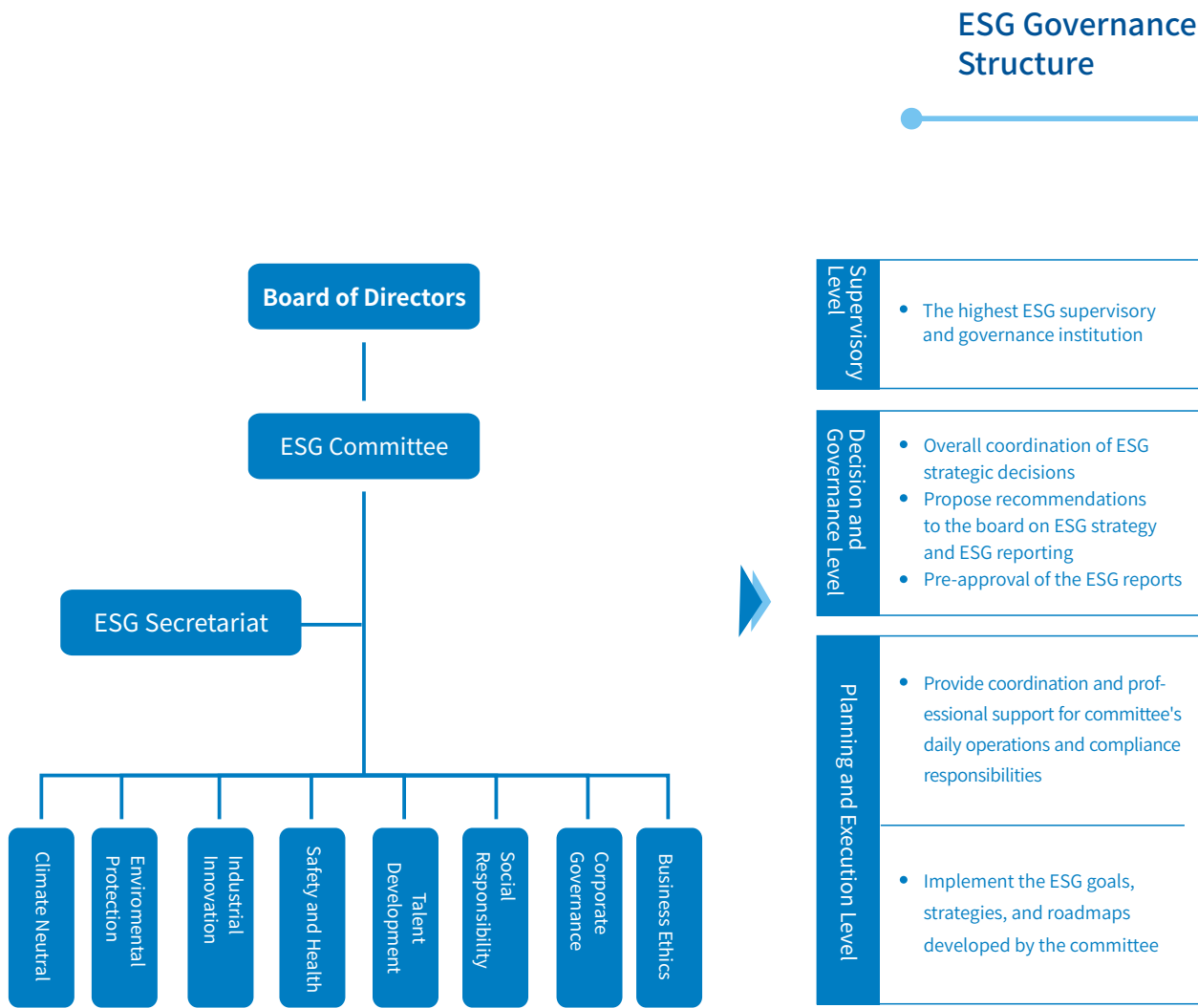
Through full research and communication with various stakeholders, we reevaluate the relative importance of relevant issues of different stakeholders and determine the sustainable development of the company by focusing on industrial chain links, demands and concerns of stakeholders.

12 Topics of Very High Importance | 10 Topics of High Importance | 2 Other Important Topics



GOVERNANCE SYSTEM

Wanhua Chemical has built a three-layer management structure: the board of directors' ESG supervision - decision-making governance - planning and execution, and formed a management system with high-level participation, and efficient matrix coordination.



MODERN ENTERPRISE SYSTEM

Over 30 years, Wanhua Chemical completed five significant reforms, including restructuring, equity structure adjustment, foreign investment, management decentralization, and reorganization listing. Through these progresses, Wanhua Chemical has established a modern enterprise system and a standardized legal personhood system. This has resulted in improved governance structure and management efficiency, a clear business structure with a focused business, and great openness and transparency of information, which has earned us the trust of the public. These accomplishments have laid a solid foundation for our global development.

CONSTRUCTION OF MODERN ENTERPRISE SYSTEM	
Lean management · The company management has been reduced to 2-4 levels.	Regulating shareholding structure · Stock rights allocation rationalization: state-owned, employee, foreign capital, private, public.
Standardization of corporate governance · The board of directors, shareholders' meeting, board of supervisors and managers have clearly defined powers and responsibilities, and management authorization became scientific and reasonable.	Extremely simplified hierarchy · Although the business has grown eightfold since 2015, the number of departments has been decreased.
Streamlining the management team · The proportion of administrative staff fell from 11.5% to 6.8%.	Business Process Efficiency · More than 95% of the internal business flow is handled in 1-3 procedures.

BOARD OF DIRECTORS

Diversity:
The number and composition of the board of directors meet the current laws and regulations.



Independence:
Wanhua Chemical's four independent directors have been fulfilling their roles in daily decision-making and expressing their independent opinions on related matters.

Professionalism:
The board of directors contains professionals from various fields, including chemical industry, finance, strategic research, and capital operation, and they possess the necessary knowledge, skills, and qualities to carry out their duties.



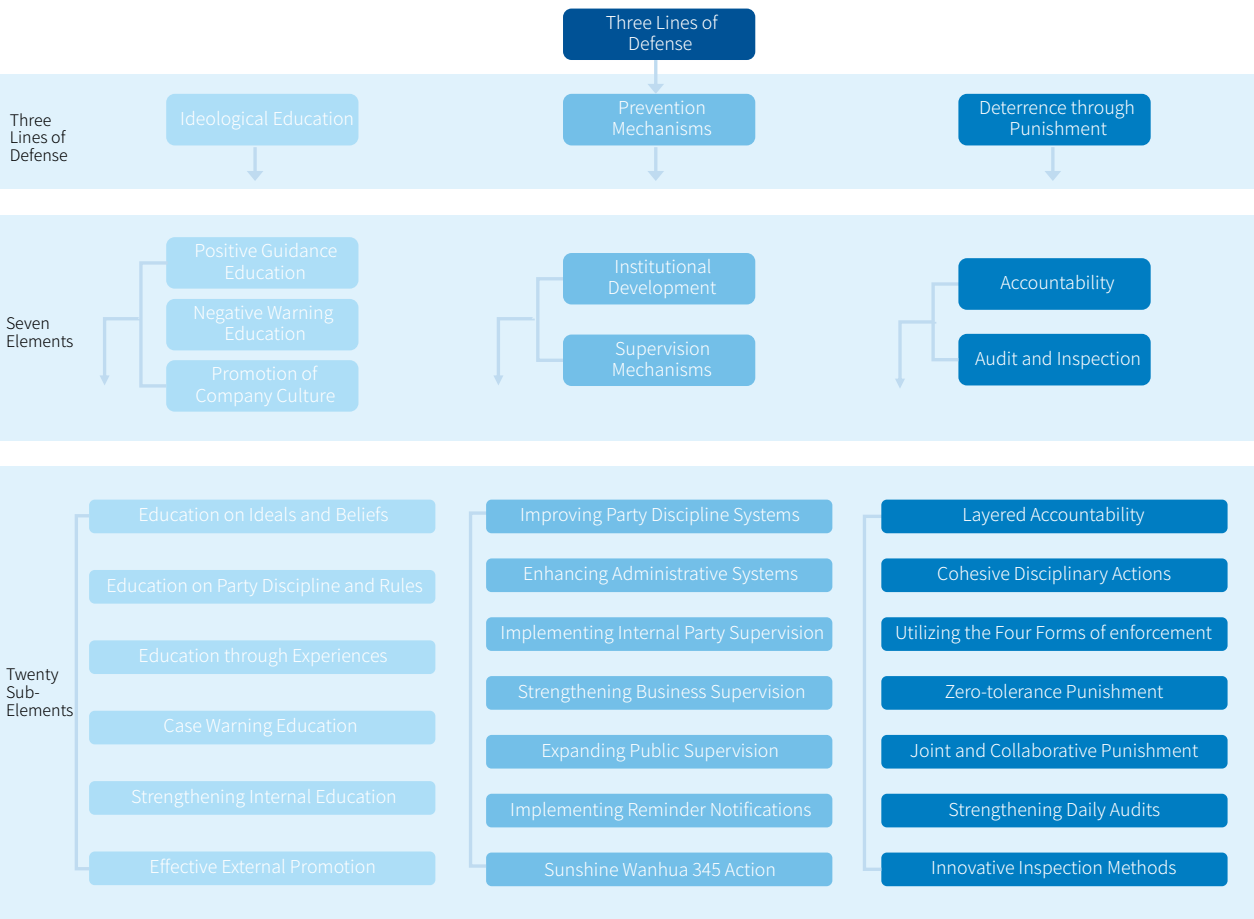
Nomination Committee	<ul style="list-style-type: none">◆ Provide recommendations to the board of directors regarding the size and composition of the board based on the company's operating activities, asset scale, and ownership structure;◆ Examine the criteria and procedures for selecting directors and managers and provide recommendations to the board of directors;◆ Conduct thorough searches for qualified candidates for director and manager positions;◆ Review and provide recommendations on candidates for director and manager positions;◆ Evaluate and provide recommendations on other senior managers who are proposed to the board of directors;◆ Carry out any other tasks that are authorized by the board of directors.
Audit and Compliance Management Committee	<ul style="list-style-type: none">◆ Propose the appointment or replacement of external auditors;◆ Supervise the implementation of the company's internal audit system and compliance management system;◆ Facilitate communication between the internal and external audit teams;◆ Review the company's financial information and disclosures;◆ Assess the company's internal control system and audit major related transactions;◆ Supervise and evaluate the company's compliance management work;◆ Perform other duties authorized by the board of directors.
Salary and Assessment Committee	<ul style="list-style-type: none">◆ Develop remuneration plans or schemes for directors and senior managers based on their main scope, responsibilities, and importance of their positions, as well as the remuneration levels of comparable positions in related companies;◆ Review the performance of non-independent directors and senior management personnel and conduct annual performance appraisals;◆ Supervise the implementation of the company's salary system;◆ Other matters authorized by the board of directors.
Strategy Committee	<ul style="list-style-type: none">◆ Conduct research and make recommendations on the company's long-term development strategy plan;◆ Research and make recommendations on major investment and financing plans that require approval from the board of directors as stipulated in the Articles of Association;◆ Research and make suggestions on major capital operations and asset management projects that require approval from the board of directors as stipulated in the Articles of Association;◆ Conduct research and make recommendations on other major issues affecting the company's development;◆ Monitor the implementation of the above matters;◆ Other matters authorized by the board of directors.
ESG Committee	<ul style="list-style-type: none">◆ Conduct research and make recommendations on the company's environmental, social, and governance objectives and decisions;◆ Supervise and review the implementation of the company's environmental, social, and governance-related work;◆ Identify and assess risks and opportunities related to the company's environment, society, and governance, and provide recommendations;◆ Review the company's environmental, social, and governance reports and provide suggestions;

The board of supervisors of the company includes three supervisors, one of whom represents shareholders, while the remaining two represent employees. Some supervisors possess professional expertise or work experience in legal or accounting fields. The personnel and structure of the Board of Supervisors ensure the independent and effective supervision of directors, managers, senior management, and the company's finances. The board of supervisors has established a code: "Rules of Procedures for the Board of Supervisors", and exercises its powers strictly according to the rules.

BUSINESS ETHICS AND COMPLIANCE

We have been long striving to create a working environment that is free of nepotism, bureaucracy, fraud, and other negative factors. Our goal is to establish a fair, justified, promising, and KPI-oriented atmosphere that encourages our team to be dedicated, responsible, and highly competent. We believe that this will create a good ecology conducive to business development and safeguard our leapfrog development.

Compliance management is crucial to the health, stability, and sustainable development of our company. At Wanhua Chemical, we deliberately adhere to all applicable laws and regulations as well as business ethics guidelines. We consolidate the cornerstone of compliance management through risk identification, system construction, compliance audits, training, publicizing and implementing, and special actions. We continue to promote anti-monopoly and anti-corruption efforts and require all employees to abide by legal guidelines, corporate systems, and ethical standards. Furthermore, we encourage our partners to collaborate with us in establishing a transparent and ethical business environment.



SUPERVISION AND MANAGEMENT SYSTEM FOR ETHICAL PRACTICES

In recent years, Wanhua Chemical has experienced rapid growth, with significant expansion of its scale, types of business operations, and workforce. Over the course of nearly three years, the Wanhua Commission for Discipline Inspection has established the "Wanhua Integrity Supervision and Management System".

This system aims to achieve the goal of integrity by ensuring that Wanhua Chemical's vision of "no intention to corrupt, cannot corrupt, and dares not corrupt". Wanhua Chemical is continuing to strengthen its culture of integrity and leadership by implementing a work policy that emphasizes both prevention and enforcement, with integrating prevention measures into management practices. Wanhua Chemical has also established a strong management foundation based on management commitment, participation of everybody, risk control, system coverage, cultural cohesion, and fraud supervision. In addition, Wanhua Chemical has developed three defensive lines of fraud prevention, including ideological education, prevention mechanisms, and deterrence and punishment measures, to systematically promote the construction of the company's clean atmosphere. This will help maintain a political ecology that is practical, innovative, clean, and progressive.

The "Sunshine Wanhua 345 Action" is a key component of "The Integrity Supervision and Management System". This action is a regular measure of the company's fraud prevention mechanism. Wanhua Chemical's discipline inspection committee took the lead in formulating an action plan that included targets and detailed arrangements based on the schedule of "confessions by March, conversations by April, and notifications by May".

3

In March, Wanhua Chemical completed the annual "Conflict of Interest declaration process" online.

Number of attenders from headquarters and 100% owned companies **15405** (98.7% of total)

Reported cases of conflicts of interest **1300**

Note: 119 employees were unable to report conflicts of interest due to special circumstances such as being on overseas assignment, being foreign nationals, being under management of another company, or being on long-term sick leave.

4

In April, Wanhua Chemical conducted full-coverage integrity reminding interviews for middle and senior managers, as well as employees in financially-critical positions. Conversations had been recorded. Nearly **2000** interviews were conducted, including **269** group interviews.

5

In May, Wanhua Chemical sorted out and screened business partners by priorities based on the type of business, risk, scale of transaction amount, and other factors, and sent letters to inform Wanhua Chemical's integrity and compliance requirements. A total of **2240** letters were sent in 2022, with a reply rate of **98%** that exceeded the targets. Strong support from suppliers and customers has been received with positive feedbacks.

ANTI-FRAUD

To effectively control Wanhua Chemical's fraud risk, we encourage employees and stakeholders to supervise fraudulent, illegal, and other behaviors that harm the interests of the company, for supporting the company's anti-fraud mechanism. Therefore, we have compiled the Wanhua Chemical Anti-Fraud Management System.

Discipline inspection commission	Leads the company's anti-corruption management work, guides anti-corruption investigations, checks the control measures against corruptions, and generate suggestions for employees who violate this system.
Heads of each department and subsidiary company	The "first responsible person" for anti-corruption work.
Managers at all levels	Responsible for identifying, evaluating, and correcting anti-corruption behavior within their jurisdiction, and assisting the Discipline Inspection Commission, Audit and Compliance Department, and Human Resources Department in carrying out anti-corruption work.
Audit and compliance department	Responsible for anti-corruption promotion, reporting, receiving, and investigating, as well as registering the gifts, cash, or equivalent items submitted by employees.

To fight fraud and corruption behavior, Wanhua Chemical has established the reporting hotlines. Reporters should provide as much information as possible about the name, division, facts and evidence of the reported person's illegal or improper behaviors. Reporters can choose to remain anonymous.

Mailing address: Room 1020, Command Center, Front Area of Gate 1, Wanhua Chemical Group Co., Ltd., No.2 Lanzhou Street, Dajijia Street, Development District, Yantai City

Postal Code: 264006

Reporting hotline: +86 535 8203820 (ext. 63820)

Reporting email: whjc@whchem.com

Wanhua Chemical protects the reporter's safety and interests of reporters from harm or retaliation. For reporters who provide clear and verifiable information that the company was previously unaware of, the company rewards them based on the extent of their contribution and the economic losses recovered. The highest reward for a single report is 200,000 yuan, and the standards are as follows:

Category	Reward Percentage	Explanation
Report with clues	10%	The clue is clear, but the evidence needs to be certified, and it is true after the investigation.
Report with evidence	20%	The clue is clear, and the evidence can directly support the case.

In 2022, Wanhua Chemical responded and take actions for all reported information in time.

COMPLIANCE MANAGEMENT

In accordance with the files of "The Basics of Corporate Internal Control" and "The Guidelines of Corporate Internal Control", Wanhua Chemical has further strengthened the construction of its internal control system. Through strict supervision, sound internal control, and thorough information disclosure systems, Wanhua effectively regulate related party transactions, prevent capital risks caused by excess guarantees, and prevent arbitrary cross-sector acquisitions. Since its listing, Wanhua has been focusing on the main business-chemicals.

After its listing, regulations have always been the bottom line for the continuous and healthy development of Wanhua Chemical. The company has implemented the separation of personnel, assets, finances, organizations, and businesses in accordance with the requirements of the Code of Corporate Governance for Listed Companies issued by the China Securities Regulatory Commission, and has timely, accurate, and complete information disclosure in accordance with relevant laws.

Wanhua Chemical has been rated "A" from the Shanghai Stock Exchange's evaluation of information disclosure for consecutive years.

PROTECTION OF SHAREHOLDERS' RIGHTS AND INTERESTS

Shareholder Participation

Wanhua Chemical regulates the procedures of shareholders' meetings in compliance with relevant laws and regulations, Articles of Association, and Rules of Procedures for Shareholders' Meetings.

As a responsible listed company, Wanhua Chemical has long been concerned about the protection of investors, particularly small and medium investors. Wanhua Chemical has included clauses in the Articles of Association that enable small and medium investors to exercise their rights effectively. Examples: when voting on significant issues that involve investors' interests, the votes for small and medium-sized investors shall be counted separately, and the results of separate counting shall be publicly disclosed promptly. The company's board of directors, independent directors, and shareholders meeting the relevant requirements may publicly solicit shareholder voting rights. The solicitation of shareholder voting rights must disclose information such as specific voting intentions to the solicited person fully. It is prohibited to solicit shareholder voting rights with compensation or in a disguised form. The company must not impose minimum shareholding ratio restrictions on soliciting voting rights.

Return to Shareholders

Wanhua Chemical has been committed to being a responsible listed company that "creates fortune for the shareholders and creates value for the society". Firstly, Wanhua Chemical pays attention to the return on investment. When financing, it considers the matching of funds and projects and the profit prospects of the project. The financing aims to bring better returns to shareholders. Secondly, we share the development results with investors adhering to sound financing and sustainable development. On the one hand, we distribute a certain percentage of profits to shareholders annually to realize the return of equity or cash. On the other hand, the realizable value of the company's capital under the circulation market is enhanced through the appreciation of assets.

Since its listing in 2001, Wanhua Chemical has distributed cash dividends to shareholders every year. By the end of 2022, it has distributed a total of 36.2 billion yuan in cash dividends to shareholders, which is twelve times of the cumulative financing amount of 2.951 billion yuan. Relying on the company's good operating performance, stable cash dividends, and continuous returns to long-term investors, Wanhua Chemical was listed in A-Share Listed Companies with Rich Cash Dividend from the 2021 China Association of Listed Companies.



Wanhua Chemical remains dedicated to its corporate mission of "Advancing Chemistry, Transforming Lives!", having establishing a clear dual-carbon goal, implementing the entire industry chain to reduce and eliminate carbon emissions. With clean energy as its source, Wanhua Chemical collaborates with multiple parties to invest in wind power, photovoltaic, and other projects, bringing green upgrades to the industrial park and surrounding cities. Using low-carbon technology, optimized processes, and energy saving and consumption reduction practices in global parks, Wanhua is energizing "zero carbon" park development. Technological innovation has been used to promote industrial ecology, providing innovative green material solutions and reducing the carbon footprint of raw materials.

Wanhua Chemical combines its own development with social responsibility, continuously leading a positive social outlook. In terms of improving the employees and teams, the company fully respects and protects human rights and emphasizes employee development, continuously improving the working and living environment of employees, and providing a diversified talent training system. Wanhua Chemical also carries out public welfare

activities jointly with upstream and downstream stakeholders, stimulating public perception and interest in science with innovative chemical science popularization, and working together to create a harmonious society.

Wanhua Chemical is committed to strengthening its efficient operation regime in terms of corporate governance, enhancing the smooth flow of corporate operation information among the general meeting of shareholders, the board of directors, the board of supervisors, managers, and various entities, and improving governance efficiency effectively. By continuously improving the corporate governance structure, standardizing the company's operation, improving the internal control system, disclosing company information in a timely manner, actively maintaining investor relations, and promoting the healthy and sustainable development of the company with pragmatism, the company is becoming a pioneer in creating a better life for mankind.

Wanhua is taking these ways as our guideline to benefit human's life.

The way chemistry makes life better

Technological Innovation

Good life

We believe that products that can reduce resource pressure, improve use efficiency, and reduce energy dependence are good ones.

Wanhua's practice

To make the basic materials greener.



The way development makes chemistry greener

Green Production

Beautiful production

We believe that good production is the good management of energy, water resources and materials, and the protection of soil and biodiversity.

Wanhua's practice

To make the production process more environmentally-friendly



The way management makes development safer

Intrinsically Safe

Safe cornerstone

Our responsibility for the safety of employees, customers, and partners is our cornerstone.

Wanhua's practice

To make supply, production, sales and usage safer.



The way responsibility makes the society more harmonious

Social Harmony

Meaningful impact

We are willing to work together with the community to build a better place.

Wanhua's practice

To make better communities.



02 THE WAY CHEMISTRY MAKES LIFE BETTER

Technology innovation is the key to unlocking the door to green development, which is the perception Wanhua Chemical possesses regarding sustainable development. We insist on independent research and development, using the power of chemistry to improve the chemical industry, innovating chemical products, and illuminating the beauty of life with green chemistry. This has always been the way of our company's long-term persistence. Moreover, taking degradable, recyclable, and renewable as the directions of innovation, is our interpretation of "a better life".



In September 2020, China officially announced its goal of GHG emissions: carbon peak by 2030 and carbon neutrality by 2060, at the 75th United Nations General Assembly. Today, green and low-carbon becoming a new norm of life. In 2022, Wanhua Chemical issued two files: "Accounting management system of product carbon footprint" and "Accounting Guidelines of product carbon footprint", and started carbon footprint accounting and certification projects, as a result, a basic

carbon footprint database was established. We compiled sustainable development and "dual carbon" strategies in accord with its own innovation and industry features, in order to promote carbon emissions reduction and products with low carbon footprint so that push the sustainable development of the industry, and create a sustainable, green future for humanity.

SCIENCE AND TECHNOLOGY AWARDS OVER THE YEARS

1999	National Science and Technology Progress Award (Second Place)	2012	Top three of China's Innovative Enterprises
2007	National Science and Technology Progress Award (First Place)	2013	National Technology Invention Award (Second Place)
2008	First batch of national innovative enterprises	2016	National Innovation Top 100 Pilot Enterprises
2009	National Science and Technology Progress Award (Second Place)	2016	National Engineering Laboratory for Polymer Surface Materials Preparation Technology
2009	National Polyurethane Engineering Technology Research Center	2019	CPCIF Science and Technology Progress Award (Special Place)
2010	National Science and Technology Progress Award (Second Place)	2022	Provincial Science and Technology Progress Award (Special Place)

At present, Wanhua Chemical has 3,800 researchers, including 175 doctors and 1750 masters.

2022 Technology Innovation Statistics

R&D Expenditure (RMB)	3.42 billion	Newly Authorized Domestic and International Patents (cases)	1058	Patent Authorization Rate	99%
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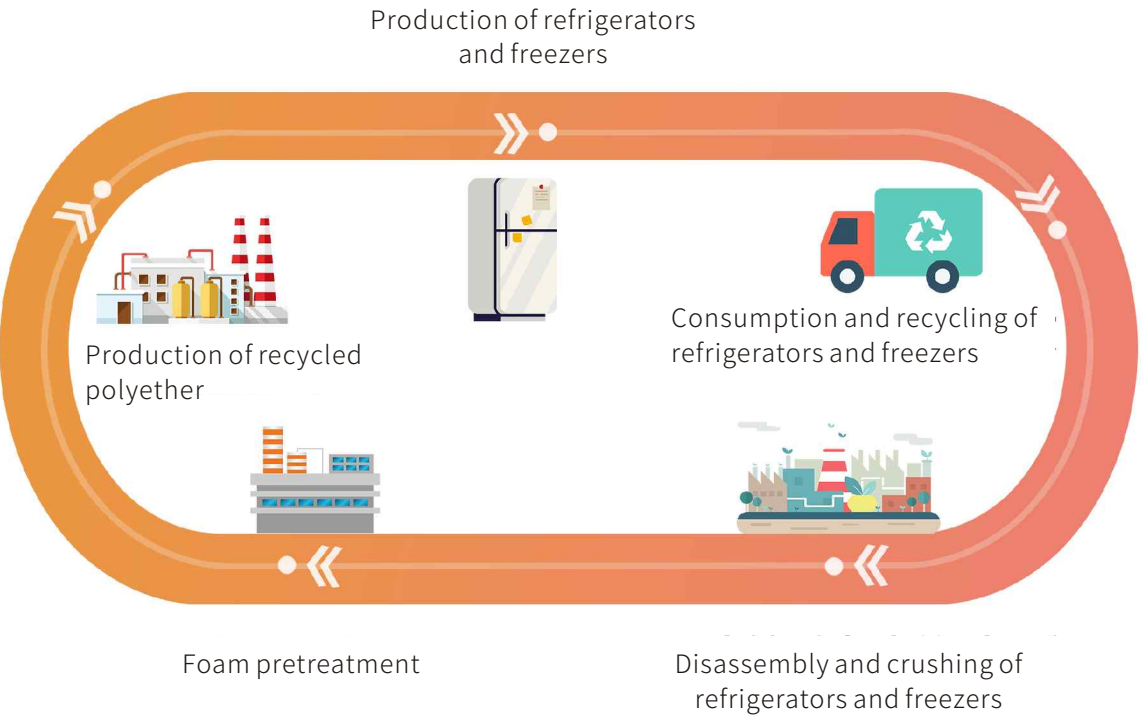
PRODUCT RECYCLING

Through innovation, Wanhua Chemical focuses on green recycling to reinforce our standing within the environmental protection value chain. Leveraging our strong R&D capabilities, increasing MDI production capacity, and advantages of integrated polycarbonate (PC) industry chain, Wanhua Chemical has entered the fields of polyurethane rigid foam recycling, plastic recycling, and recycling pallets. We have achieved successful trials of polyurethane rigid foam recycling, and the production of shared plastic pallets and MDI-binder molded wood pallets. We have launched Waneco®, a green brand dedicated to PC recycling, aiming to help various segments to become greener, like home appliances, logistics, electronics, and automobile, with our chemical know-how.



RIGID FOAM RECYCLING

In 2022, Wanhua Chemical's pilot plant for polyurethane rigid foam recycling was successfully put into operation, with a re-generated polyether polyol capacity of 60 tons/year. This is a milestone that marks the company's implementation of polyurethane recycling and reuse. A new channel of dealing with waste polyurethane foam has been opened for promoting the development of a circular economy.



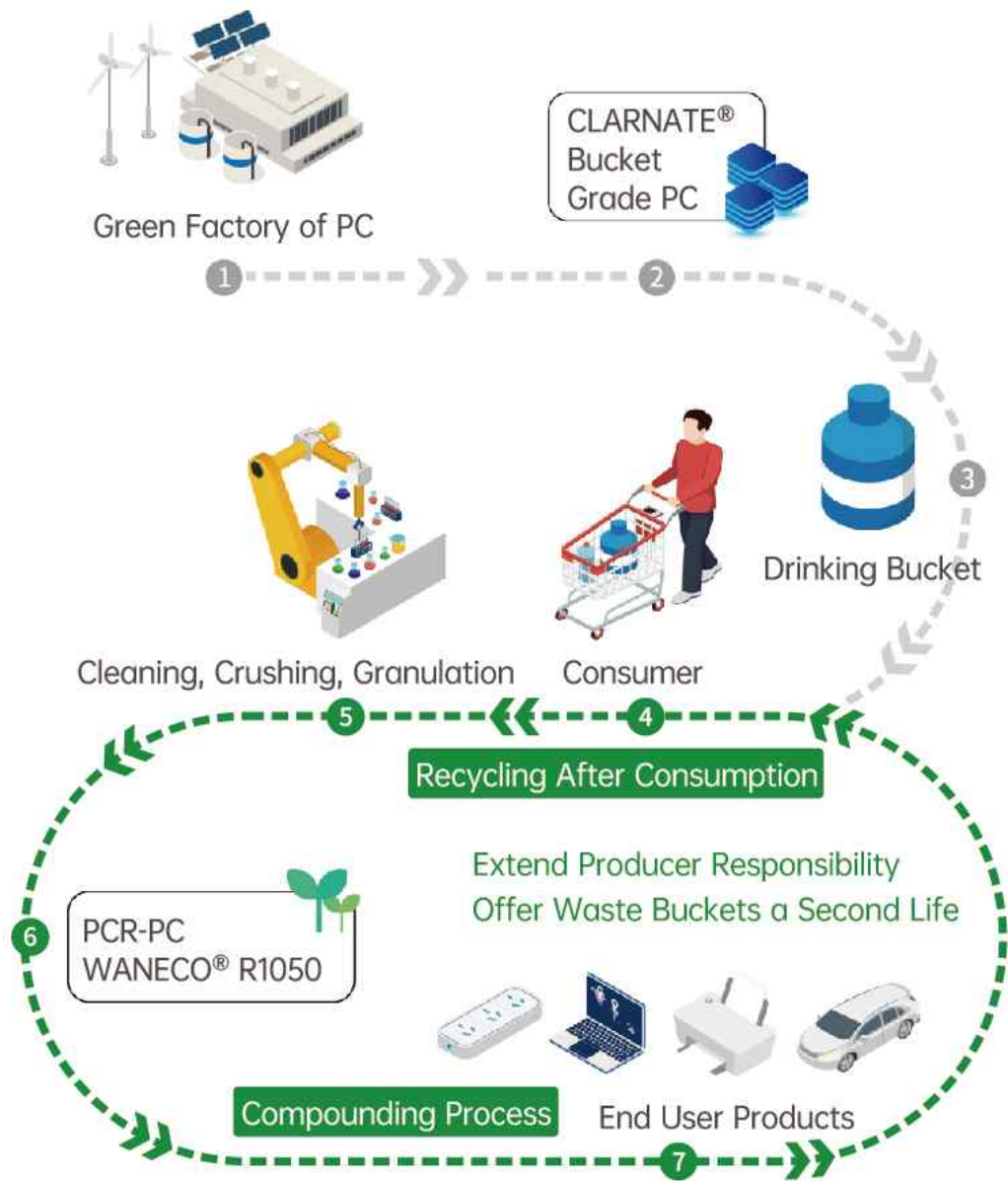
The polyurethane rigid foam recycling plant in collaboration with relevant parties is to recover and crush waste foam from refrigerators and freezers, and then produces recycled polyether polyol through a specific chemical process. The characteristics and performance of the re-generated polyol are comparable to the standard virgin polyol and can be applied in refrigeration, automotive, pipeline insulation, and household items. One ton of waste foam can achieve a carbon reduction of approximately 3 tons when recycled. This polyurethane rigid foam recycling technology is in accord with the concept of circular economy, with both economic and ecological benefits.



PLASTIC RECYCLING

As a polycarbonate (PC) producer with integrated industry chain, Wanhua Chemical has been advancing in low-carbon and environmentally friendly product lines. In June 2022, Wanhua Chemical launched the green environmental protection brand: "Waneco", which covers post-consumer recycling, biodegradable, and bio-based materials. Through value chain cooperation, the first post-consumer recycled polycarbonate (PCR-PC) product, Waneco® R1050, has been officially commercialized.

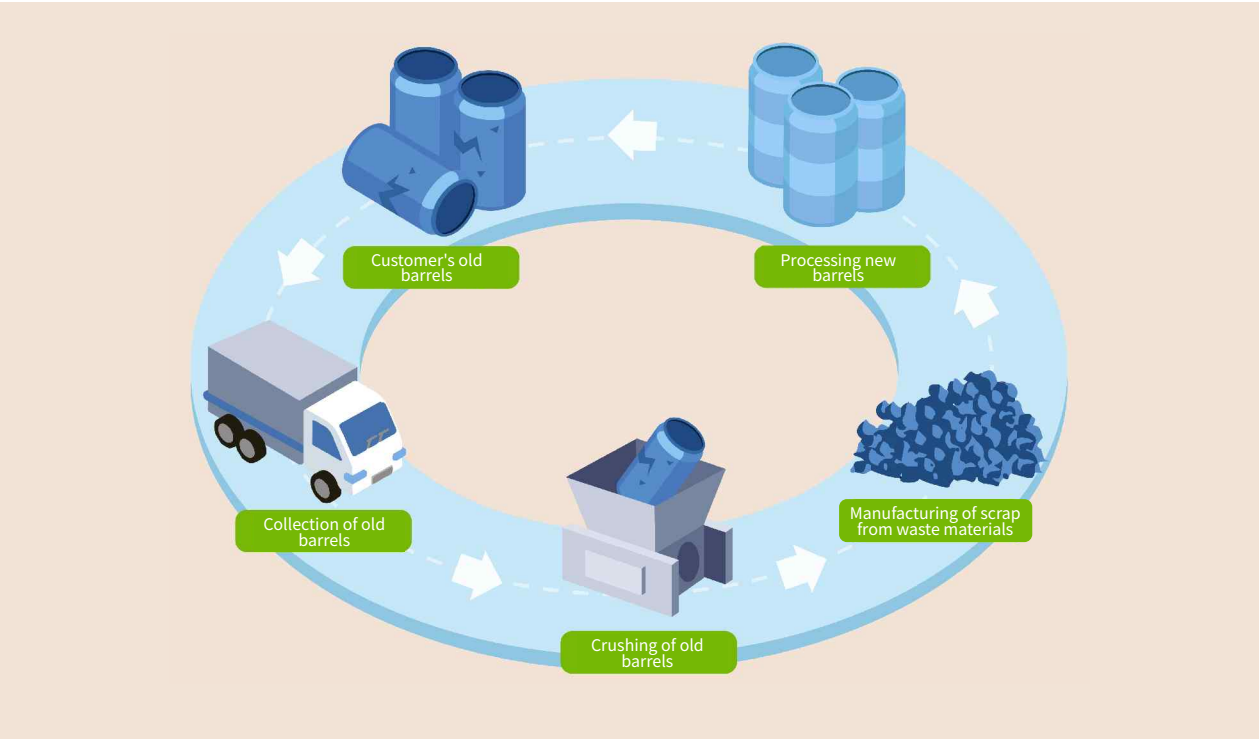
Wanhua Chemical has established a cross-sector collaborative model with the upstream and downstream partners to recover and recycle waste PC from different sources, like car lights and water barrels. After multiple steps such as crushing and cleaning, it is re-granulated into Waneco® rPC material, which means an extended material life cycle and 20%-50% carbon emissions reduction. At the same time, a comprehensive quality management system is established from raw materials and processes, to finished products with traceability of the entire recycling chain. Currently, Waneco® rPC has passed GRS and UL2809 certifications, which is crucial for meeting the customized needs of diverse segments and greener end-consumption.



CIRCULATED PALLETES

Recycled Plastic Shared Pallet: One of the green projects developed by our company is a shared pallet logistics system made from recycled plastics. This is a joint effort with Leju Technology and the solution was successfully launched in 2022. It is the first domestically produced recycled plastic pallet that combines digital technology, good performance, low-carbon footprint and cost advantage. These pallets are made of 100% recycled plastic. The project saves 2 million pieces of wood pallets per year, equivalent to 330,000 trees. Compared to the conventional disposal ones, recycled ones can reduce about 45% of pollution and 60%-70% energy consumption. The project recycles 13,000 tons of waste plastic alongside a carbon reduction of 5,000 tons every year. In addition, the recycling and regeneration process are traceable with a digital data system. Users can access detailed information such as the production material and source through the unique ID code of each pallet. Also a series of management standards are made including classification, recycling, treatment and regeneration processes.

MDI Binder Molded Pallet: A new type of pallet made from recycled wood, or waste crops (such as straw, peanut shells, and bamboo), with applying MDI-based binder. The application and promotion of the pallets are beneficial to conserving China's precious forest and utilizing waste bamboo and wood. Thanks to the high bonding strength of MDI binder, the weight of binder used is only one-fifth of that of urea-formaldehyde binder, with less carbon emissions. Moreover, MDI binder does not contain free formaldehyde, thus the harm to workers' occupational health during production is minimized, and customers' concerns of the VOC during the usage is eased.



GREEN SOLUTIONS

Wanhua Chemical has been focused on R&D of sustainable materials and solutions, especially for zero-carbon communities, formaldehyde-free living space and bio-based and biodegradable applications. Through technology and service innovation, we are able to strengthen the industry chain to provide efficient, stable and responsible green solutions that meet stringent environmental compliance requirements, for upstream and downstream enterprises, and help customers to tackle technological challenges, and eventually enable more businesses turning to low-carbon and sustainable development.

ZERO-CARBON COMMUNITIES

In partnership with research institutions and construction companies, Wanhua Chemical has innovatively employed polyurethane foam to fill the cavity between double-layer autoclaved lightweight concrete (ALC) panels. The powerful bonding force of polyurethane foam creates a complete insulating wall with the two layers of ALC panels, birthing a new generation of the polyurethane structural insulation integration system.

In 2021, in response to the call of the province and city governments to encourage the development of ultra-low energy consumption buildings, Wanhua Chemical started to construct a 90,000 m² ultra-low energy consumption demonstration project and successfully applied the new polyurethane structural insulation integration system. The main structure and insulation of the demonstration project have been completed. According to building experts, the project can reach equivalently A-level fire resistance with high efficiency thermal insulation and lightweight walls. The filling foam between ALC panels also brings better waterproof and air tightness with improved overall strength and less insulation area. The cost of the new insulation is 30% lower than the conventional polyurethane spray insulation or rock wool insulation, making it very suitable for application in low energy consumption buildings.

The demonstration project was constructed in accordance with national standard of nearly -zero energy consumption buildings, with an over 90% building energy-saving rate. Furthermore, energy-saving PU composite windows with excellent insulation performance, fire resistance, and low carbon footprint are also applied in addition to the polyurethane insulation structure. Various renewable energy sources such as solar PV, GSHP, power-generating glass and solar thermal are installed. All of the above renewable energy sources contribute totally 30% of the energy consumption of the community.

Despite the contribution of renewable energy, the predicted annual electricity consumption per unit area is expected to be within 50 kWh, which means an energy saving of 60% compared to conventional buildings. Besides, the total carbon emissions reduction of the project is more than 10,000 tons per year.

Yantai Economic and Technological Development Area

- Highly-efficient insulation structure
- Passive solar doors and windows
- Air impermeability design
- Photovoltaic integration
- Solar thermal water supply system
- Ground-source heat pump
- Energy management system
- Smart air monitoring



FORMALDEHYDE-FREE SPACES

For 15 years, we have been dedicated to developing the home Composite Wood Panel (CWP) market and collaborating with stakeholders to spread the concept of "formaldehyde-free". Our aim is to promote the green upgrade of the furniture segment, including home, office, and medical, for safeguarding the human's health.

GB/T 39600-2021 "Classification of Formaldehyde Emission in Composite Wood Panels and Their Products" and GB/T 39598-2021 "Guidelines for Maximum Capacity of Composite Wood Panels Indoors Based on Maximum Formaldehyde Content" were jointly compiled by the China Academy of Forestry's Wood Industry Research Institute, Wanhua Chemical, and other entities. These new standards classify the formaldehyde emission of composite wood panels and their products for indoor use into three levels: ENF (formaldehyde-free addition), E0, and E1, according to limit values. The promulgation and implementation of these two standards are of great significance for protecting consumers' health, eliminating indoor environmental pollution, and promoting the healthy development of the composite wood panel industry.

The key to creating formaldehyde-free homes and offices by applying formaldehyde-free composite wood panels, formaldehyde-free veneer, and formaldehyde-free edging is the use of formaldehyde-free MDI adhesives. Formaldehyde-free composite wood panels are mainly made from straw and produced through high-temperature and high-pressure processing with MDI binder. The recycling and utilization of straw greatly alleviate the environmental pollution caused by straw burning, and simultaneously, reduce deforestation.

In addition to providing high-performance formaldehyde-free adhesives, we also offer matching additives and production processes. Our company has developed an efficient fast-curing technology for manufacturing formaldehyde-free composite wood panels. With this technology, we have industrialized the world's first continuous spraying gluing process for formaldehyde-free plywood. This not only promotes the improved performance of plywood products but also reduces the number of workers needed for production by 75% and reduces the production cost of plywood by more than 10% per cubic meter. This greatly promotes the transformation and upgrading of the composite wood panel industry.

Currently, our company has helped downstream composite wood panel factories to build an annual capacity of 8 million cubic meters of formaldehyde-free panels with reducing carbon emissions by 400,000 tons. While promoting carbon reduction in industry, we have also provided a new way of healthy living for more than 3 million families. By taking responsibility, we are promoting the transformation and development of the industry through a dual approach of both innovation and sustainability.

BIO-BASED MATERIALS

To address the challenges of global climate change, we focus on our own innovation and industry development path, and established a bio-based innovation R&D platform. We use non-food corn starch, bio-waste, and natural oils as sources to develop bio-based TPU, biodegradable materials, bio-based polyether, and bio-based emulsions, among other material solutions. We have developed dozens of bio-based products to better helping companies reduce their carbon footprint and promote industry sustainable development.

Bio-based TPU

Leveraging on our integrated bio-based platform, we have launched a 100% bio-based TPU product, which is made from bio-based pentamethylene diisocyanate (PDI) derived from corn straw, and additives such as rice bran wax are also sourced from renewable resources such as non-food corn and castor. With environmental sustainability, renewable materials, and eco-friendly waste disposal, this product can greatly reduce carbon emissions from end-use products. It also has excellent properties such as high strength, toughness, oil resistance, and resistance to yellowing, which continuously empowers green transformation in fields such as footwear and apparel, films, consumer electronics, and food contact materials. To better meet market demand for diversified products, we have developed TPU products with bio-based content ranging from 10% to 100% and are committed to improving the low-carbon value chain with more upstream and downstream partners and transitioning towards a circular economy.

Polylactic acid (PLA)

As a manufacturer covering all mainstream biodegradable materials, Wanhua Chemical uses natural gas, corn starch, and other renewable resources and clean energy such as hydropower to provide a comprehensive integrated supply chain while effectively reducing carbon footprint. Waneco® PLA, which is fully degradable under composting conditions and offering excellent mechanical properties, is widely used in packaging materials, daily consumer goods, fiber textiles, medical devices, agricultural films, and 3D printing.

Bio-based polyether

By combining renewable castor oil and the advantages of our own integrated industrial chain, we have developed the bio-based polyether series, WANOL®FB340/FB350/FB390. With bio-based content exceeding 50%, this product can reduce carbon footprint by 30% to 50% compared to the conventional product, and help downstream products to obtain the US Department of Agriculture (USDA) bio-based label certification, thus meets the demands of high-end household, automotive, and footwear markets.

Bio-based emulsions

To help consumers improve indoor air quality, we have developed a high-end emulsion for interior wall latex paint, Archsol®8177&8179. By achieving high bio-based content, these products can effectively reduce the carbon footprint in paint production and meet the stringent requirements of high-performance coatings, further promoting the green progress of the coating industry.

BIODEGRADABLE MATERIALS

With the support of Wanhua Ninbo High-performance Material Research Institute, we are continuously advancing the development of biodegradable materials in the fields of disposable packaging, express delivery, logistics, daily catering, agriculture and horticulture, medical, and 3D printing. We work together with our partners to expand the application boundaries of biodegradable materials. Our company boasts a professional CMF design team that integrates color, texture, feel, smell and other elements into the materials to meet the aesthetic needs of end-users and consumers.

Packaging materials: We have successfully developed a series of biodegradable materials, including the latest PBAT, which finds wide application in the packaging of precision instruments, glassware, fresh fruits, alcohol and beverage due to its excellent performance including plump bubbles, good shock absorption, strong buffering, excellent long-term sealing performance, and lasting support. After being discarded, the PBAT material can be completely degraded through composting, making it environmentally friendly.

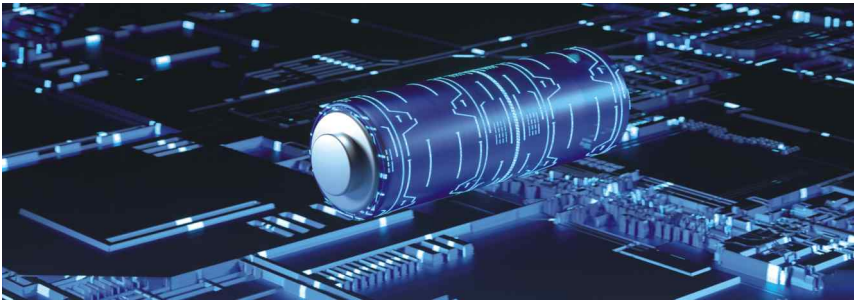


Biodegradable film: In 2022, we released Waneco® T18 PBAT resin for agricultural film, which uses an original one-step low-acid process to achieve a balance between performance and cost. We have also established a cross-value-chain ecosystem to demonstrate and explore the biodegradation of plastic products in crops such as peanuts, corn, potatoes, and processed tomatoes, in collaboration with research institutions, industry peers, downstream companies, and other entities. This initiative aims to promote green agricultural development.

NEW ENERGY MATERIALS

Leveraging our integrated industry chain, we prioritize research and development efforts in carbon reduction technologies, battery materials, and green energy materials to contribute to the advancement of the new energy industry. We are expanding our presence in fields such as wind power, photovoltaics, and other new energy-related fields, as well as battery materials. We have signed a strategic cooperation agreement with LongJi Green Energy Technology to collaborate extensively on photovoltaics, hydrogen energy, built-in photovoltaics, new materials, and other fields to grow in new energy applications.

BATTERY MATERIALS



To promote high-quality development in the battery industry, we are constructing a new industry ecology through our chemical insights. We are building a closed-loop recycling model to create a comprehensive supply chain of battery materials, to provide various kinds of cost-competitive products for supporting the development of China's new energy industry.

Battery wastewater treatment solutions: As a leading supplier of advanced membrane materials, Wanhua Chemical offers environmentally-friendly and efficient solutions for battery wastewater treatment. We have developed the WANFORITE® BW-LP reverse osmosis membrane, which has good acid resistance and maintains a high desalination rate under high-pressure conditions. During battery production, the combination of high-desalination and low-pressure membrane products can be used to recycle most of the wastewater and other useful resources in it.

New energy vehicle battery pack solutions: As the "heart" of new energy vehicles, batteries are vital important for the development of the industry. For new energy vehicles, the flame retardancy, thermal conductivity, sealing performance, and impact resistance of raw materials are directly related to the driving safety and driving mileage. We have innovatively upgraded a variety of materials such as polyurethane, modified plastics, composite materials, and organosilicon to provide an overall material solution for the battery pack in the new energy vehicle industry, as to enhance the safety performance of the batteries. In the future, Wanhua Chemical will also leverage the advantage of industry cluster and work with downstream customers to jointly build a circular value chain, and contribute to the sustainable development of the industry.



WIND POWER MATERIALS

For wind power, Wanhua Chemical offers a variety of raw materials that can be applied in multiple component of wind power systems such as blades, rotors, tower beams, cables, etc., providing high-performance, environmentally friendly materials that can withstand extreme conditions and random loads for a long period outdoors. With a focus on sustainability, Wanhua Chemical also explores thermoplastic and recyclable materials for the next generation of wind power solutions.

Wind turbine blades: Wanamine®IPDA, renowned for its high reactivity, superior weather resistance, and rigidity, serves as an ideal curing agent for epoxy resin-based blades. Its low viscosity ensures smooth resin impregnation, facilitating efficient production of large structural parts with long operation times and fast post-curing.

Wind turbine coatings: Wanhua Chemical's aliphatic HDI curing agents offer excellent yellowing resistance, weather resistance, mechanical strength, and flexibility. These properties make them well-suited for polyurethane anti-corrosion coatings, enhancing the fullness and glossiness of the coatings and ensuring long-lasting appearance of wind turbine blades.

Wind power pipelines: Leveraging its integrated industrial chain, in 2022 Wanhua Chemical officially launched a new product: polyamide 12 (nylon 12). Under the innovative combination of multiple processes, a chain of products: CDON (cyclododecanone), CDOL (cyclododecanol), LL, nylon 12 resin, modified nylon 12 and nylon 12 elastomer has been produced. This made Wanhua one of the few companies globally that possess the core production technology and stable supply of nylon 12 chain. Nylon 12 products, with their extremely low density, good resilience under low temperature conditions, impact resistance, chemical resistance, are ideal for wind power pipelines to be durable in harsh environments.

PHOTOVOLTAIC MATERIALS

In the field of photovoltaics, Wanhua Chemical has developed comprehensive material solutions that encompass general products, engineering plastics, and special polymers, providing downstream customers with high-performance and competitive products.

POE film: As an encapsulation material for photovoltaic modules, POE film offers several advantages, including high volume resistivity, low water vapor permeability, high UV resistance, resistance to potential induced degradation (PID), and low glass transition temperature. With the increasing market share of double glass modules, the penetration rate of POE film in the photovoltaic encapsulation material market is continuously increasing. However, due to the technical complexity, the high-end polyolefin products are heavily dependent on imports. After many years of independent technical development, Wanhua Chemical has completely mastered the relevant technology, especially the key catalysts with high activity and good thermal stability. Following the successful pilot test, the industrialization of high-end POE and its differentiated special grades is imminent.

Polyurethane frames: The choice of material for photovoltaic modules has a profound impact on the large-scale photovoltaic power generation. Polyurethane extruded composite has excellent properties such as high strength, high modulus, low density, low thermal conductivity, low expansion, high insulation, and high corrosion resistance. They do not exhibit PID effects, thus can reduce power generation efficiency losses, and have the same coefficient of expansion as glass panels. It is ideal for offshore photovoltaics, saline-alkali land photovoltaics, and marshland photovoltaics, etc. The optimized design of the full yarn process frame structure takes into account of the product's lateral strength, straightness, and production stability. Its novel assembly approach can meet automation requirements and ensure assembly efficiency. Compared with conventional materials, polyurethane extruded composite can reduce carbon emissions by over 85%.

PV connectors: In 2022, Wanhua Chemical's special copo-polycarbonate (PC) project was successfully put into production, and the first high-silicon content (20%) siloxane product was officially launched. This is the first industrialized product from Wanhua Chemical in terms of special engineering plastics. The silicone copolymer PC product has excellent properties such as low-temperature toughness, electrical insulation, long-term UV resistance and flame retardancy due to the introduction of flexible silicone chains.

03

PATH TO MAKING CHEMISTRY GREENER

To explore green and low-carbon production, we prioritize energy-saving, water-saving, pollution control, and waste treatment. Our approach involves integrating sustainable development concepts into every aspect of production and management, continuously optimizing environmental and resource management systems, and minimizing the impact of our activities on the environment. By implementing these actions, we can respond to climate change with practical solutions. We formed a cross-departmental carbon emission management team to manage the energy-saving and low-carbon work, established the carbon emission management structure and system process, and continuously promoted the implementation through advanced technologies.

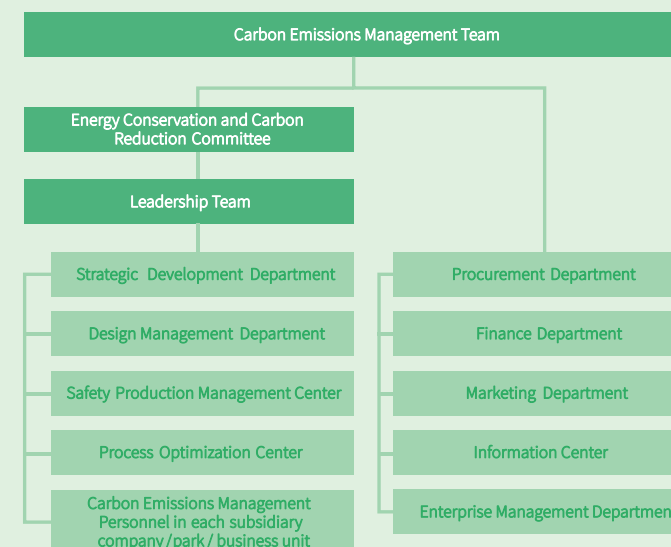
As the first Chinese chemical company who proposed and promoted the "zero emissions" concept, Wanhua promise to achieve zero fugitive emissions, and 100% compliance of other emissions until they decrease to zero. In all major production bases, we are committed to building "3 zero factories" (zero leaks, zero noise, and zero odor), for a greener community and planet.



Carbon Emission Management Authority

In 2016, Wanhua Chemical established the Energy Conservation and Low-Carbon Committee to coordinate the company's efforts in reducing energy consumption and greenhouse gas emissions. They set up a structure and processes for managing carbon emissions, and formed a team to oversee it, which included members from various departments. Wanhua Chemical also introduced, developed, and promoted advanced energy conservation and low-carbon technologies to continuously improve their efforts in reducing energy consumption and emissions.

Environmental Management System : ISO 14001



ENERGY MANAGEMENT

We are firmly committed to a green and low-carbon development path, which aligns with our company's strategy and dual-carbon goals, and respects the law of nature. We lead the industry's energy efficiency upgrades, and maintain a keen awareness of new technologies, products, processes, and models. We continually explore the construction of green factories and green parks, providing reliable and advanced solutions for energy innovation in the chemical industry.

In 2022, Wanhua Chemical conducted thorough statistical studies and verification of internal energy consumption and greenhouse gas emissions within the organization. In 2022, by increasing renewable energy usage, process optimization, and nitric oxide emissions reduction, Wanhua Chemical achieved a CO2 emissions reduction of 413,000 tons throughout the year, and the carbon intensity reduced by 14% from 2021.



Energy Consumption (TWh)	Energy Intensity (kgce/t)	Carbon emissions (million tCO ₂ e)	Carbon Intensity (tCO ₂ e/t)
32.9	129	20.06	0.96

Note: Total output includes the company's main products, intermediate products, and by-products.

ENERGY STRUCTURE

We strongly believe that the energy sector is the primary method for achieving carbon peaking and carbon neutrality. Wanhua Chemical strengthens carbon footprint management from the source, continues to optimize energy structure, and forms a system to achieve green and low-carbon transformation and supply security. We have made significant strides in the clean energy sector, particularly in wind power, solar power, and nuclear power, through advanced ventures

and collaborations. By 2030, Wanhua Chemical will anticipated>50% clean energy source through investment of electricity projects, and will have 14.9 billion kWh/a of clean electricity, with an annual reduction of 8.65 million tons of carbon emissions, based on the proportion of the company's equity. Ultimately, the clean electricity obtained through cooperative projects will cover all Wanhua Chemical's industrial parks in China.



Laizhou Offshore Photovoltaic Power Generation Project: Jointly built with China Huaneng Group, the 1,300 MWp Laizhou Offshore Photovoltaic Power Generation Project helps green transformation. The project is expected to generate an annual power output of 1.73 billion kWh and reduce carbon dioxide emissions by over 1 million tons per year, helping to save energy and reduce emissions and build a green energy system.

Fujian Offshore Wind Power Project: Together with China Energy Group, Wanhua has constructed a 310 MWp offshore wind power project on the main island of the Matsu islands, in Fujian Province. The project plans to install 23 sets of 13.6 MW wind turbines to achieve an annual power output of 1.45 billion kWh and reduce carbon dioxide emissions by over 800,000 tons per year.

Weifang Offshore Photovoltaic Power Generation Project: By utilizing Shandong's local advantage of energy sources, Wanhua, China Energy Group, and Trina Solar jointly built a 1,260 MWp offshore photovoltaic power generation project in Weifang, Shandong. The project is expected to generate an annual output of 1.68 billion kWh and reduce carbon dioxide emissions by nearly 980,000 tons per year, for accelerating energy structure adjustment and low-carbon transformation.

Agriculture-Solar PV Complementary Power Station Project: Wanhua invested and built a 140 MWp power plant in Zhaoyuan, Yantai, Shandong Province. The project has an annual power output of 170 million kWh, and part of the electricity generated is integrated into Wanhua Chemical Yantai Industrial Park, which can achieve an annual carbon reduction of 170,000 tons.

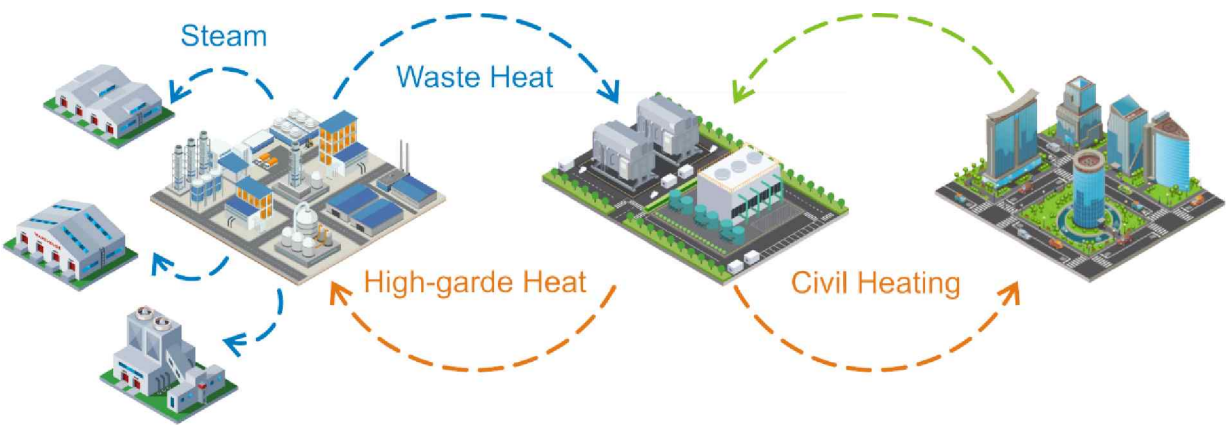
Wanhua Cishan Headquarters Photovoltaic Project: The power plant was successfully connected to the grid in 2022 (Phase I) and supply green electricity to the headquarters office area through distributed photovoltaic power generation, creating a new example of green and low-carbon parks.

Please note that the aforementioned projects are just a few examples of Wanhua's initiatives in the clean energy sector.

ENERGY EFFICIENCY

Wanhua Chemical has been focusing on transforming fugitive gas emissions into non-fugitive ones with supportive high-efficiency recycle and treatment facilities to reduce atmospheric pollutant emissions while achieving material recovery and utilization.

Emission Intensity (t/million t)	SO ₂ (t)	NOx (t)	Particulate Matter (t)	VOCs (t)
54.1	330	1363	95	210



Wanhua Chemical-
Hehai Comprehensive
Energy Project:

Wanhua Chemical and Hehai New Energy jointly established a comprehensive smart waste energy recycling project that uses a combination of innovative technologies to recover and reuse the waste heat from Wanhua Yantai Industrial Park, providing high-grade heat for the park's production and clean heat for civil winter heating of Yantai city. By implementing this project, Wanhua Chemical's Yantai Industrial Park can save about 2.6 million standard tons of coal and reduce carbon dioxide emissions by 6.7 million tons annually, while ensuring heating for 100 million square meters of urban area in Yantai city. This project represents a perfect fusion of industrial energy-saving technology and civil low-grade heat utilization.

High-efficient
electric motor

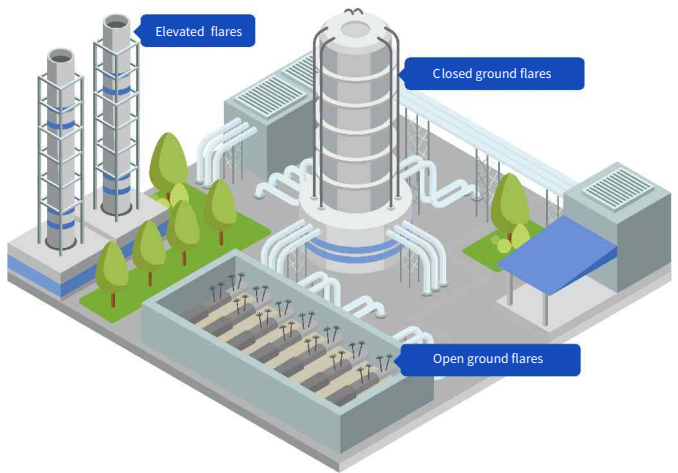
By upgrading the efficiency of electric motors and transformers, power consumption is reduced. Wanhua Chemical collaborates with strategic partners to develop specialized products for Wanhua and applies for the Ministry of Industry and Information Technology's super-high efficiency and energy-saving electric motor project. Based on the company's existing inventory of low-voltage electric motors and transformers, the annual electricity savings will reach 206,000 kWh and 12.1 million kWh, respectively, after efficiency upgrades based on capacity.

Flare gas
utilization

By implementing volume reduction and end-of-pipe recycling techniques, the torches in Yantai operate without visual flame, odor, noise, or light pollution. We have combined torch and recycling systems to effectively recover valuable flare gas, which is then directed to energy recycling units for steam production, benefiting our manufacturing processes.

Electric buses

One electric bus can reduce CO2 emissions by 3.2 tons/year, NOx emissions by 0.187 tons/year, and PM2.5 emissions by 3.9 kg/year. By the end of 2022, Wanhua Chemical had 24 electric buses with a service life of 8 years. Moving forward, we plan to increase the number of electric buses at our Fujian and Ningbo bases to further reduce carbon emissions.

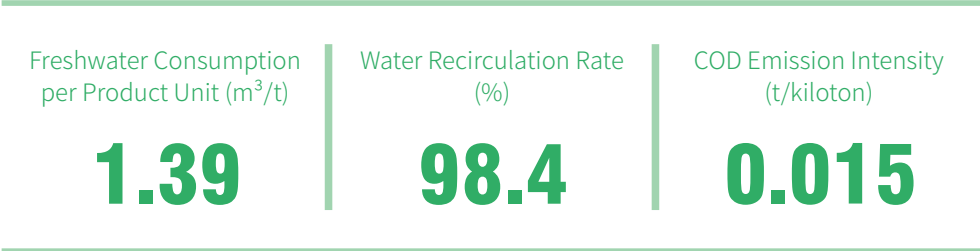


Climate and Energy

Commitments	Topic	Index	2021 (base year)	2022	2030 target
1. Achieve net zero emissions from their own operations 2. Actively promote emission reduction in the value chain	Greenhouse gas emissions and energy management	Total carbon emission (Scope1+2) (million tCO2e)	26.89	30.07	Peak carbon before 2030, net zero emissions by 2048
		Carbon emission intensity (Scope1+2) (tCO2e/t)	1.11	0.96	≥20% decrease from 2021
		Energy intensity (kgce/t)	144	129	≥25% decrease from 2021

WATER RESOURCE MANAGEMENT

We firmly believe that a chemical problem should be addressed through chemistry itself. The reuse of production water in chemical parks is one of the hot topic related to water saving worldwide. Wanhua Chemical has been strengthening water resource management in research and development, production operations, and process optimization, and regulates the whole process management including wastewater generation, collection, treatment, reuse, and discharge, aims for zero wastewater discharge, utilizes different processes to treat and reuse wastewater.



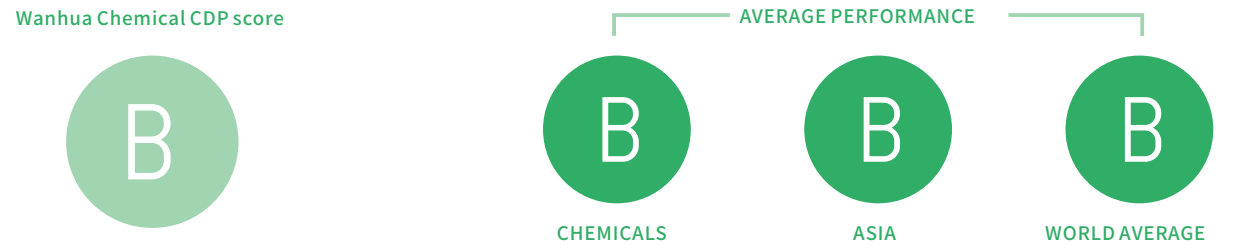
Note: Total output includes the company's main products, intermediate products, and by-products.



MDI Waste Brine Recycling Technology

Reusing by-product brine generated during the production process has always presented a challenge. Wanhua Chemical adopted self-developed waste brine reuse technology, which can efficiently recycle the collected MDI by-product high-amine-content waste brine, by catalytically convert it under mild conditions to high-purity concentrated saltwater. The parameters of the obtained saltwater are completely qualified to be used as ion membrane electrolysis water, making it a high-quality raw material for the chlor-alkali industry. This enables the majority of MDI waste brine to be recycled. This technology features efficient waste treatment, zero emissions, simple process, and stable treatment effects, pioneered the zero-emission of waste brine in isocyanate industry, and was shortlisted for the Chemical Week 2022 Sustainable Development Best Recycling Project. Currently, this technology has been widely applied in the company's parks globally, with a total amount of recycled waste brine of approximately 3 million tons/a, with reducing CO2 emissions by more than 140,000 tons per year, and supplying additional re-generated feedstock.

Wanhua Chemical's 2022 "Water Security" rating by CDP is "B"



Wastewater Treatment

Differentiated pretreatment methods are formulated based on the distinct properties of wastewater generated from various production processes. Multiple wastewater treatment units have been established to receive and treat production wastewater from the company and its subsidiaries. The clean effluent produced by the existing equipment, along with the effluent from the comprehensive wastewater treatment facility, is directed to the water recycle system for further treatment. The reclaimed water is then reused within the park's facilities. In 2022, the water reclamation rate reached 75%, indicating significant progress in wastewater treatment and reuse.

Municipal Recycled Water Utilization

We are cooperating with the Yantai Taoziwan Municipal Wastewater Treatment Plant to build a new recycled water treatment facility using the existing municipal wastewater reuse facility. Through various advanced processes such as reverse osmosis and ultrafiltration, the treated reclaimed water is centrally treated, and the water can be used again in park production. In 2022, more than 49 million tons of municipal reclaimed water were used, accounting for 74.95% of the water consumption in Yantai Industrial Park, indicating a substantial reduction of water consumption and environmental benefit.

Commitments	Topic	Index	2021 (base year)	2022	2030 target
1. Reduce the intensity of resource consumption 2. Manage your environmental footprint effectively	Water resources management	Fresh water consumption (m³/t)	1.97	1.39	≥25% decrease from 2021
		Water recycling rate (%)	98.2	98.4	≥99.0
		Fresh water consumption rate (%)	65	46	≤40
		COD emission intensity (t/kiloton)	0.017	0.015	≥35% decrease from 2021

WASTE DISPOSAL

Wanhua Chemical adheres to the principle of "reduction, resource utilization, and harmless treatment" for dealing with solid waste , reducing waste production from the source and maximizing the recycling of solid waste inside and outside the park, and has been actively promoting "zero emissions" for solid waste.

The on-site solid waste station is designed and constructed in accordance with the paper of the "Pollution Control Standards for Storage of Hazardous Waste". It is equipped with liquid leak collection device, gas outlet ports, and gas purification devices. The solid waste station has skirt walls and diversion trenches to prevent seepage and corrosion into the ground. Hazardous waste is packaged in containers that meet the standard and regulatory requirements, with information labels affixed to the containers, enabling full life cycle traceability.

Commitments	Topic	Index	2021 (base year)	2022	2030 target
1. Reduce the intensity of resource consumption 2. Effective management of environmental footprint	Waste and hazardous material management	Exhaust emission intensity (t/million t)	59.47	54.1	≥10% decrease from 2021
		Solid waste emission intensity (10,000 t/million t)	3.98	4.31	≥10% decrease from 2021
		Solid waste landfill rate(%)	0.3	0.5	≤0.5

Excellence in Practice: Hazardous Waste Harmless Treatment Project

In 2021, Wanhua Chemical's solid waste treatment facility began operating with an annual processing capacity of 35,000 tons of solid waste. The chimney emissions meet both Chinese and EU environmental standards in 2010, and all the by product is just 31t/h of S30 steam. The solid waste treatment project is crucial for the Yantai Industrial Park and allows for the harmless treatment of hazardous waste. Additionally, it helps the company to establish a green, zero-waste, and circular economy park.



Solid waste emission intensity
(10,000 t/million t)

4.31

Solid Waste Landfill Rate
(%)

0.5

- Note: 1. The statistical boundary of solid waste is readjusted;
2. Solid waste includes general solid waste and hazardous solid waste;
3. Total output includes the company's main products, intermediate products, and by-products.

SOIL PROTECTION AND BIODIVERSITY

Wanhua Chemical is among the first companies named as "resource-saving and environmentally friendly company" by the Chinese government. For decades, Wanhua Chemical has consistently promoted green development to protect the ecosystem, and always evaluated the effects on genetic diversity, bio-diversity, and ecosystem diversity during construction feasibility studies. For example before selecting a site, biodiversity surveys of the environment were conducted to minimize the impact of construction on local biodiversity. Wanhua Chemical aims to create a green and ecological modern chemical plant, protecting the environment and contributing to a beautiful future of "green mountains, clean water, and fresh air."

Following the land lifecycle management process, Wanhua Chemical developed a soil and groundwater pollution prevention and control system guided by the "Soil and Groundwater Pollution Prevention and Control Management Procedure," combined with relevant standards and guidelines. Wanhua Chemical conducts a comprehensive environmental risk assessment, with effective control and monitoring to ensure that operations throughout the lifecycle do not affect the site's soil and groundwater environment.

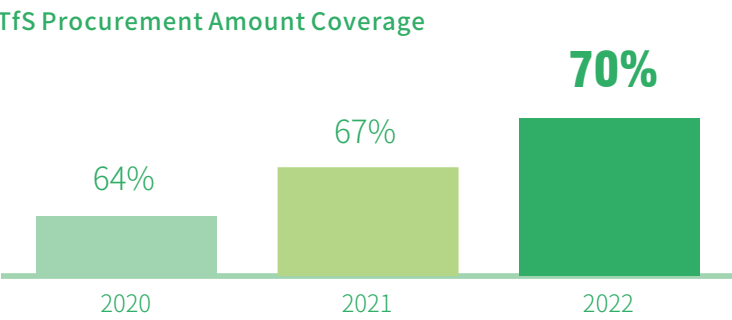
During the 2022 World Environment Day, Wanhua Chemical actively participated in various activities, including tree planting events, training courses, and open day events. We place great emphasis on environmental protection and ecological education for our employees, aiming to raise awareness and enhance their understanding of the importance of ecological preservation.

SUSTAINABLE SUPPLY CHAIN

Wanhua Chemical takes responsibility for industrial demand, and relies on independent technology as the foundation. The company connects with various technological innovation sources, strengthens upstream and downstream collaborative innovation and collaborative mechanisms, responded to carbon reduction calls, and strives to build an efficient, safe, healthy, and sustainable supply chain. We look for green breakthroughs in every corner of the value chain.

Wanhua Chemical constructed a digital procurement platform to extend its "antennal" for supplier collaboration, moving from offline operations and integrated systems to synergetic systems. The supplier risk warning platform construction enables supplier risk visualization, real-time monitoring, and automatic alarming, for improving the risk management of the entire supply chain.

As the first Chinese company to join TfS, Wanhua Chemical actively participates in its various initiatives, deeply exerting efforts in supplier management, digital procurement, green circular procurement, and comprehensively evaluated the social responsibility activities of suppliers. Wanhua Chemical shared the sustainable development evaluation results of 15,000 industry suppliers with TfS members, improving the sustainable development level of the supply chain.



In 2022, Wanhua Chemical achieved an over 70% for sustainable development audits for suppliers. The audit rate of major chemical suppliers reached over 80%.

Additionally, Wanhua Chemical adheres to the concept of shared circulation and low-carbon ideas. It has created various packaging recycling and reuse models involving internet sharing, recycling, thinning, mass reduction, and green substitution, for reducing carbon emissions in chemical packaging.



The thinning of liquid packaging steel drums: Wanhua Chemical optimized the design of its steel drums through hundreds of performance tests, and eventually achieved the "three-step" design optimization ahead of schedule. The first step was to switch from galvanized drums to painted steel drums. The second step was to simplify the colors of painted drums from over 10 to 4, thus improving environmental protection and production efficiency. The third step was to decrease the steel drum wall thickness from 1.2mm~1.0mm to 0.9mm, and simplify dozens of specifications into one. Thin steel drums reduced the annual consumption of steel plates by 10,000 tons. Additionally, the elimination of galvanized drums significantly reduced zinc powder pollution. Moreover, a majority of steel drums were replaced with water-based paint, leading to a substantial reduction in VOC emissions.

FFS heavy-duty packaging film: In 2022, Wanhua Chemical achieved a breakthrough in ultra-thin film packaging. Within one year, the thickness of the polypropylene film used for heavy-duty packaging was reduced from 0.18mm to 0.14mm and then to 0.12mm. This reduction resulted in annual savings of 2200 tons of packaging film and a carbon emissions reduction by 11,000 tons per year. Currently, the thickness of film packaging for TPU, PMMA, PC, and other products has reached the advanced level. With a focus on the characteristics of each product, Wanhua Chemical aims to further reduce the thickness of the film, achieve greater cost savings, and accelerate the process of making chemical packaging more environmentally friendly.

Replacement of Steel Drum with Inner Bag: After conducting extensive research for two years, Wanhua Chemical has successfully obtained a patent for its "steel drum with inner bag" packaging and received export qualifications. This innovative packaging solution has been applied to polymeric MDI products, resulting in almost zero residual packaging materials and significantly less processing costs. Furthermore, the clean steel drums can either be sold or reused, thus reduces solid waste by nearly a thousand tons each year. To maximize the environmentally friendly transformation of the chemical logistics industry, Wanhua Chemical plans to authorize partner enterprises to deploy this packaging solution nationwide and promote its extensive adoption within the industry, thereby revolutionizing conventional steel drum packaging practices.

PVC recycling bulk bag: In 2022, Wanhua Chemical and Leju Technology jointly developed China's first PVC recycling bulk bag and have completed product loading tests. Compared with the ton bags, PVC recycling bulk bags have stronger performance and a safety coefficient of up to 6:1. Especially in terms of environmental protection, the recycling bulk bag is tough, has a long service life, and can be reused more than 5 times so that reduce the use of disposable plastic by more than 40%. Compared with the conventional disposable usage habits, the newly launched sharing mode can effectively save the use of PP and PE, and reduce carbon emissions. Currently, approximately 700 million disposable bulk bags are produced in China each year. If this recycling sharing mode is widely promoted in the future, it will greatly reduce waste and lead to the sustainable development of the transportation packaging industry.

04

THE WAY MANAGEMENT MAKES DEVELOPMENT SAFER

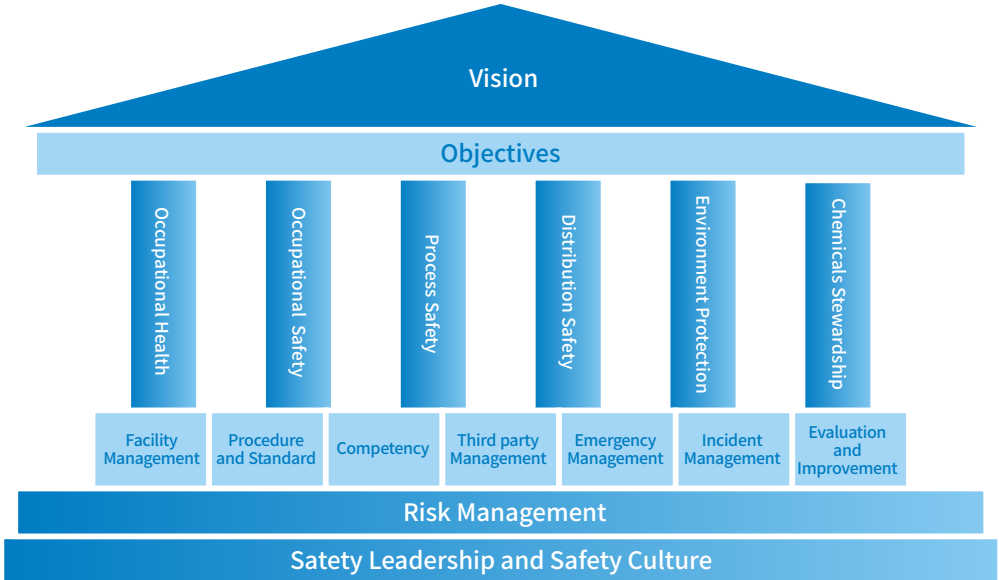
SYSTEM CONSTRUCTION

Wanhua Chemical is dedicated to sustainable development and considers the safety, health, environment, and resource conservation of employees, stakeholders, and community residents as sacred responsibilities. Wanhua Chemical firmly believes that all harm, safety, and environmental accidents can be prevented. Therefore, its goal is to achieve "zero harm, zero accidents, zero emissions", and to construct a green, ecological, and modern chemical enterprise. To accomplish this, Wanhua Chemical has developed a long-term safety management strategy, which takes risk management as the core, and with safety leadership and culture as the cornerstone, capability enhancement and audits as the means, and excellent execution and implementation as the foundation. Wanhua Chemical aims to thoroughly enhance its safety management capabilities and performance across all aspects of its operations.

In 2022, Wanhua Chemical promoted various works according to its long-term strategy, guided by the "three-zero" target. We have fulfilled all annual KPI in terms of safety.

The Wanhua safety management system controls the six major business risks of occupational health, occupational safety, process safety, storage and transportation safety, low-carbon environmental protection, and chemical regulation. In 2022, Wanhua Chemical improved the management system and enhanced its execution and implementation, based on the principle of building a production management system with safety as the core, and forming a management culture of safe production as the top priority.

Benchmarking DNV ISRS (9th edition), and conducting systematic evaluations on 13 sets of facilities, Wanhua Chemical has scientifically developed a program to improve the safety production management of its facilities. Meanwhile, Wanhua completed the creation of DNV ISRS level 7 at its Ningbo site as a pilot project, making it one of the few domestic companies to achieve level 7 ISRS. This has effectively promoted the modernization of the company's overall safety production governance system.



OCCUPATIONAL SAFETY



SAFETY CULTURE WITH
EMPLOYEE PARTICIPATION

In addition to the existing monthly inspection activity, senior management will carry out "1+1" meetings and the facility managers will carry out "1+N" meetings. The frequency of safety meetings has increased, with the quarterly enterprise safety production committee meeting now held on a monthly basis. The objective is to gather input from various safety audits at all levels, coordinate and resolve safety issues, develop safety control measures, and guide employees in practicing the company's safety ideals.

Monday has been designated as the "Weekly Safety Workday". Unit management will lead safety activities in different areas to identify hidden dangers, coordinate and solve important safety production issues, and ensure that teammates from different levels of management have time for fulfilling safety responsibilities. Other responsibilities include implementing a "safety work log" mechanism, regular safety activities for all employees based on the safety production responsibility

system.

To ensure that managers possess effective safety leadership, they are required to undergo a three-day safety leadership training before being appointed. Emphasis is placed on strengthening safety awareness and leadership capabilities to help them to be qualified in terms of safety. In 2022, a two days safety training were conducted every month strengthen safety mindset for managers at all levels.

IMPROVING THE SAFETY PRODUCTION
CAPABILITY OF ALL EMPLOYEES

In 2022, Wanhua Chemical has designed 47 online live streaming courses to improve safety capabilities of the production team. 288 accident lesson courses are released every week through the Wanhua Learning mobile APP. Additionally, skill courses that have 10 levels are included in the simulation training center.

Simulation Training Center

Compulsory Courses	Optional Courses	Total Courses	Total Training Hours	Number of Trainees
114	67	1697	112737 ^H	5902

IMPROVING SAFETY MANAGEMENT
THROUGH STANDARDIZATION

Wanhua Chemical participated in the making of "The Safety Regulations for Hazardous Chemical Special Operations (GB30871-2022)". Wanhua Chemical invited senior experts from the writing group to train Wanhua team before the standard became effective. Moreover, Wanhua Chemical revised its occupational safety-related documents: "Wanhua Chemical Job Hazard Analysis (JHA) Management Procedures", "Wanhua Chemical Job Permit Procedures", "Wanhua Chemical Special Operation Safety Standard for Chemical Production Facilities", "Wanhua Chemical Non-Production Area Job Safety Management System", and "Wanhua Chemical HSE Management Procedure for Maintenance Contractors".

To provide systematic training to all staff, Wanhua Chemical conducted training programs through various channels, including "Wanhua University", Weekly live streaming sessions, and "Wanhua Learning" mobile APP.

Furthermore, Wanhua Chemical placed a contractor HSE management system covering all the processes, including pre-qualification audit, tendering and bidding, execution, process supervision, and completion acceptance. To ensure strict enforcement of responsibilities, the company defined the corresponding responsibilities of the related departments. The company cultivates excellent contractor teams to improve contractor safety performance.

Employee work-related fatalities0

Recordable injury rate for employees per 200,000 work hours0.082

Employee off duty rate per 200,000 work hours0.042

Contractor work-related fatalities0

Recordable injury rate for contractors per 200,000 work hours0.042

Note:1.The company's accident grading standard was upgraded in 2022;
2.The company's classification of work-related injuries resulting in lost workdays was upgraded in 2022.



OCCUPATIONAL HEALTH

Wanhua Chemical has implemented multiple management systems including "Wanhua Chemical Occupational Hygiene and Occupational Disease Prevention and Control Management System" and "Wanhua Chemical Medical Rescue and Work Injury Management System. There is an annual physical examination for all employees including the occupational disease inspection.

To safeguard the health of employees, the company help the staff to access traditional Chinese medicine healthcare, dietary therapy, and physical exercise, with regular education and campaigns.

PROCESS SAFETY

Process Safety Management (PSM) is a crucial tool for ensuring the scientific safety management of companies and preventing major chemical accidents. Since 2013, Wanhua Chemical has established a PSM management system comprising around 20 elements, including PHA, SOP, IOW, OD, MOC, etc. In 2022, Wanhua Chemical concentrated on promoting the establishment of the process safety hazard identification team and talent development to further enhance risk control in new projects.

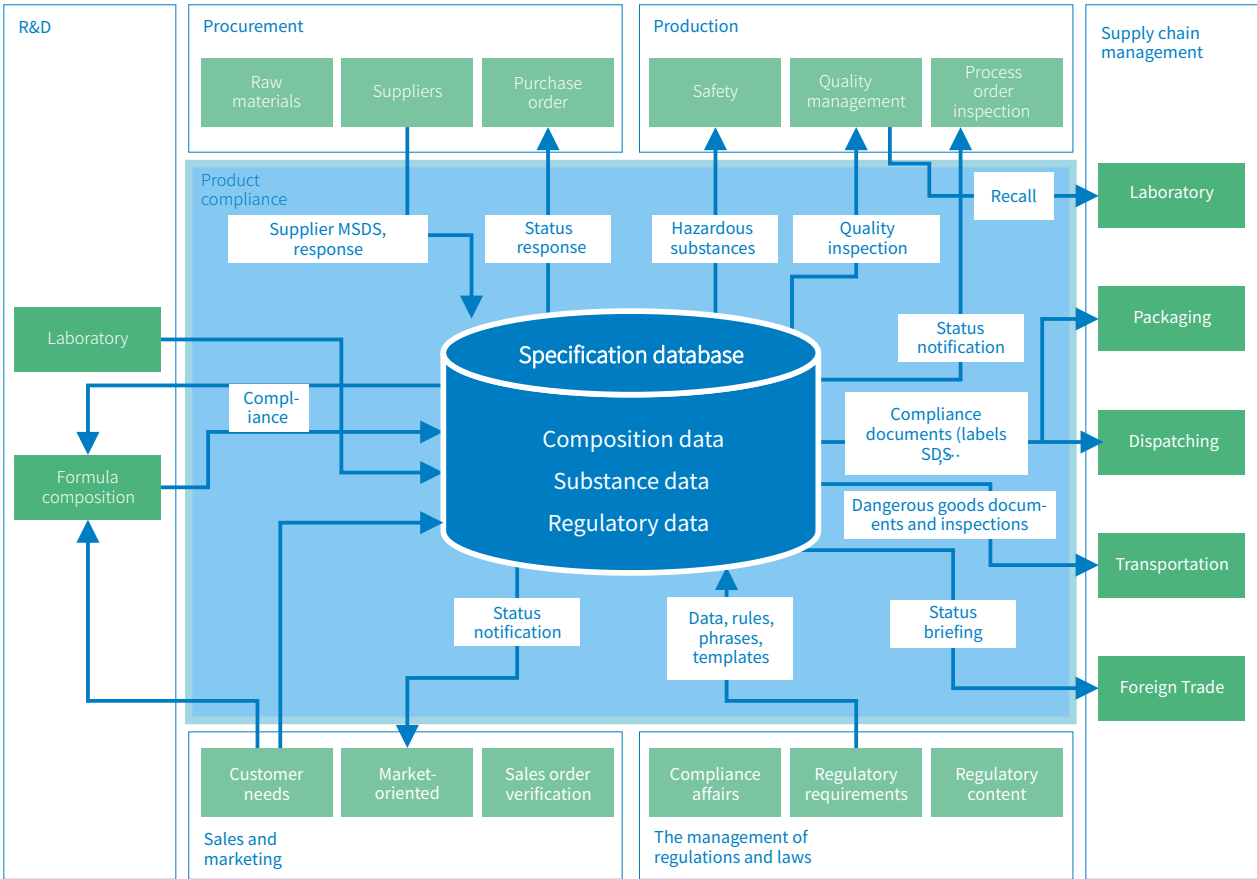
Wanhua Chemical recruited international experts in reaction hazard as the team leaders and invested over 20 million yuan to establish a state of art process safety research platform. Wanhua Chemical has introduced international safety assessment tools, and established theme labs such as the thermal safety lab, loss of control reaction and emergency release lab, combustion and explosion lab, and reaction hazard research lab. There are 18 sets of international thermal safety assessment equipment and 2 sets of safety assessment professional software. Those made Wanhua lead in terms of safety management in China. Wanhua Chemical also has a professional process hazard analysis and control team.



In 2022, Wanhua Chemical focused on improving the risk control of new projects by establishing and refining full-process standards and quality control requirements. This included process scheme and P&ID review, HAZOP, LOPA analysis, SILver verification, and control and interlock schemes. To supplement this effort, the company released a series of regulatory requirements, such as the "P&ID Audit Management Procedure", the "Design and Implementation Guidelines for Sequential Batch Control", and the "Guidelines for the Control Function Debugging of Pre-Commissioning Self-Control Systems". The "P&ID Audit Management Procedure" identifies important domestic and international standards, industry experiences, and best practices. This has brought forth an audit guide document consisting of 4 parts and 390 audit checklists. Additionally, in 2022, Wanhua Chemical conducted 255 P&ID review trainings for each production base/business unit, aiming to educate design concepts and process technical knowledge for teams in new projects.

CHEMICAL MANAGEMENT

Wanhua Chemical devotes to identifying, managing, and reducing the EHS impacts of chemicals at every stage of their lifecycle. With digital technology, the company monitor compliance throughout the entire process, including raw materials and supplier access, formulation, product SDS and labeling, product sales, and logistics, etc.



Design And Development

The market access declarations and toxicology test reports are applied to ensure product compliance. Additionally, we integrate environmental benefits and health and safety features into our product design. Our goal is to develop products with lower risks and fewer EHS hazards than those currently on the market. We respond promptly for regulatory changes. For example, when Korea's K-REACH (The Act on Registration and Evaluation of Chemicals) was modified, we fulfilled the obligations like pre-registration and registration and set up a local only representative (OR).

Raw Material Procurement

We have implemented a digital procurement system to specify material requirements and ensure the compliance of every batch of materials. Our procurement department has established a supplier evaluation mechanism, which includes periodic evaluations and checks, to guarantee that the quality, packaging, and transportation of products purchased by the company meet our standards. Raw materials that are procured in quantities exceeding 1 ton/year must undergo special compliance assessments.

compliance assessment rate of products with sales volume > 1 ton per year

100%

compliance assessment rate of products with procurement volume > 1 ton per year

100%



Production Stage

We have implemented a series of safety and environmental response measures to reduce the environmental impact during the production stage, as well as minimize the impact on the safety and health of production personnel and nearby communities.

Storage, Packaging, and Shipping

We have put in place strict safety management procedures for the storage and transportation of our products. We have also implemented classification of product packaging to ensure the safe delivery of our products.

Sales and Use

All products delivered come with SDS and ID code. We visit our customers regularly to provide technical support and solutions for HSE-related issues.

Reuse and Disposal

We employ advanced disposal and analysis technologies, as well as an environmental monitoring management system to ensure effective management of the end-use.

Information Management

We have established a company-level digital database of chemicals. The database is centrally managed by our headquarters and highly integrated with existing related business processes.



STORAGE AND TRANSPORTATION SAFETY

We have established a global leading storage and transportation safety management system. Our primary objective is to prevent and mitigate any adverse effects of chemical releases, thus to support the sustainable development of our company. Safety management should not end at the factory gate. We manage the entire process of chemical storage and transportation safety and have introduced advanced management tools to improve safety management level and efficiency. For storage and transportation safety management, we adhere to the core values of "responsible care", paying attention to the safety and health of all relevant stakeholders, and striving to achieve excellence in storage and transportation safety performance.

2022 STORAGE AND TRANSPORTATION SAFETY PERFORMANCE

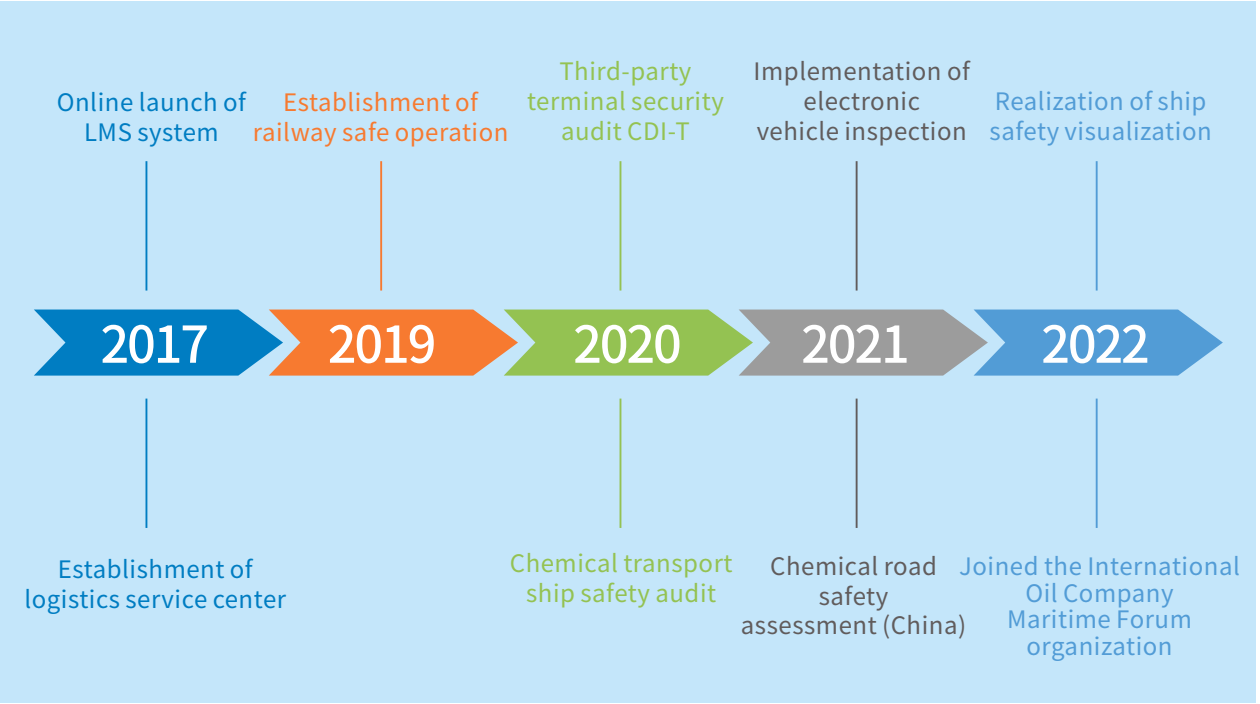
Transport mode	Milestone	Accident rate
 Road Transportation	63.5 Million Km	0.12 Per Million Km
 Ship Transportation	9.16 Million Nautical Miles	0.005 Per Ten Thousand Nautical Miles

In 2022, Wanhua Chemical upgraded its system application of ADAS equipment. As a result, Wanhua Chemical successfully developed a "facial fatigue recognition + road risk intelligent reminder" system. This system enables on-the-go visualization of driver and vehicle safety status, real-time reminders for high-risk road sections and bad weather and other functions. Recognized as an industry-leading solution, the system serve our hazardous goods logistics suppliers with over 800 vehicles and more than 1000 drivers.

Additionally, Wanhua Chemical also made efforts to promote ship safety visualization. The company achieved full video coverage of several chartered ships and gradually began to use AI recognition to alert and assess unsafe behaviors of crew members. This effort helped fill the gap in on-the-go safety management of ships and helped to avoid ship accidents caused by crew operating errors, neglecting duty watches, and other unsafe behaviors.

Over the past few years, Wanhua Chemical has provided drivers with a variety of meals. Additionally, the company has provided clean and comfortable rest and dining areas for drivers. To further enhance driver safety and satisfaction, the company launched systems such as paperless vehicle inspection, automatic navigation for loading and unloading points within the factory, facial recognition training and exams for guard personnel, and contactless meal ordering for drivers. These systems protect the health of drivers and greatly improve vehicle entry efficiency and driver satisfaction.

The LMS launched, ensuring safe railway operation. The CDI-T third-party terminal undergoes safety audits, while electronic vehicle inspections are implemented. This allows for visualization of ship safety, and a logistics service center is established. Chemical vessels undergo safety assessments, and chemical transportation by road is evaluated in China. The company is considering joining either an international oil company or the OCIMF forum.



2

per Million Km

As of February 2023, Wanhua Chemical's logistics safety driving milestone has exceeded 200 million kilometers.

Social Responsibility and Sustainable Development Awards

In 2022, Wanhua Chemical was recognized with the Social Responsibility and Sustainable Development Contribution Award issued by the China Federation of Logistics and Purchasing.

Ministry of Transport's "Driver's Home"

After multiple reviews by the National Federation of Trade Unions under the Ministry of Transport, Wanhua Logistics Service Center was awarded the honorary title of "Driver's Home", becoming the first shipper in Shandong Province to receive this honor.



Information Technology Strategy Committee

- Procurement Information Technology Subcommittee
- Financial Information Technology Subcommittee
- R&D Information Technology Subcommittee
- Engineering Information Technology Subcommittee
- Production Information Technology Subcommittee
- Marketing Information Technology Subcommittee
- Resources Information Technology Subcomm
- Information Security Subcommittee
- Cybersecurity Subcommittee

INFORMATION TECHNOLOGY CONSTRUCTION

Wanhua Chemical's digital construction has a vision of creating value, leading innovation, and becoming a first-class digital chemical player. The company follows the guide concept of "business-driven, value-oriented, holistic planning, step-by-step implementation, and user satisfaction". For many years, it has been committed to building a fully connected and data-driven intelligent company. The company has already established six digital platforms including business management, intelligent manufacturing, collaborative office, ecosystem collaboration, intelligent decision-making, and smart infrastructure. In 2021, Tsinghua University incorporated the case study "Wanhua Chemical's Digital Transformation" in its MBA courses.

To enhance the company's management level and sustainable development capabilities, the company established an Information Technology Strategy Committee. This committee aims to strengthen the top-level information technology design and create an efficient and unified information technology platform that links various functions, including R&D, production, purchasing, marketing, finance, and engineering. By doing so, the company aims to enhance its operational efficiency and lay a solid foundation for future growth and success.

Wanhua Chemical completed the implementation of the S/4 HANA system for the entire group in 2021, achieving full end-to-end process communication in the industrial chain, setting a new benchmark for global giant's ERP implementation. Through the collaboration platform, the company has formed a digital collaboration with partners such as customers, suppliers, carriers, customs, insurance, tax bureaus, and banks, building an end-to-end business network, achieving interconnection and mutual benefit. Through the collaborative office platform, a global unrestricted real-time collaborative office has been created, allowing employees both domestically and overseas to work anytime, anywhere, and improving the overall efficiency of global collaboration.

In terms of overall data construction, the company adheres to the concept of "data creates value" and has initially formed a "data pool" covering the entire business range, with data value constantly emerging. Data quality is key to realizing data empowerment. Through the master data governance (MDG) system, the company standardizes, establishes procedures, and deploys systems for data governance. Combining big data, AI, 5G, and other technologies, the company promotes the application and landing of amoeba management and intelligent prediction in various business areas.

In 2022, Wanhua Chemical successfully passed the audit of the international leading certification brand DNV, and was awarded the ISO/IEC 27001:2013 information security management system certification UKAS&CNAS certificates. At the 100th anniversary of the founding of the Harvard Business Review China conference, the company stood out from more than 200 companies with the "New Generation Smart Enterprise Platform Construction Project" and won the 2022 Jury Award of "Modern Chinese Enterprise". The company's independently operated and innovative research and development project "Wanhua Chemical Data Center" was successfully selected as a provincial-level demonstrative project for edge data centers.

With a focus on information security, Wanhua Chemical has prioritized the network security awareness and skills of all employees. Throughout the year, it conducted three phishing email tests company-wide, fostering a proactive approach to identifying and mitigating internet threats. Additionally, Wanhua Chemical provided network security learning courses on the "Wanhua Learning" APP, enabling employees to stay updated on the latest security practices and protocols.

05 THE WAY RESPONSIBILITY MAKES THE SOCIETY MORE HARMONIOUS

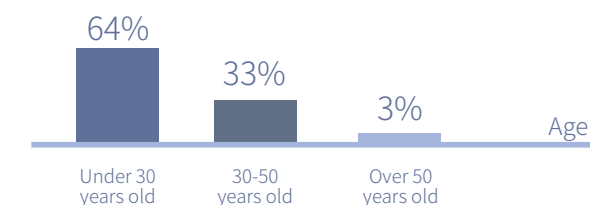
We believe that the core competitiveness of enterprises lies in achieving harmony between the sky, the land, and humanity through sustainable development. By focusing on the needs of employees and the community, we have built a platform for co-

development, enabling employees to grow while benefiting the community. Through our actions, we bring people together and unlock their potential, fulfilling Wanhua Chemical's responsibility of becoming creators and sharers of a better world.

EMPLOYEE SOCIAL RESPONSIBILITY

Wanhua Chemical recognizes that talents are the most crucial strategic resource of the company. As such, we have implemented a talent development project with "attracting, cultivating, learning, energizing, and protecting talents" as the main principles. We attract talented individuals by offering compelling missions and ambitious goals, competitive salaries and incentives, and apply scientifically proven training methods to keep them. We also prioritize creating a supportive and fair work environment that promotes a positive company culture. This provides a continuous source of momentum for independent innovation, accelerating the pace of creating an Acadia for talent and promoting high-quality development.

Employee Structure

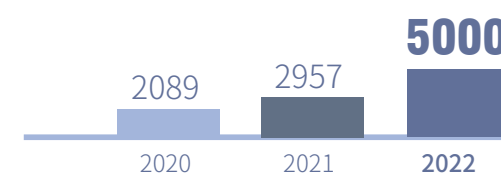


LABOR RELATIONS

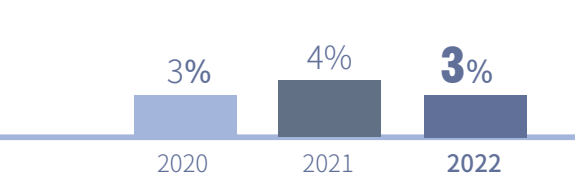
At Wanhua Chemical, we operate under the principle of people-oriented development, creating an international platform to facilitate the development of talent. By focusing on the needs of employees and the community, we foster mutual development and the best employer brand. We have been recognized with the "Hewitt Best Employer in China" award for five consecutive years.

In 2022, Wanhua Chemical took "The Year of Talent" as management theme, innovated recruitment approaches, with a record number of new teammates. The total number of employees in the company has now reached 24,387.

New Hires



Employee Turnover Rate



Best Practice: cooperation between colleges and the company, opening up highways for talents.

Wanhua Chemical takes on the responsibility and obligation of a leading enterprise, by in depth cooperation with key universities in research and talent education, and connecting talent education with the company's demand. This deepens cooperation of academic-industrial cooperation, ensuring both the quality and quantity of talent introduction. The company participates in the "employment and education integration" project of the Ministry of Education, in order to promote the

organic link of employment and training. As the first stage, 80 projects were signed with 49 universities, which is lead in numbers in the industry. Graduates from these universities can learn about Wanhua from multiple dimensions, including internship, targeted talent development and other information, enhancing the influence of Wanhua's employer brand.

DEMOCRACY AND DEVELOPMENT

Democracy And Equal Rights: Since joining the United Nations Global Compact in 2019, we have incorporated its requirements and principles into our company strategy, culture, and daily operations. We have relevant human rights policies and systems that prohibit discrimination, forced labor, harassment and abusing, and child labor. Our commitment is to implement the ten basic principles within the company and actively participate in the United Nations' collaborative sustainable development projects. Additionally, we have a well-established labor union, improved employee spaces, with ensuring the rights of labor unions and collective bargaining. It is worth mentioning that during the reporting period, 100% employees has joined the labor union.

Employee Feedback Rate

100%

Minimum Notice Period
Respecting Operations

1 Month

Development Channels: We promote the values of diligence and dedication, and we actively implement systems and provide daily behavioral guidance to foster a fair, performance-oriented culture for our employees. Our goal is to enable them to concentrate on their work within the company without distractions, while also provide a broad platform for personal and professional development. Wanhua Chemical deliberately build a promotion system with both management and professional routes, which systematically cultivates and attracts talents, maintains organizational energy, and ensures the continuous development of the company's business through the strength of its teammates.

Employee Training: In 2022, under the management theme of "The Year of Talent", Nearly 10,000 people has been trained in Wanhua University, with a total of 172,000 training hours throughout the year.

Training Attendance

100%

Average Training
Duration (h)

95

Percentage of Performance and Career
Development Assessment Acceptance

100%



The training system has been optimized, allowing the motto of "Carrying ideas and cultural consciousness" of Wanhua University to enter the mind. The "Three steps, three goals" campaign has sparked a wave of learning among all employees.

DIVERSE TRAINING METHODS

Production System Talent Development	<ul style="list-style-type: none">● Develop differentiated training strategies for different development stages and groups of people.● Utilize the system, create a positive atmosphere, extract positive experiences, and execute effective training.● Empower employees through training systems and practical platforms, forming a closed-loop verification, with emphasized practicality.
"Three Re and goals" Campaign	<ul style="list-style-type: none">● For frontline production employees, which includes retraining, relearning, and re-entry, to rise.
Engineer Training Camp	<ul style="list-style-type: none">● The training focuses on improving the ability of special practical operation and solving the real problems that affect production operations.
Supply Chain Staff Development	<ul style="list-style-type: none">● Accelerating the linkage of procedures, achieving coordination between the supplier and customers, and customer-centered order delivery.

BENEFITS AND CARE



Wanhua Chemical has implemented a comprehensive talent care system that prioritizes the well-being of its employees worldwide. This system is built upon legal welfare requirements, with company's additional welfare packages. Furthermore, special welfare benefits are provided to female employees and those live with difficulties. Wanhua Chemical has established employee clubs and organizes various activities to alleviate work-related stress and foster a strong sense of belonging among the workforce.



Legal Welfare

Social insurance and housing provident fund, holidays (legal holidays, paid annual leave, marriage leave, maternity leave, home leave, sick leave, etc.), funeral subsidies, supporting relatives' caregiving allowance, one-time work-related injury compensation.

Company Welfare

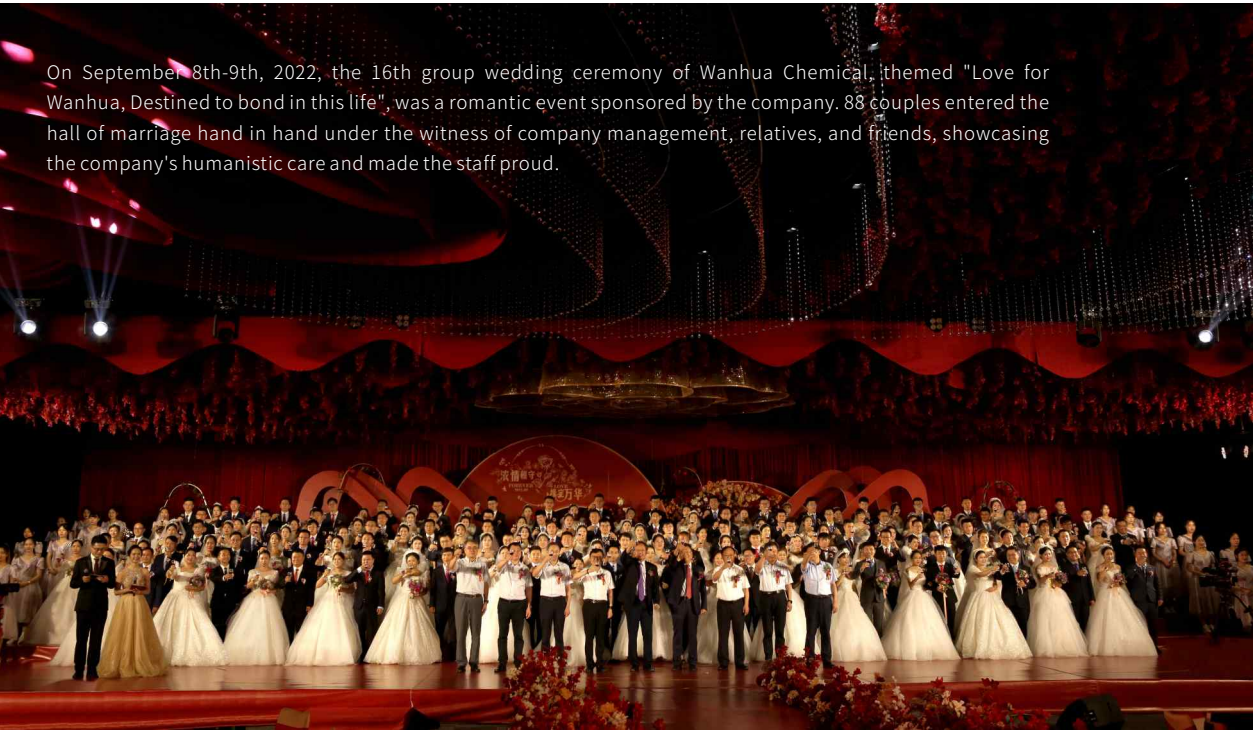
A 200,000 yuan free of interest home loan, lunch subsidies, childcare fees, shift subsidies, team building fees, high-temperature fees, heating fees, holiday cash gifts, birthday cash gifts, wedding cash gifts, additional insurance, and labor protections.

Assistance For Those In Need

Wanhua Chemical has established an employee care fund for formal employees who are experiencing life difficulties due to illnesses or other unfortunate affairs in their families.

Altair And Vega Dating

In 2022, Wanhua Chemical co-hosted 23 matchmaking events with external partners, with a total of 760 employees participating. The company has also established a database of singles to effectively help employees who want to get married.



On September 8th-9th, 2022, the 16th group wedding ceremony of Wanhua Chemical, themed "Love for Wanhua, Destined to bond in this life", was a romantic event sponsored by the company. 88 couples entered the hall of marriage hand in hand under the witness of company management, relatives, and friends, showcasing the company's humanistic care and made the staff proud.

Care For Female Employees

Wanhua Chemical care female employees. To balance the family and work for female employees, the company has the "Wanhua Chemical Extended Maternity Leave Policy", which allows lactating female employees to apply for an additional four months of maternity leave on top of the time regulated by the law. The company has established high-standard lactation rooms in different office locations and added dedicated shuttle buses for female employees returning to work after lactation. In addition, the "Wanhua Chemical Attendance Rules" officially added parental leave and childcare leave in 2022.

Maternity and Childcare Leave
Employee Return Rate

100%

Maternity and Childcare Leave
Employee Retention Rate

100%



COMMUNITY RESPONSIBILITY

Wherever we are, we show the energy of the company. We actively collaborate with communities, support public welfare, and help education. Utilizing our own industrial advantages and corporate characteristics, we contribute in employment, and help vulnerable social groups. Every year we donate money and goods with a total value over 10 million.

We care for children's education and growth and have created "Wonder Lab" and "Dr. Talk" science popularization activities. We deeply recognize the educational concept of "education through entertainment" and offer chemistry classes with children in more than ten cities across China. We cooperate with

governments and public welfare organizations in various places to carry out sustainable and targeted poverty alleviation. Through initiatives such as the construction of schools and special donations, we improve the living and educational environment of children in remote areas, ignites scientific dreams, and help the harmonious, stable, and healthy development of the community.

PUBLIC SCIENCE POPULARIZATION



Exhibition Hall Visit

Organize public welfare activities that let children visit the company's exhibition hall, and introduce the chemical materials in daily life, showing the magic of chemistry.

Wonder Lab

Collaborate with primary and secondary schools across the country to educate professional chemical knowledge through interesting science popularization workshops. The wonder of chemistry is showed by experiments and students learn correct scientific concepts, and their enthusiasm for exploring the unknown are stimulated.

Dr. Talk

Create large-scale learning and growth education activities. R&D teammates with PhD degrees from the company go to middle and high schools and colleges to share their life experiences and exchange learning experiences with students. They also help students to solve problems encountered and help them better plot the learning and career directions.

Other Themed Events

Such as open chemical courses on World Environment Day, other online/offline public welfare activities, for spreading environmental protection awareness, and the intention to explore sustainable lifestyles.



SUPPORT FOR EDUCATION

Wanhua Scholarship: Since 2002, Wanhua has established "Wanhua Scholarships" at about 30 premium universities in China, including Peking University, Beijing University of Chemical Technology, Tianjin University, East China University of Science and Technology, and Shandong University, providing financial rewards to outstanding students in chemical-related majors. The total amount of scholarships provided has exceeded 10 million.

Teaching Awards: In accordance with the spirit of the National Vocational Education Conference, Wanhua has formed strategic partnerships with universities and established "Teaching Awards" for teachers from vocational colleges. We provide resources to support teachers' industrial internship, title evaluations and qualification applications.

OPEN DAY EVENTS

Wanhua invites residents from surrounding communities, employees' family members, people from media, and others to visit our factories, explore the company's exhibition hall, experience the modern green chemical park and living area in it, witness the production process and operation, for showing our responsible, attitude-driven, and environmentally friendly corporate image.



CONCLUSION

While the dust of battle may yet to settle on the field, our journey of a thousand miles has only just commenced. As we step into 2023, our company has set forth novel directives for our forthcoming endeavors: executing a strategy of premium investment and cementing the bedrock for enduring growth. We will orchestrate our initiatives in a more scientifically sound and sustainable manner, realizing more effective and top-tier investments. Committed to fostering a vibrant Wanhua culture that remains abreast of the times, we aim to persistently ignite the sense of mission and creativity within our talents, fortify our organizational efficacy, and refine our exemplary operational standards. Our ambition is to spearhead the ongoing formation of a world-class chemical and new materials enterprise, thereby powering a new and exciting era of sustainable development.

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FEEDBACK

Dear Reader:

Hello! Thank you for reading this report. In order to further improve the level of Wanhu's sustainable development and the qualityof report preparation, we sincerely invite you to provide valuable comments and suggestions on this report to help us to improve continuously.

You are welcome to answer the following questions and return this questionnaire via email or other means to the contact person below:

Contact Person: Wanhua Commission on Sustainable Development
Tel +86 535 8202841
E-mail: llwangf@whchem.com
Contact address: No. 3 Sanya Road, Development District, Yantai City, Shandong Province
Postal Code:264006

1. Please tick "✓" the corresponding cell in the table

Questions:	Yes	No	Not sure
Do you think this Report mirrors the significant impacton the environment.economy and society, and the Company's achievements in these areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you think this Report discloses real, accurate and valid information?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you think this Report is clear and easy to understand in terms of itsdescriptions, content arrangement and graphic design?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Open-ended questions:

Which part of this Report do you like best?

What other information do you think needs to be disclosed in this Report?

What are your expectations for the future sustainable development reports of Wanhua Chemical?

3. Please, if you may, leave your information, so that we can provide timely feedback on your comments and suggestions:

Name:

Contact number:

Company:

E-mail:

Contact address:

REPORT PREPARATIONS INSTRUCTIONS

Wanhua Chemical Group Co., Ltd. has issued an annual Responsibility Care Report in 2009 and a Sustainable Development Report prepared according to GRI standards in 2007. This year will be our first ESG report aims to present to our stakeholders the sustainable development work and performance of Wanhua Chemical Group Co., Ltd. in 2022 in environmental, social and governance dimensions.

This report has been prepared in accordance with the "core protocol" of the Global Reporting Initiative (GRI) Sustainable Reporting Standards (GRI Standards) and in conjunction with the Disclosure Requirements of the Environmental Information Disclosure Guidelines for Listed Companies on the Shanghai Stock Exchange and the United Nations Sustainable Development Goals (UNSDGs).

The sustainable development data disclosed in this report cover the period from January 1, 2022 to December 31, 2022, with minor previous years' data disclosures. This financial data included in the report were obtained from the Annual Report of Wanhua Chemical Group Co., Ltd. 2022, which was independently audited by Deloitte Young Accounting Firm (Special General Partners). Unless otherwise specified, the amounts indicated in this report are presented in RMB. Other non-financial information will be provided by functional departments and branches of the headquarters of Wanhua Chemical Group Co., Ltd..

This report is available in both Chinese and English in print and electronic forms, which can be accessed and downloaded on our website at <https://en.whchem.com>. If not necessary, please try to use the electronic version of the report to save resources and protect our planet.

