

Acid-resistant Nanofiltration Membrane
Alkali-resistant Nanofiltration Membrane
Solvent-resistant Nanofiltration Membrane
Hollow Fiber Nanofiltration Membrane

2026

Professional Nanofiltration Membrane R&D and Manufacturer

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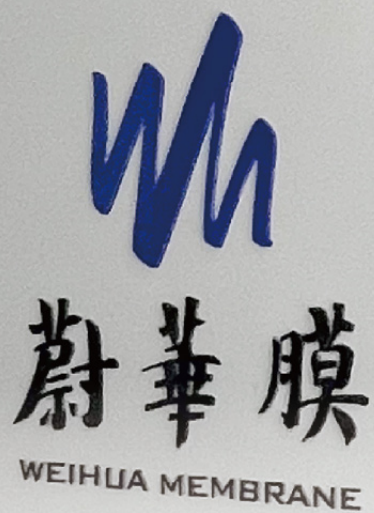
7.3 Metal Surface Treatment

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专注纳滤生态

| COMPANY PROFILE



构建低碳世界

Nanjing Weihua Membrane Technology Co., Ltd., established in 2022, is a national high-tech enterprise specializing in the R&D, production, and sales of polymer nanofiltration membranes and related module products.

Leveraging the National Engineering Research Center for Special Separation Membrane Technology of Nanjing Tech University, the State Key Laboratory of Materials-Oriented Chemical Engineering, and the Membrane Science and Technology Research Institute of Jiangsu Industrial Technology Research Institute, the company has built 6,000 square meters of R&D and production facilities in Nanjing and Kunshan. It has established a full-process industrialization platform encompassing R&D, pilot-scale production, manufacturing, and testing of core products such as spiral-wound flat-sheet nanofiltration membranes and hollow fiber nanofiltration membranes.

With its R&D team dedicated to nanofiltration membrane research for over a decade, the company has developed high-precision nanofiltration membranes featuring controllable pore size and surface charge using its proprietary "Molecular Encapsulation" patent technology. For diverse application scenarios, it has continuously launched specialty nanofiltration membranes including acid-resistant, alkali-resistant, solvent-resistant, and high-temperature-resistant grades. These products have been successfully applied in drinking water purification, biopharmaceutical purification, industrial wastewater treatment, and lithium extraction from salt lakes.

Guided by its mission to "develop the best nanofiltration membranes, support industrial decarbonization, and enhance health through clean water," the company is committed to serving industrial environmental protection and human health with high-quality products, working alongside partners to realize a vision of "green mountains and clear waters, a thriving and beautiful China."

I COMPANY MILESTONES

2021

Received the First Prize of "Basic Research Achievement" of the Science and Technology Award of the Chemical Industry and Engineering Society of China



2017

Established a pilot production line for nanofiltration membranes with a width of 300 mm.



2015

Professor Sun Shipeng established the Organic Nanofiltration Membrane Research Group.



2022

Nanjing Weihua Membrane Technology Co., Ltd. was established.



2018

Established a large-scale production line for nanofiltration membranes with a width of 1000 mm, achieving an annual production capacity of 500000 square meters.



2016

The First Laboratory Membrane Sheet



I COMPANY MILESTONES

2025

The large-scale production line was officially completed, increasing the production capacity of spiral-wound flat-sheet nanofiltration membranes to 3 million square meters per year and that of hollow fiber nanofiltration membranes to 100,000 square meters per year. In the same year, the company was certified as a "National High-Tech Enterprise."

2024



1.46 million tons/year Coal-to-Ethylene Glycol Wastewater Resource Utilization Demonstration Project



10000 tons/day Prince Paper Wastewater Phase II Retrofit Project



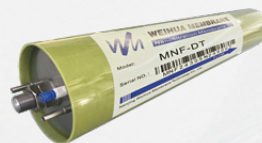
80000 tons/year Phosphorus-Containing Wastewater Compliance Discharge Demonstration Project



Annual output of 1,000 tons Lithium Carbonate Salt Lake Lithium Extraction Demonstration Project

2023

Developed multiple nanofiltration membrane products including spiral-wound, disc-type, and hollow fiber configurations, which have been applied in salt lake lithium extraction, landfill leachate treatment, and compliance discharge projects for papermaking wastewater and pesticide wastewater. These products are also continuously being expanded into applications such as water treatment, material separation, pharmaceutical purification, and solvent recovery.



I COMPANY HONORS

Honorary Certificate



National High-Tech Enterprise



Jiangsu Provincial Private Science and Technology Enterprise



National Sci-Tech Small and Medium-sized Enterprise



7 Authorized Invention Patents



2 Utility Model Patents



PRODUCTION WORKSHOPS



Flat Membrane Casting Line



Flat Membrane Coating Line



Hollow Fiber Membrane Production Line



Membrane Sheet Testing Device

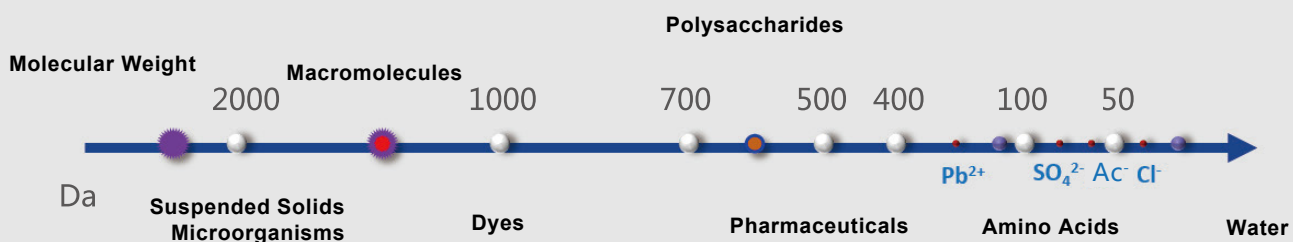
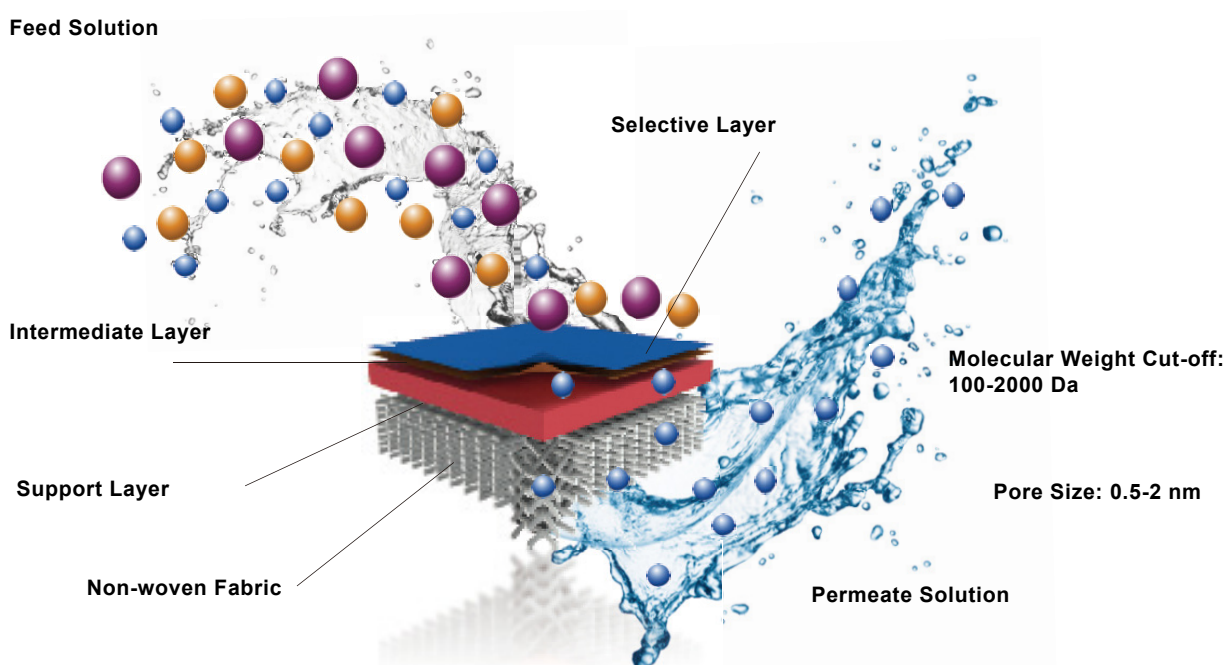


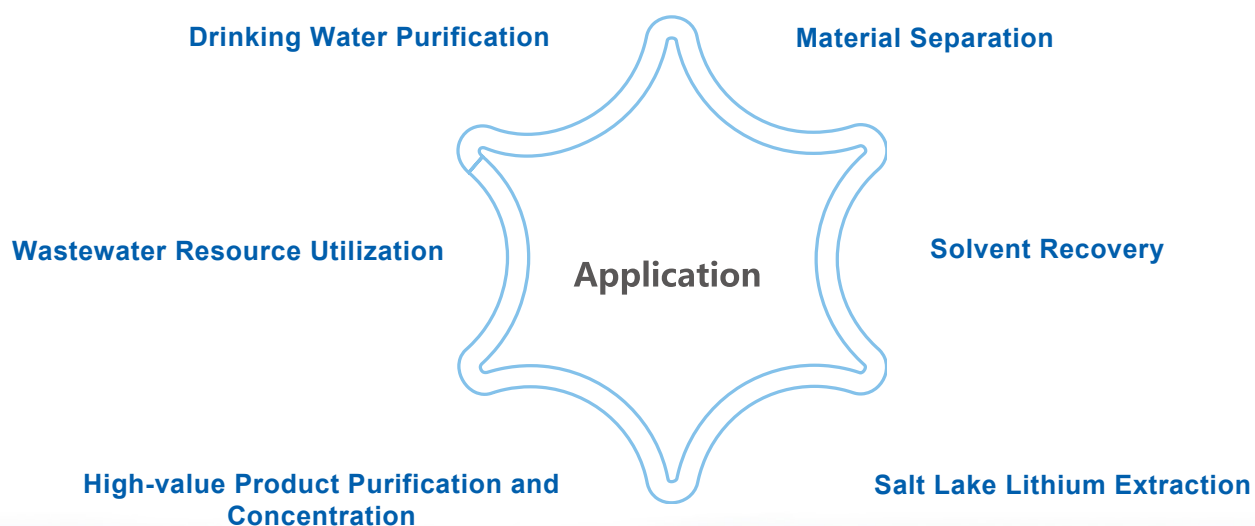
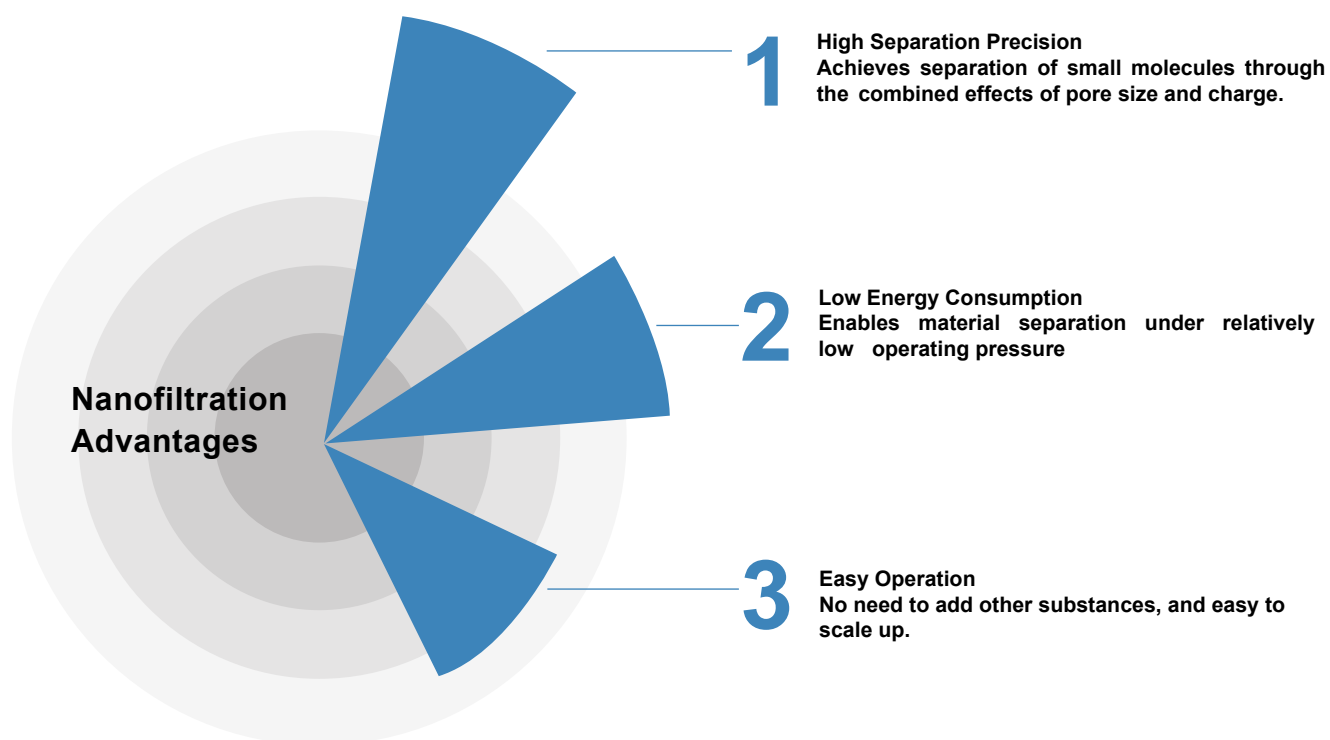
Module Testing Device



Pilot-scale Testing Device

I NANOFILTRATION MEMBRANES

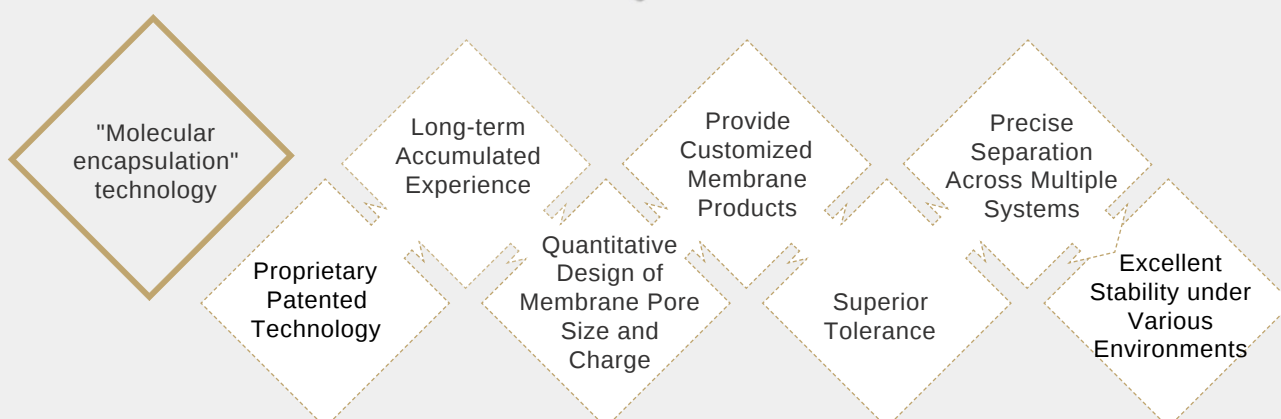
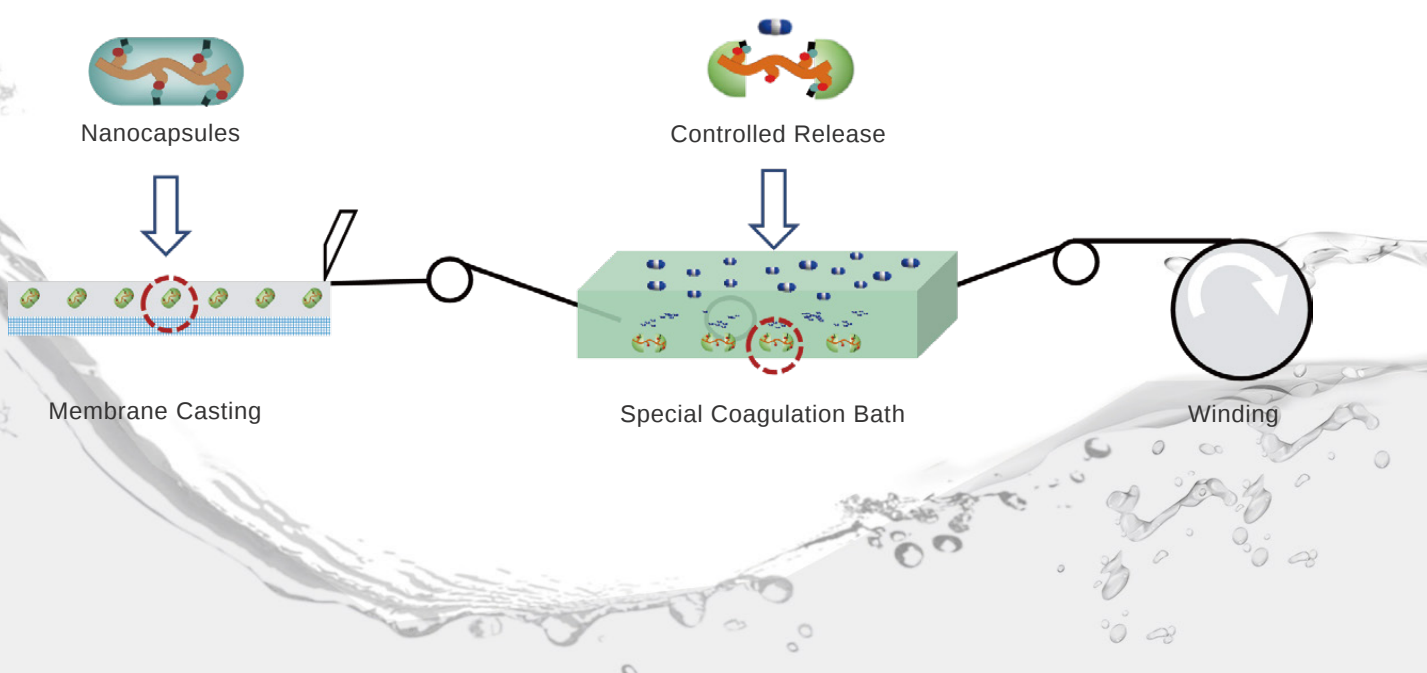


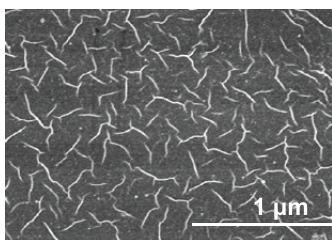
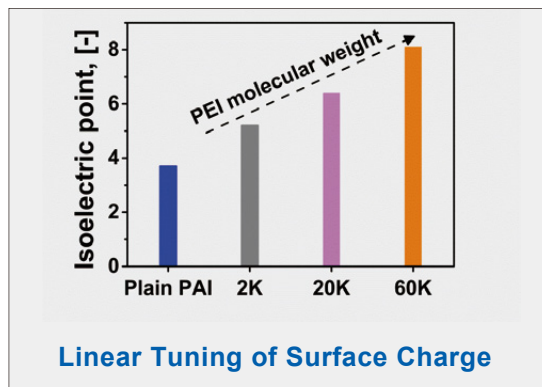
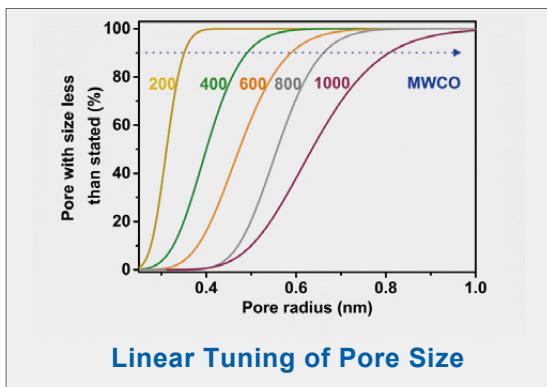


Technical Feature 1: Customized Preparation of High-precision Nanofiltration Membranes

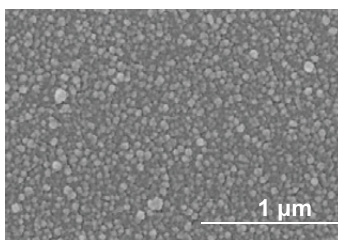
Molecular Encapsulation Technology

Inspired by the controlled-release function of capsules in the pharmaceutical industry, the concepts of "molecular encapsulation" and "nanocapsules" were first proposed in the membrane field. Functional modifiers are encapsulated within "capsules" and released at specific process stages, enabling simultaneous membrane structure regulation and functional modification.

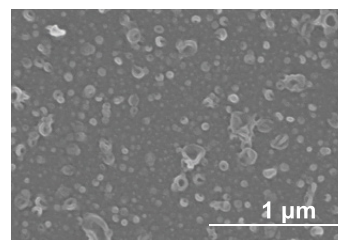




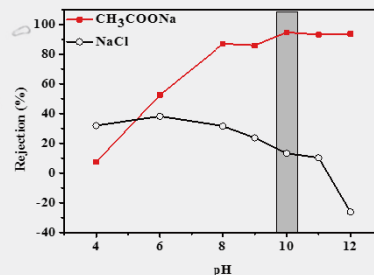
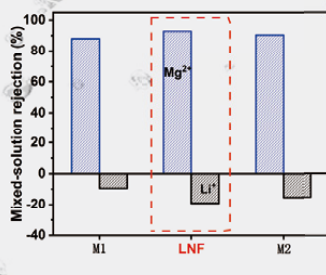
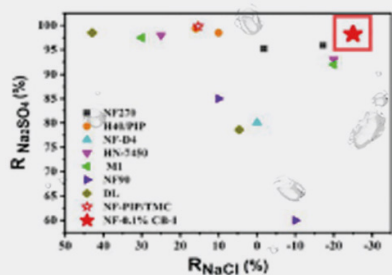
LNF Nanofiltration Membrane
Molecular Weight Cut-off: 500 Da



MNF Nanofiltration Membrane
Molecular Weight Cut-off: 200 Da



SNF Nanofiltration Membrane
Molecular Weight Cut-off: 100 Da

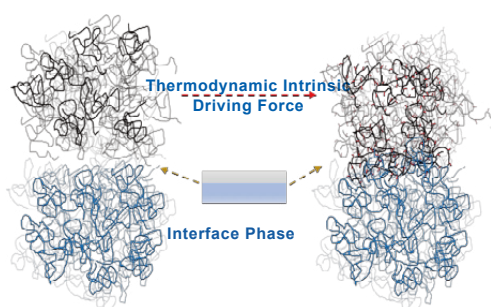


Technical Feature 2: Technical Features of Hollow Fiber Nanofiltration Membranes

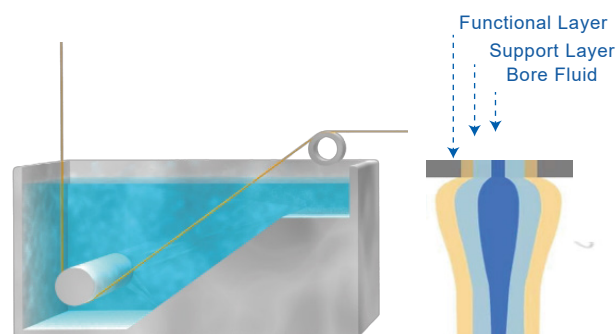
Simultaneous construction technology of composite hierarchical structure

Starting from the chemical structure of polymers, polymer compatibility is quantified through molecular simulation and solubility parameter calculation, theoretically overcoming the interfacial compatibility issue of bilayer membranes. This enables the co-extrusion and integrated formation of composite structures from two materials, offering the advantages of significantly reducing membrane material costs and effectively shortening the membrane preparation process.

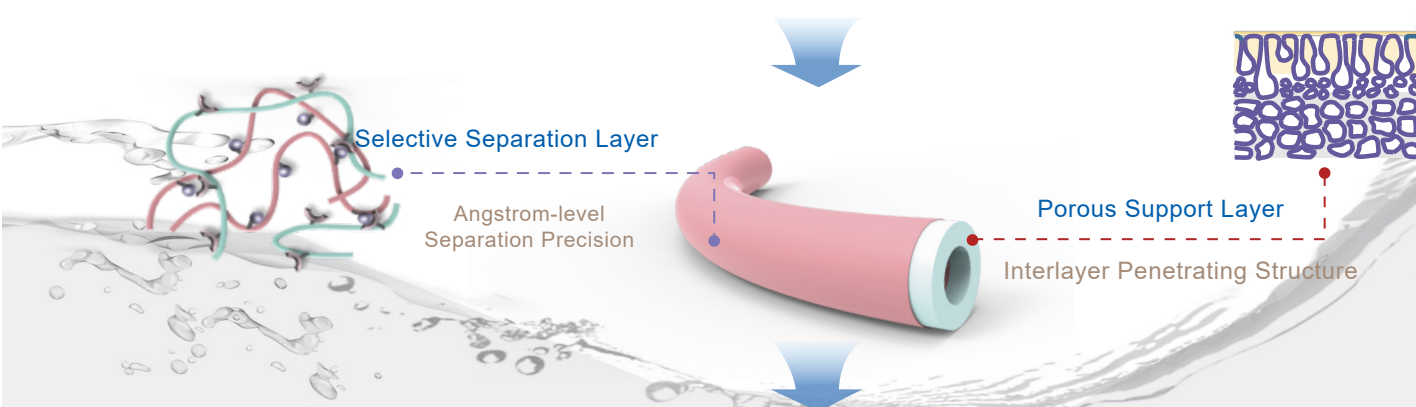
► **Theoretical Breakthrough:** Intermolecular Force-induced Interfacial Adhesion Mechanism



► **Technological leadership:** Simultaneous construction of composite hierarchical structure



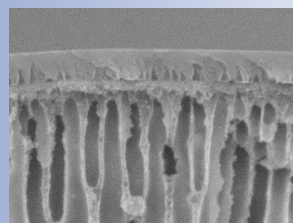
Integral Forming of Externally Pressurized Composite Hollow Fiber Nanofiltration Membrane

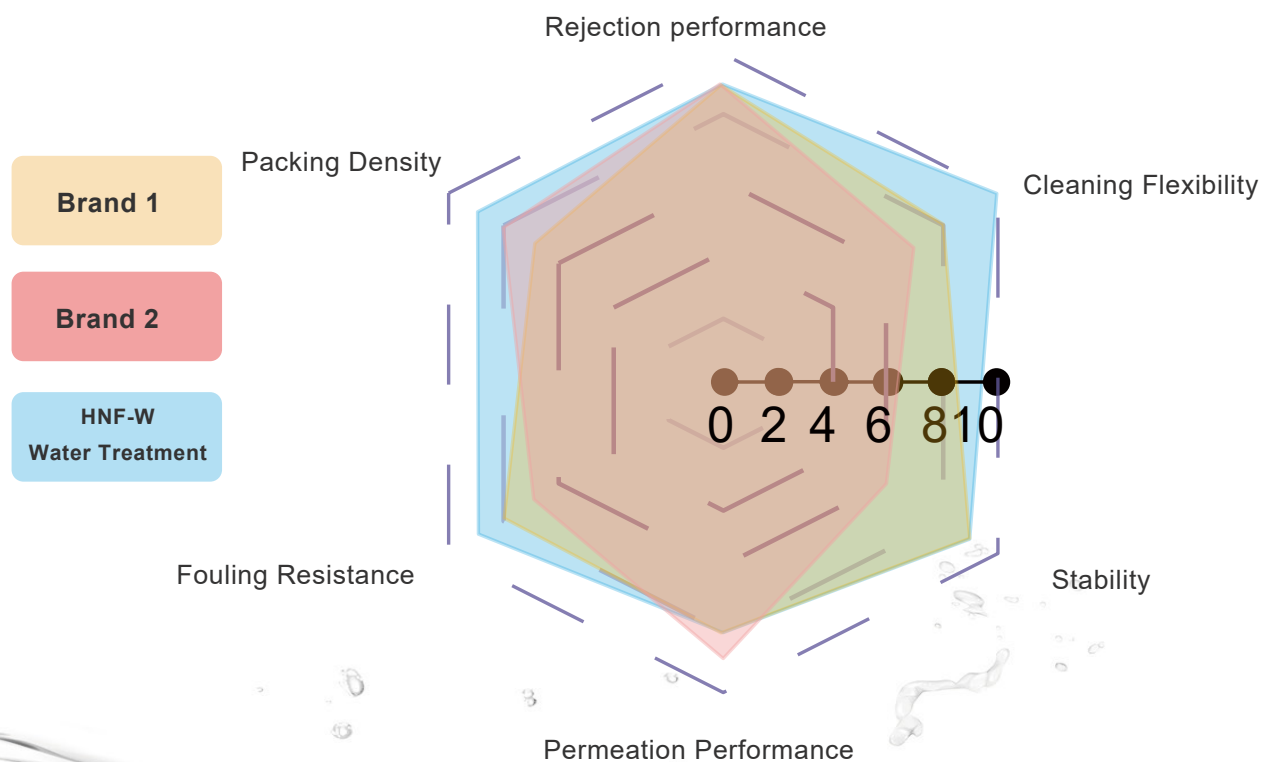


Significantly shorten the membrane manufacturing process and achieve continuous production.



Achieve an interpenetrating interface structure with excellent structural stability under harsh conditions





Advantages

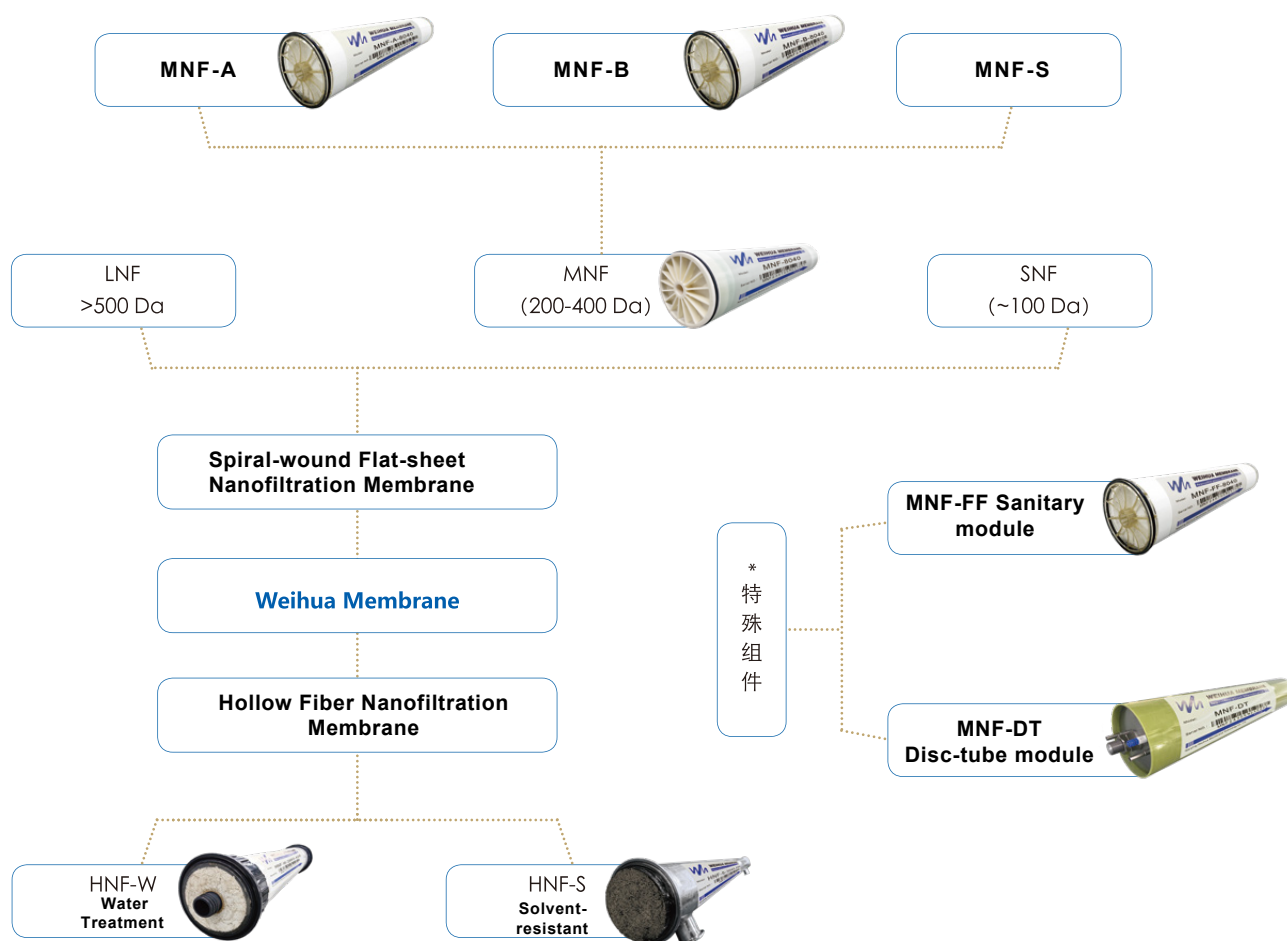
- ▶ Packing density reaches $1500 \text{ m}^2/\text{m}^3$, which is 1.5 to 2 times that of competing membranes, saving floor space. Externally
- ▶ pressurized reinforced membrane structure with low influent water quality requirements, reducing pretreatment equipment investment.
- ▶ Unique anti-fouling functional layer combined with effective cleaning significantly reduces operation and maintenance costs.

Authorized Invention Patents: ZL202010994439.6; ZL202010264299.7; ZL201710131883.3

Papers: AIChE J., 67 (2021) e17138; J. Membr. Sci., 628 (2021) 119243; J. Membr. Sci., 610 (2020) 118270

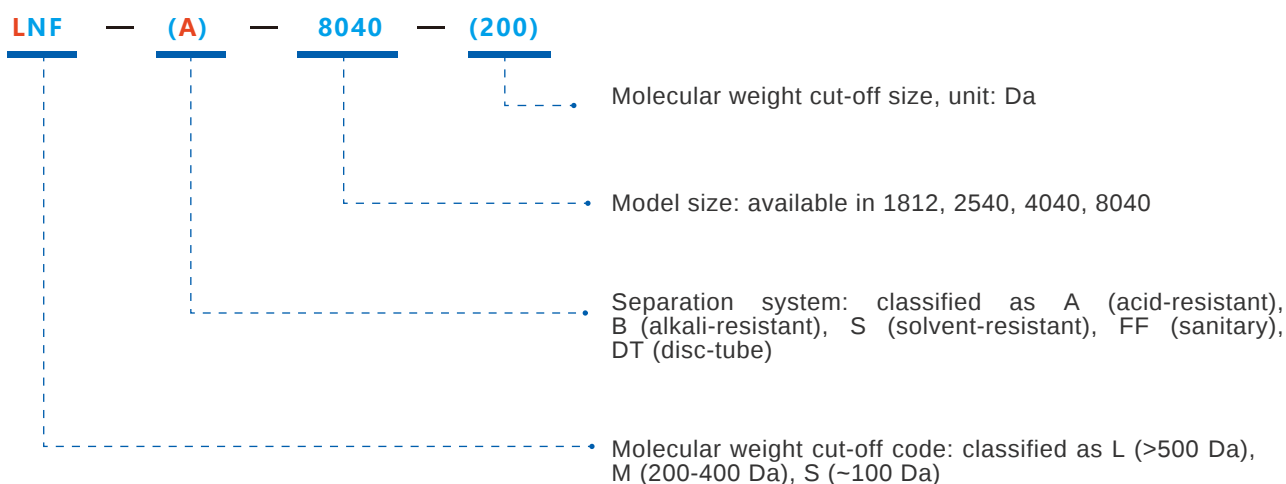
I PRODUCTS

The company's products cover nanofiltration membrane elements and processes of various materials and molecular weight cut-offs, providing nanofiltration membrane-based solutions for wastewater resource utilization and material separation globally. Its business spans multiple sectors including chemical, biopharmaceutical, environmental protection, and energy, with applications in household water treatment, municipal water treatment, salt lake lithium extraction, zero liquid discharge of high-salinity wastewater, purification and concentration of high-value products, organic solvent recovery, and material separation under strong acid systems. The company undertakes wastewater treatment and zero-discharge resource utilization projects for industries such as pharmaceuticals, electronics, food, textiles, papermaking, and landfill leachate.

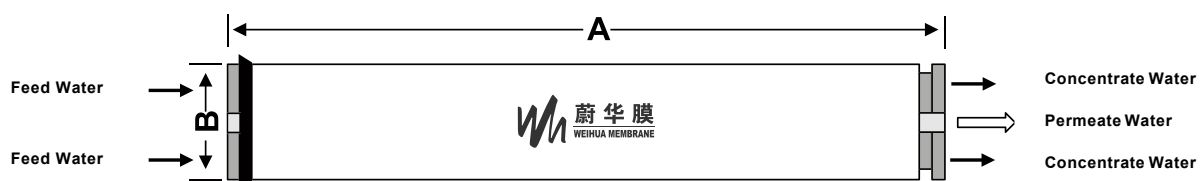


I NOMENCLATURE OF MEMBRANES

| Spiral-wound Flat-sheet Nanofiltration Membrane



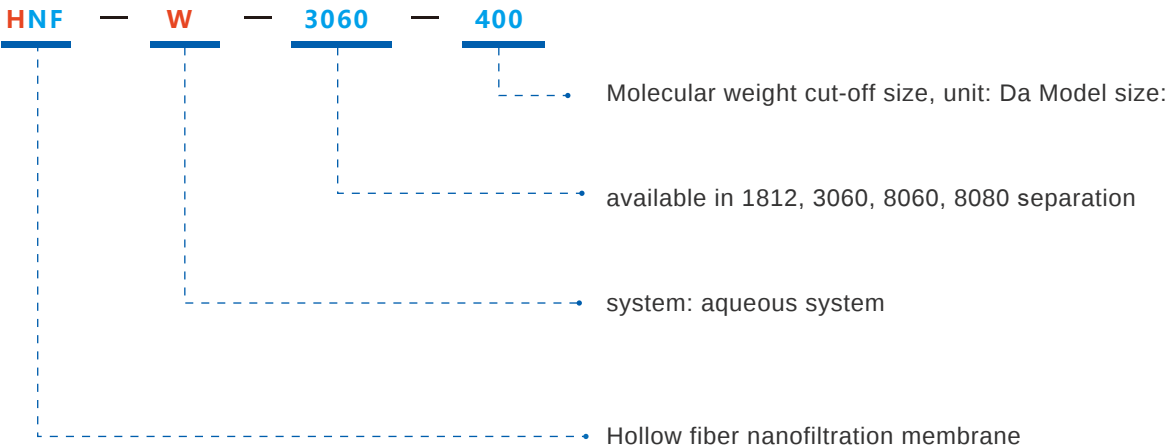
| Element Dimensions



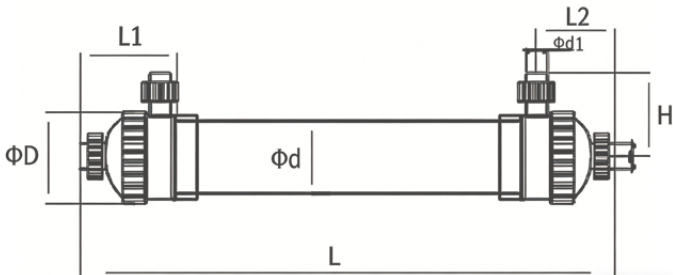
Model	A (inch)	B (inch)
1812	12.0	1.8
2540	40.0	2.5
4040	40.0	4.0
8040	40.0	8.0

Note: 1 inch = 25.4 mm

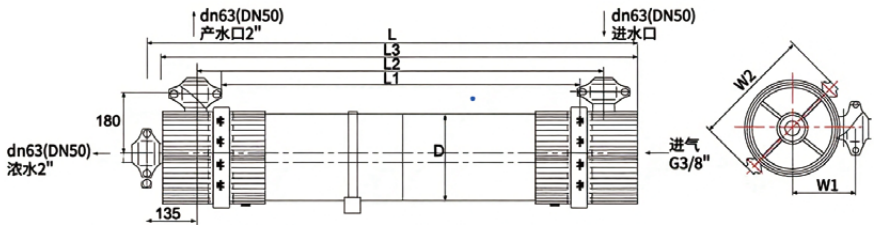
Hollow Fiber Nanofiltration Membrane for Water Treatment



Element Dimensions

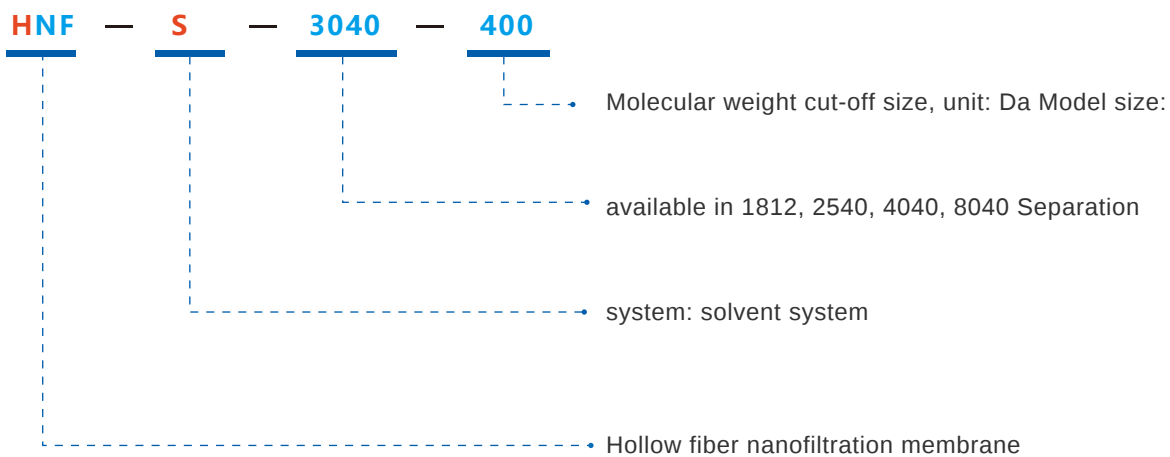


Model	Ød(mm)	ØD(mm)	L(mm)	L1(mm)	L2(mm)	H(mm)
1812 (2 inches)	50	85	340	90	72	56
3060 (4 inches)	90	110	1500	115	101	110

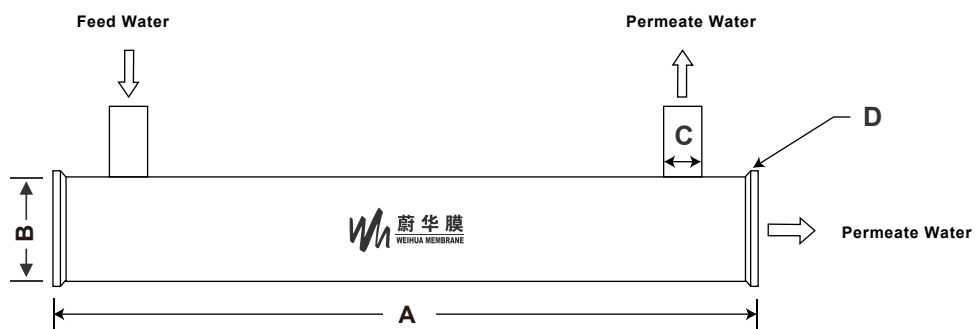


Model	D(mm)	L(mm)	L1(mm)	L2(mm)	L3(mm)	W1(mm)	W2(mm)
8060 (8 inches)	225	1860	1500	1620	1800	180	342
8080 (8 inches)	225	2360	2000	2130	2320	180	342

Solvent-resistant Hollow Fiber Nanofiltration Membrane



Element Dimensions



Model	A(mm)	B(mm)	C(mm)	D(mm)
1812	300	45	16	Clamp 64
2540	1000	45	16	Clamp 64
3040	1100	95	Clamp 50.5	Clamp 119

I PRODUCT OVERVIEW

Product Category	Product Model	Effective Membrane Area ft ² (m ²)	PWP (LMH/bar)	2000 ppm MgSO ₄ Rejection rate(%)
Spiral-Wound Flat-sheet Nanofiltration Membrane	LNF-8040-500	400.0 (36.40)	13-15	>80
	MNF-8040-300	400.0 (36.40)	8-9	>97
	MNF-8040-200	400.0 (36.40)	5-6	>98
	SNF-8040-100	400.0 (36.40)	3-4	>90 (2000 ppm NaCl)
	MNF-A-8040 Acid-resistant membrane	400.0 (36.40)	2-3	>98
	MNF-B-8040 Alkali-resistant Membrane	400.0 (36.40)	2-3	>98
	MNF-S-8040 Solvent-resistant Membrane	400.0 (36.40)	4-5	>98
	MNF-FF-8040 Sanitary Module	400.0 (36.40)	5-6	>98
	MNF-DT Disc-tube Module	108 (10)	5-6	>98
Hollow Fiber Nanofiltration Membrane	HNF-W-8060-400 Water Treatment	861 (80)	7-8	>90
	HNF-S-3040-200 Solvent-resistant	118 (11.0)	1-2	>90 (200 ppm PEG 200)

Note: The allowable variation range for the permeate flow rate of a single membrane element is ±15%, and the salt rejection rate may vary by ±2%.

LNF-500

Product Introduction

The LNF-500 series uses polyamide as the main membrane material, with a molecular weight cut-off of approximately 500 Da. It can remove larger contaminants, suspended solids, macromolecular colloids, macromolecular organics, and some salts from water. It is widely used in chemical wastewater treatment, pharmaceutical separation in the pharmaceutical industry, the food industry, and other fields.

Product Advantages

High water permeate flux; small molecule permeation; special separation.

Application Fields

Suitable for chemical wastewater treatment, pharmaceutical separation in the pharmaceutical industry, the food industry, and other fields, as well as removal of suspended solids/viruses, dye desalination, dye concentration, whey desalination, etc.

Product Specifications

Product Model	LNF-1812-500	LNF-2540-500	LNF-4040-500	LNF-8040-500
Effective Membrane Area ft ² (m ²)	4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Permeate flow rate GPD (Cubic meters per day)	198 (0.75)	1149 (4.35)	4382 (16.59)	18756 (71.92)
Stable Removal Rate	> 80% (2000 ppm MgSO ₄)			

Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.

Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C,
Operating pH range: 3-11, Feed water residual chlorine: <100 ppm

Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with a cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from tens of minutes to several hours.

*The above parameters are for reference only. Component parameters should be reasonably set according to actual conditions.

*As the company's products are continuously optimized, actual performance data may differ from those in the product brochure. Nanjing Weihua Membrane Technology Co., Ltd. reserves the right of final interpretation.

MNF-300

Product Introduction

The MNF-300 series utilizes proprietary molecular encapsulation and support layer synergy technology, significantly enhancing the flux of the nanofiltration membrane. It is widely applicable in chemical wastewater treatment, municipal water treatment, household water purification, landfill leachate treatment, and other fields.

Product Advantages

High processing capacity; resistance to harsh systems; low operating pressure; high treatment efficiency.

Application Fields

Chemical wastewater treatment; separation and concentration of food and juice; landfill leachate treatment; municipal water treatment; household water purification.

Performance Comparison

Brand	Model	MWCO (Da)	Flux (LMH/bar)	MgSO ₄ Rejection rate (%)	MgCl ₂ Rejection rate (%)	NaCl Rejection rate (%)	Glucose Rejection rate (%)
Wei Hua	MNF-300	255	8-9	> 97	>85	38-50	84
Veolia	DL	278	6-7	> 97	>80	30-45	81

Test conditions: Temperature 25°C, pH 7, test pressure 0.69 MPa, salt concentration 2000 ppm, glucose concentration 200 ppm

Product Specifications

Product Model	MNF-1812-300	MNF-2540-300	MNF-4040-300	MNF-8040-300
Effective Membrane Area ft ² (m ²)	4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Permeate flow rate GPD (Cubic meters per day)	114 (0.43)	655 (2.48)	2499 (9.46)	10831 (41.00)
Stable Removal Rate	> 97% (2000 ppm MgSO ₄)			
Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.				
Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C, Operating pH range: 3-11, Feed water residual chlorine: <100 ppm				
Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with a cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from tens of minutes to several hours.				

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*As the company's products are continuously optimized, actual performance data may differ from those in the product brochure. Nanjing Wei Hua Membrane Technology Co., Ltd. reserves the right of final interpretation.

MNF-200

Product Introduction

The MNF-200 series utilizes proprietary molecular encapsulation technology to produce high-precision, high-flux nanofiltration membranes. It can efficiently remove microorganisms, COD, ammonia nitrogen, color, heavy metals, etc., from water, while achieving high-efficiency separation of monovalent and divalent ions. It is widely applicable in fields such as salt lake lithium extraction, biomedicine, and industrial wastewater resource utilization.

Product Advantages

High separation precision; strong fouling resistance; good monovalent/divalent salt separation efficiency; high separation efficiency under high salinity and high pressure.

Application Fields

Industrial wastewater treatment; separation and concentration in biomedicine; precious metal recovery; salt lake lithium extraction; resource utilization of high-salinity wastewater.

Performance Comparison

Brand	Model	MWCO (Da)	Flux (LMH/bar)	MgSO ₄ Rejection rate (%)	MgCl ₂ Rejection rate (%)	NaCl Rejection rate (%)	Glucose Rejection rate (%)	Pressure 80bar Rejection rate (%)	Pressure 60bar Rejection rate (%)	Pressure 40bar Rejection rate (%)
Weihua	MNF-200	168	5-7	>98	>97	52-57	96.81	98.1	97.2	95.7
Veolia	DK	214	4-5	>98	>90	48-56	92.31	94.4	94.1	91.9
Test conditions: Temperature 25°C, pH 7, test pressure 0.69 MPa, salt concentration 2000 ppm, glucose concentration 200 ppm								Test conditions: Temperature 25°C, pH 7, magnesium chloride 40 g/L		

Product Specifications

Product Model	MNF-1812-200	MNF-2540-200	MNF-4040-200	MNF-8040-300
Effective Membrane Area ft ² (m ²)	4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Permeate flow rate GPD (Cubic meters per day)	77 (0.29)	436 (1.65)	1667 (6.31)	7228 (27.36)
Stable Removal Rate	> 98% (2000 ppm MgSO ₄)			
Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.				
Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C, Operating pH range: 3-11, Feed water residual chlorine: <100 ppm				
Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with a cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from tens of minutes to several hours.				

*The above parameters are for reference only. Component parameters should be reasonably set according to actual conditions.

*As the company's products are continuously optimized, actual performance data may differ from those in the product brochure. Nanjing Weihua Membrane Technology Co., Ltd. reserves the right of final interpretation.

SNF-100

Product Introduction

The SNF-100 series utilizes molecular encapsulation and precise support layer control technology to form a uniform, dense surface layer with narrow pore size distribution, achieving a molecular weight cut-off of approximately 100 Da. It exhibits high rejection of monovalent ions and small organic molecules, while its operating cost is significantly lower than that of reverse osmosis membranes. It is widely applicable in fields such as water softening, pure water production, the electronic chemicals industry, and wastewater resource utilization.

Product Advantages

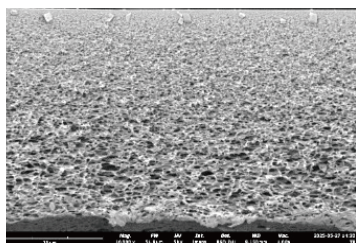
High salt rejection rate; narrow pore size distribution; low operating cost; high treatment efficiency.

Application Fields

Fermentation broth concentration; water softening; seawater desalination; pure water production; electronic chemicals industry.

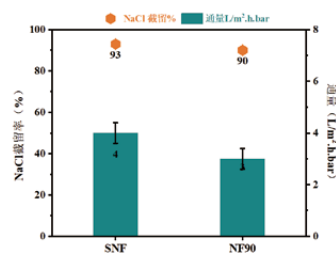
Performance Comparison

Advantage 1: Fully spongy support structure



- High Pressure Resistance
- High Permeate Flux High
- Fouling Resistance

Advantage 2: High separation precision, high flux



- Higher Rejection Rate
- Higher Flux

Product Specifications

Product Model	SNF-1812-100	SNF-2540-100	SNF-4040-100	SNF-8040-100
Effective Membrane Area ft²(m²)	4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Permeate flow rate GPD (Cubic meters per day)	51 (0.19)	290 (1.1)	1112 (4.21)	4818 (18.24)
Stable Removal Rate	> 90% (2000 ppm NaCl)			

Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.

Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C, Operating pH range: 3-10, Feed water residual chlorine: <50 ppm

Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with a cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from tens of minutes to several hours.

MNF-FF Sanitary membrane

Product Introduction

The MNF-FF sanitary-grade membrane, as a new type of composite nanofiltration membrane product, uses sanitary-grade materials that are green and safe. It removes bacteria, organic matter, and sulfates from water while retaining minerals. It is suitable for use in food processing such as dairy products and beverages to improve product taste and quality.

Product Advantages

Meets the standards of the food and pharmaceutical industries; uses food-grade auxiliary materials; no organic leachables.

Application Fields

Food and juice concentration; pharmaceutical concentration; daily chemical product filtration; pharmaceutical purification; drinking water purification.

Product Specifications

Product Model	MNF-FF-1812-200	MNF-FF-2540-200	MNF-FF-4040-200	MNF-FF-8040-200
Effective Membrane Area ft ² (m ²)	4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Permeate flow rate GPD (Cubic meters per day)	77 (0.29)	436 (1.65)	1667 (6.31)	7228 (27.36)
Stable Removal Rate	> 98% (2000 ppm MgSO ₄)			
Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.				
Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C, Operating pH range: 3-11, Feed water residual chlorine: <100 ppm				
Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with a cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from tens of minutes to several hours.				

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MNF-A Acid-resistant Membrane

Product Introduction

MNF-A acid-resistant nanofiltration membrane is specifically designed for extreme acidic environments and serves as a key technology for the efficient separation of acids from heavy metals/small-molecule organics. Compared with traditional processes such as chemical neutralization, resin adsorption, and extraction, this technology transforms waste acid from a "cost burden" into a "recoverable resource," significantly reducing the costs of new acid procurement and waste liquid disposal; greatly minimizes hazardous waste generation and total wastewater discharge, making it easy to comply with increasingly stringent environmental regulations; and enables a closed-loop production process, improving resource utilization and creating a green, sustainable competitive advantage. It is suitable for harsh conditions such as anodizing bath solution purification, acid recovery from electroplating lines, and rare earth extraction and separation.

Product Advantages

① Excellent acid resistance: Acid resistance is comparable to KOCH and superior to domestic membranes; ② Excellent selectivity: Acid permeation rate >90%, heavy metal rejection rate >98%, separation selectivity comparable to KOCH and superior to domestic membranes; ③ Excellent applicability: Demonstration projects have been established in multiple actual wastewater systems such as anodizing, chemical polishing, and titanium dioxide washing wastewater, with wastewater treatment capacity >1000 tons/day, acid recovery rate >70%, and wastewater treatment cost reduced by over 70%.

Application Fields

Anodizing, chemical polishing, titanium dioxide washing wastewater, etching wastewater, electroplating wastewater, resin wastewater, lactic acid decolorization, battery recycling, rare earth separation.

Performance Comparison

Brand	Model	Acid Resistance Strength	Flux (LMH/bar)	Rejection Rate
Weihua	MNF-A	30% H_2SO_4 20% HNO_3 20% H_3PO_4 20%HCl	2.0	98% ($MgSO_4$)
KOCH	MPS-34	15% H_2SO_4 5% HNO_3 20% H_3PO_4 37%HCl	2.0	98% ($MgSO_4$)

Test conditions: Temperature 25°C, test pressure 0.69 MPa, salt concentration 2000 ppm

Product Specifications

Product Model	MNF-A-1812-200	MNF-A-2540-200	MNF-A-4040-200	MNF-A-8040-200
Effective Membrane Area ft ² (m ²)	4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Permeate flow rate GPD (Cubic meters per day)	32 (0.12)	200 (0.76)	792 (3.00)	3488 (13.20)
Stable Removal Rate	> 98% (2000 ppm MgSO ₄)			
Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.				
Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C, Operating pH range: 3-11, Feed water residual chlorine: <100 ppm				
Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from tens of minutes to several hours.				

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MNF-B Alkali-resistant Membrane

Product Introduction

MNF-B alkali-resistant nanofiltration membrane is specifically designed for extreme alkaline environments and serves as a key technology for the efficient separation of alkalis from multivalent salts/small-molecule organics. Compared with traditional processes such as chemical neutralization, resin adsorption, and extraction, this technology transforms waste alkali from a "cost burden" into a "recoverable resource," significantly reducing the costs of new alkali procurement and waste liquid disposal; greatly minimizes hazardous waste generation and total wastewater discharge, making it easy to comply with increasingly stringent environmental regulations; and enables a closed-loop production process, improving resource utilization and creating a green, sustainable competitive advantage. It is suitable for harsh conditions such as papermaking wastewater, photoresist wastewater, and milk production cleaning water.

Product Advantages

① Excellent alkali resistance: Alkali resistance is comparable to KOCH and superior to domestic membranes; ② Excellent selectivity: Alkali permeation rate >90%, multivalent salt rejection rate >98%, glucose rejection rate >90%, separation selectivity comparable to KOCH and superior to domestic membranes; ③ Excellent applicability: Demonstration projects have been established in multiple actual wastewater systems such as papermaking wastewater resource utilization, photoresist wastewater purification, and milk production cleaning water reuse, with wastewater treatment capacity >500 tons/day, alkali recovery rate >80%, and wastewater treatment cost reduced by over 70%.

Application Fields

Lignin purification, electronic chemical purification, cleaning water purification for food/beverage and dairy products, textile mercerization wastewater recovery, resin wastewater purification.

Performance Comparison

Brand	Model	Alkali Resistance Strength	Flux (LMH/bar)	Rejection Rate
Weihua	MNF-B-200	30%NaOH 20%KOH	2.0	98% (Na ₂ SO ₄)
KOCH	MPS-34	20%NaOH 10%KOH	2.0	98% (Na ₂ SO ₄)

Test conditions: Temperature 25°C, test pressure 0.69 MPa, salt concentration 2000 ppm

Product Specifications

Product Model	MNF-B-1812-200	MNF-B-2540-200	MNF-B-4040-200	MNF-B-8040-200
Effective Membrane Area ft ² (m ²)	4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Permeate flow rate GPD (Cubic meters per day)	32 (0.12)	200 (0.76)	792 (3.00)	3488 (13.20)
Stable Removal Rate	> 98% (2000 ppm MgSO ₄)			
Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.				
Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C, Operating pH range: 3-11, Feed water residual chlorine: <100 ppm				
Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from tens of minutes to several hours.				

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MNF-S Solvent-resistant Membrane

Product Introduction

This series is specifically designed for extreme solvent environments and serves as a key technology for the efficient separation of solvents from target solutes (such as small-molecule organics, precious metal salts, dyes, etc.). Compared with traditional processes such as distillation, extraction, adsorption, and crystallization, this technology transforms solvents from a "cost burden" into a "recoverable resource," significantly reducing the costs of new solvent procurement and waste liquid disposal; greatly minimizes hazardous waste generation and organic waste gas emissions, making it easy to comply with increasingly stringent environmental regulations; and enables a closed-loop production process, improving resource utilization and creating a green, sustainable competitive advantage. It is suitable for harsh conditions such as pharmaceutical solvent recovery, separation and purification in fine chemicals, dye and pigment production, and aromatic hydrocarbon separation in petrochemicals.

Product Advantages

① Excellent solvent resistance: Solvent resistance is comparable to Evonik membranes and superior to domestic membranes; ② Excellent selectivity: Solvent permeation rate >90%, rejection rate for organics with molecular weight above 300 Da >95%; ③ Excellent applicability: Pilot-scale applications have been achieved in areas such as catalyst recovery, biological fermentation broth concentration, and pharmaceutical purification and solvent recovery, with energy consumption reduced by over 70%.

Application Fields

Pharmaceutical solvent recovery, separation and purification in fine chemicals, dye and pigment production, aromatic hydrocarbon separation in petrochemicals, catalyst recovery, biological fermentation broth concentration, etc.

Performance Comparison

Brand	Model	Solvent Resistance Strength	Flux (LMH/bar)	Rejection Rate
WeiHua	MNF-S-200	Alcohols, esters, ketones, DMF, etc.	5.0	98%(MgSO ₄)
Evonik	DureMem280	Alcohols, esters, ketones, DMF, etc.	3.4	98%(MgSO ₄)

Test conditions: Temperature 25°C, pH 7, test pressure 0.69 MPa, salt concentration 2000 ppm

Product Specifications

Product Model		MNF-S-1812-200	MNF-S-2540-200	MNF-S-4040-200	MNF-S-8040-200
Effective Membrane Area ft ² (m ²)		4.20 (0.38)	23.68 (2.20)	92.40 (8.40)	400.00 (36.40)
Pure Solvent Flux GPD (Cubic Meters per Day)	Methanol	26 (0.1)	185 (0.7)	660 (2.5)	2641 (10)
	Ethanol	19 (0.075)	119 (0.45)	449 (1.7)	1981 (7.5)
	Propanol	12 (0.05)	74 (0.28)	290 (1.1)	1215 (4.6)
	DMF	1.5 (0.005)	10 (0.04)	39 (0.15)	158 (0.6)
Permeate Flow Rate GPD (Cubic Meters per Day)		79 (0.3)	475 (1.8)	1981 (7.5)	7925 (30)
Stable Removal Rate		> 98% (2000 ppm MgSO ₄)			
Test conditions: All performance data were collected under operating pressure of 0.69 MPa, temperature of 25°C, and pH 7.					
Operating conditions: Maximum operating pressure: 4 MPa, Maximum operating temperature: 45°C, Operating pH range: 3-11, Feed water residual chlorine: <100 ppm					
Precautions: 1. The allowable variation range for the permeate flow rate of a single membrane element is ±15%. 2. Routine cleaning of membrane elements is generally water flushing, with a cleaning frequency ranging from tens of minutes to several hours, and each flushing lasting from ten seconds to several minutes. Chemical cleaning is required every ten days to two months, with each cleaning lasting from ten of minutes to several hours.					

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HNF-W Water Treatment

Product Introduction

The HNF-W series for water treatment features an externally pressurized high-strength structure and unique functional layers with chlorine resistance, antibacterial properties, and fouling resistance. The membrane elements have high packing density and flexible cleaning options, effectively reducing pretreatment requirements for nanofiltration projects, shortening process flows, and lowering equipment investment as well as operation and maintenance costs. They offer broad prospects in municipal water treatment, industrial water treatment, and resource utilization.

Product Advantages

High chlorine resistance and excellent antibacterial properties; high mechanical strength of membrane fibers; easy to clean; high packing density; high permeate flux; low operating cost.

Application Fields

Municipal water treatment, industrial circulating water reuse, printing and dyeing wastewater treatment, industrial water treatment and resource utilization, material separation and concentration.

Performance Comparison

Brand	Model	MWCO (Da)	Flux (LMH/bar)	MgSO ₄ Rejection Rate (%)	Packing Density (m ² /m ³)	Maximum Transmembrane Pressure (bar)	Chlorine Resistance (ppmh)	pH Tolerance Range
WeiHua	HNF	400	4-6	90-92	1500	10	300000	2-12
NXF	dNF	400	4-6	90	1000	6	250000	2-12
		Test conditions: Temperature 25°C, pH 7, pressure 6 bar					Test conditions: Immersion test in 1000 ppm active chlorine and acid/alkaline solutions	

Product Specifications

Product Model	HNF-W-1812-400	HNF-W-3060-400	HNF-W-8060-400
Effective Membrane Area ft ² (m ²)	9.7 (0.9)	156.1 (14.5)	861.1 (80.0)
Permeate Flow Rate GPD (Cubic Meters per Day)	211.3 (0.8)	3302.5 (12.5)	18256.3 (69.1)
Stable Removal Rate	~ 90% (1000 ppm MgSO ₄) ; ~ 90% (200 ppm PEG 400)		
Chlorine resistance (ppmh)	> 300000		

Test conditions: All performance data were collected under operating pressure of 0.6 MPa, temperature of 20°C, and pH 7.

Operating conditions: Maximum operating pressure: 1 MPa, maximum operating temperature: 40°C, operating pH range: 2-12.

Precautions: The allowable variation range for the permeate flow rate of a single membrane element is ±15%.

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HNF-S Solvent-resistant

Product Introduction

The HNF-S solvent-resistant series membrane elements use polyimide as the membrane matrix material, with a molecular weight cut-off of approximately 200 Da. Solvent-resistant materials are selected as the potting material, and 304 steel is used as the housing material. They can operate stably in different polar solvents with low leachables and residues, and are applicable in fields such as biomedicine and food processing.

Product Advantages

Broad organic solvent tolerance; superior mechanical stability, no fiber breakage; flexible cleaning, long service life of membrane fibers.

Application Fields

Material separation in solvent-based systems in the pharmaceutical, food, and chemical industries; organic solvent recovery and purification; drug concentration (antibiotics, peptides, etc.); recovery of dissolved chemicals; cleaning wastewater from production lines; hydrocarbon recovery and purification; recovery of dissolved chemicals.

Product Specifications

Product Model		HNF-S-1812-200	HNF-S-2540-200	HNF-S-4040-200
Effective Membrane Area ft ² (m ²)		3.23 (0.3)	32.30 (3.0)	118.43 (11.0)
Pure Solvent Flux GPD (Cubic Meters per Day)	Methanol	11 (0.05)	112 (0.40)	409 (1.53)
	Ethanol	3 (0.01)	29 (0.11)	106 (0.40)
	Propanol	7 (0.03)	70 (0.26)	258 (0.96)
	DMF	2 (0.01)	19 (0.07)	71 (0.26)
Permeate Flow Rate GPD (Cubic Meters per Day)		23 (0.08)	222 (0.84)	817 (3.06)
Stable Removal Rate		> 90% (200 ppm PEG 200)		
Test conditions: All performance data were collected under operating pressure of 0.6 MPa, temperature of 20°C, and pH 7.				
Operating conditions: Maximum operating pressure: For polar aprotic solvents such as DMF and NMP: 1 MPa; For polar protic solvents such as methanol/ethanol: 1.5 MPa; Maximum operating temperature: 40°C; Operating pH range: 2-11.				
Precautions: The allowable variation range for the permeate flow rate of a single membrane element is ±15%.				

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APPLICATION FIELD

Papermaking Industry

Dyeing and Printing Wastewater

Metal Surface Treatment

Chemical Wastewater

High-quality Drinking Water

Semiconductor Industry

Biological Fermentation

Lithium Extraction from Salt Lakes

The relevant products have been successfully applied in the treatment of more than ten types of industrial wastewater, including chemical, printing and dyeing, papermaking, and electroplating wastewater, as well as in the recovery of acids, alkalis, and solvents in industrial processes. At the same time, mature applications have also been achieved in multiple emerging industries such as high-quality drinking water, salt lake lithium extraction, biomedicine, and semiconductors.

Chemical Separation — Coal Chemical Wastewater

In the process of producing coal-to-ethylene glycol, a coal chemical enterprise generates a large amount of high-salinity wastewater, with a flow rate of approximately 4000 m³/d. The enterprise now aims to achieve zero liquid discharge and salt resource utilization for this wastewater stream. Based on customer requirements and verified through experiments, the final technical route for the project was determined, featuring an integrated process centered on reverse osmosis membrane concentration, nanofiltration membrane salt separation, and freeze crystallization. Given the high total salt content of the coal chemical wastewater and the fact that the main salt components are sodium chloride and sodium sulfate, an integrated process focusing on reverse osmosis membrane concentration, nanofiltration membrane salt separation, and freeze crystallization was designed.



**Spiral-wound Flat-sheet
Nanofiltration Membrane
Product MNF-8040-200**

Treatment Objective: Separation of sodium sulfate and sodium chloride

Separation Performance: $R(\text{SO}_4^{2-}) > 99.4\%$

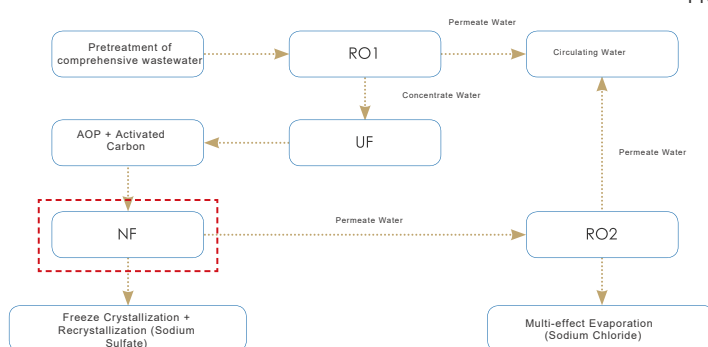
Treatment Cost: Wastewater treatment cost reduced by 71%, carbon emissions reduced by 80%

Product Purity: Sodium sulfate purity 98.4%, sodium chloride purity 98.9% Product Output: Sodium sulfate recovery approximately 94 tons/day, sodium chloride recovery approximately 43 tons/day

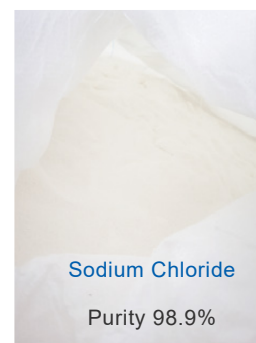
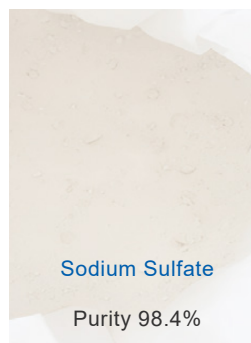
Treatment Capacity: 4000 tons/day

Operation Duration: Stable operation for 2 years

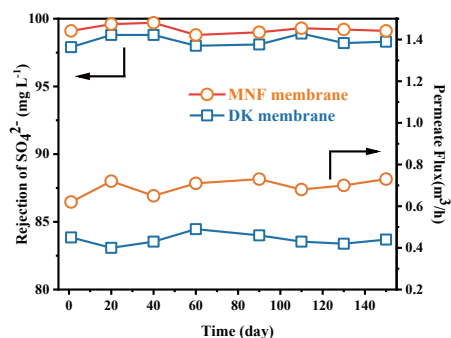
Process Flow



Freeze Crystallization + Recrystallization Multi-effect Evaporation



Competitor Comparison



Both ion selectivity and flux are significantly superior to imported membranes.

Project Site



4000 tons/day Coal-to-ethylene Glycol Wastewater Resource Utilization Project - Nanofiltration Membrane Section

Chemical Separation — Chlor-alkali industry

To reduce raw material costs, the salt used in the chlor-alkali industry is typically industrial salt, which contains some sodium sulfate. When the sodium sulfate content is too high, it shortens the service life of the electrolyzer anode, reduces the current efficiency of the electrolyzer, decreases the effective membrane area, and increases power consumption due to reduced current conduction. Therefore, chemical or physical methods are required to remove excess sulfate from the brine circulation system to ensure normal production.



**Spiral-wound Flat-sheet Nanofiltration
Membrane Product MNF-8040-300**

Treatment objective: Reduce sulfate concentration in the system

Product model: MNF-8040-300

Number of membrane elements: 18

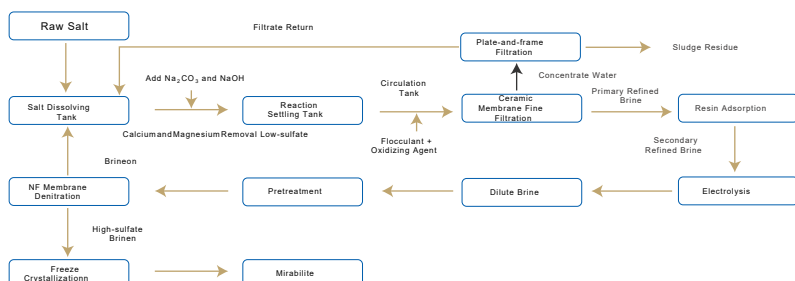
Operating pressure: 3.5-4 MPa

Permeate water quality: Sulfate concentration <0.77 g/L

Treatment capacity: 1000 tons/day

Operation duration: Stable operation for 12 months

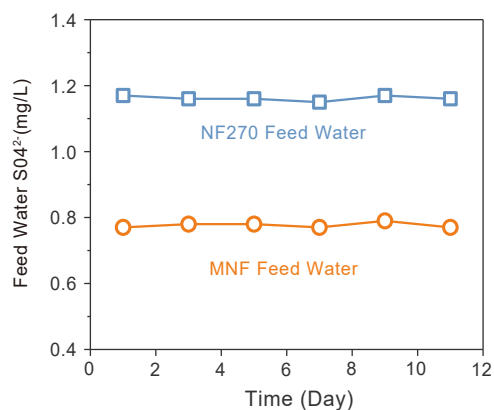
Process Flow



**1000 tons/day Chlor-alkali Denitration Project –
Nanofiltration Membrane Section**

Competitor Comparison

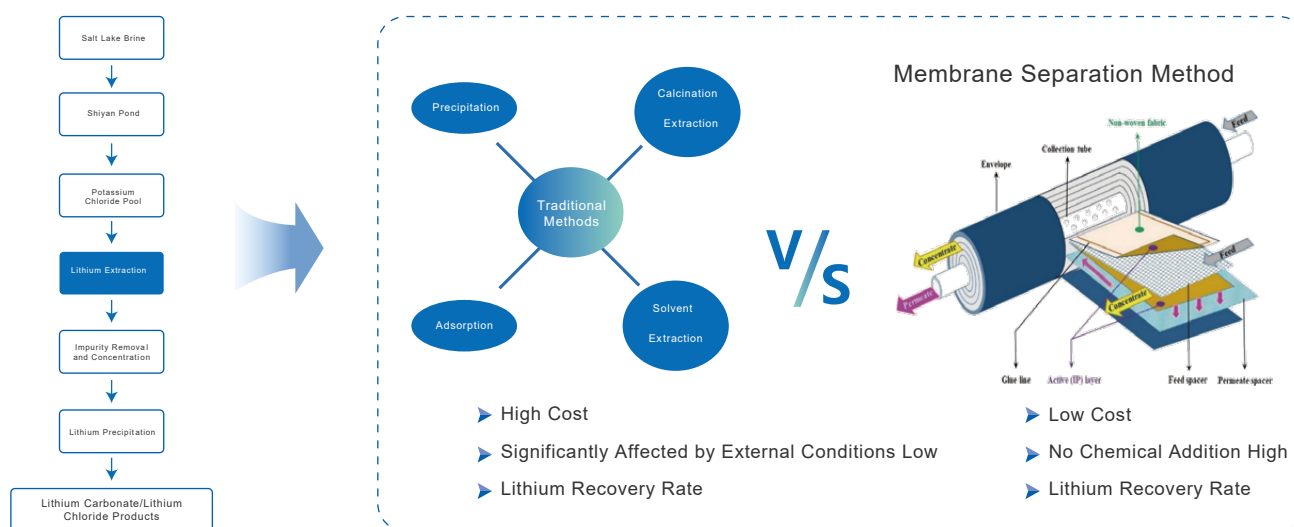
SO ₄ ²⁻	NaCl	Na ₂ CO ₃	SO ₄ ²⁻		
Feed Water (g/L)	Feed Water (g/L)	Feed Water (g/L)	Concentrate Water (g/L)	F270 Feed Water (g/L)	MNF200 Feed Water (g/L)
4.65	308	0.44	21.76	1.17	0.77
4.26	309	0.44	21.85	1.16	0.78
4.26	310	0.44	22.08	1.16	0.78
4.65	308	0.44	21.86	1.15	0.77
4.85	309	0.44	22.49	1.17	0.79
4.65	309	0.44	21.71	1.16	0.77



Compared to NF270, MNF produces permeate with lower sulfate concentration, resulting in higher purity of sodium chloride obtained.

Chemical Separatio—Lithium Extraction from Salt Lakes

Lithium Product Production Process

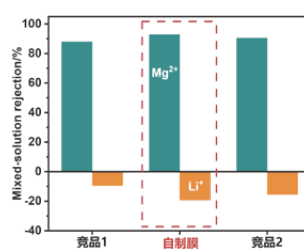


Lithium Extraction from Salt Lakes with High Mg^{2+}/Li^+ Ratio

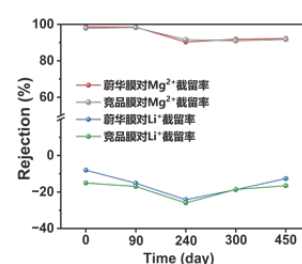
Ions	Concentration
B	0.27 g/L
K ⁺	15.07 g/L
Li ⁺	0.5 g/L
Mg ²⁺	10 g/L
Na ⁺	68.65 g/L
Cl ⁻	203.15 g/L
SO ₄ ²⁻	19.53 g/L



1000 tons/year Lithium Carbonate Pilot Project



Mg²⁺:Li⁺ separation performance is superior to the most advanced foreign membrane products.



Influent concentration ratio Mg²⁺:Li⁺ = 20:1, effluent magnesium-to-lithium ratio reduced to 1:1 Excellent long-term stability

Lithium Extraction from Carbonate-type Salt Lakes

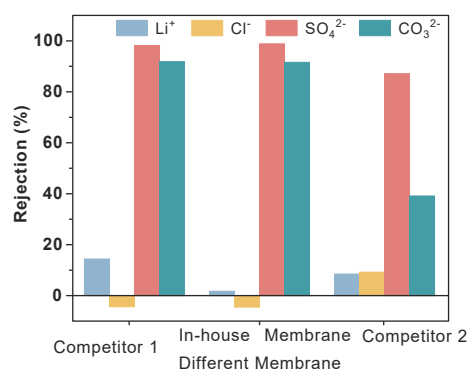
Carbonate-type salt lake raw brine test:

Feed concentration: ~150 g/L

Operating pressure: >30 bar

Operating performance: Removal of most divalent anions

Allows permeation of most Li⁺, reducing lithium loss.

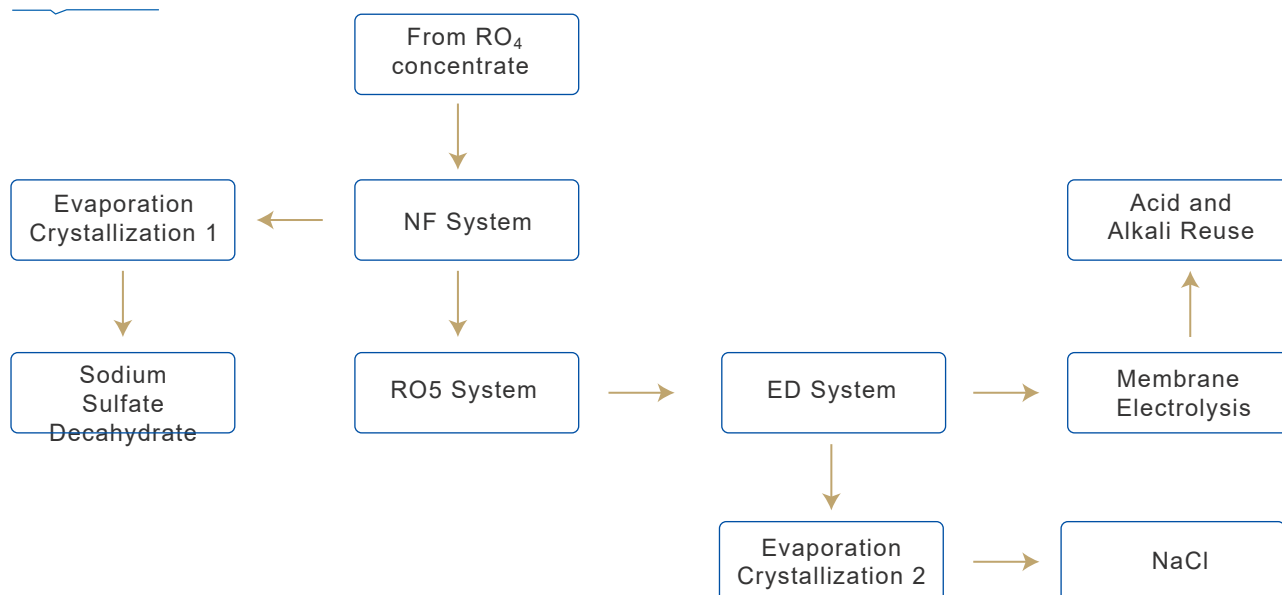


Monovalent/divalent anion separation and Li⁺ permeation performance comparable to that of foreign competing products.

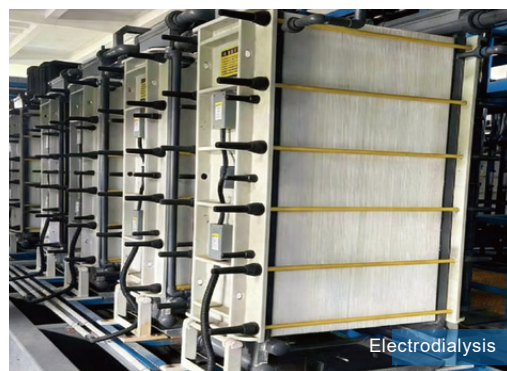
Chemical Separation — Papermaking Wastewater (Phase II Retrofit)

In a pulp and papermaking wastewater treatment project of a certain enterprise, Weihua membrane products were used for the Phase II retrofit of the NF section. This achieved efficient separation of sulfate and chloride ions, improving the quality of the recovered industrial salt. The treated purified water was reused, realizing resource utilization of papermaking wastewater. Annual operating costs were reduced by 10 million RMB, creating significant economic and social benefits.

Process Flow



Project Site



Chemical Separation — High-salinity Wastewater Resource Utilization

To address the difficulty of separating similar ions with close molecular sizes and identical valence states in chemical wastewater, the company has developed high-precision NF membranes and a near-zero discharge process centered on NF technology. This reduces wastewater discharge by 90% for enterprises, significantly saves environmental protection costs, and improves the input-output ratio.



**Spiral-wound Flat-sheet NF
Membrane Product SNF-8040-100**

Treatment objective: Separation of sodium acetate and NaCl

Product model: SNF-8040-100

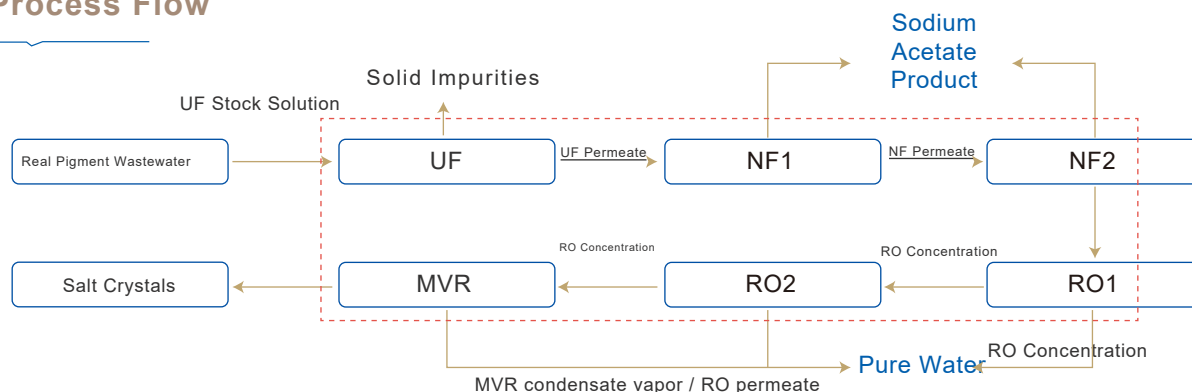
Feed water quality: High-concentration salt solution Effluent

quality: Concentrated salt solution

Treatment capacity: 230 tons/day

Treatment cost: 6.6 RMB/ton

Process Flow



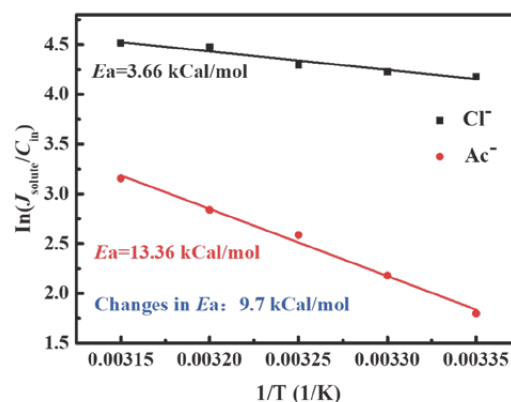
Integrated Process for Resource Utilization of Organic Pigment Wastewater

Project Site



**Zero-liquid Discharge Demonstration Unit for
Sodium Acetate Wastewater**

Treatment Performance



**Separation Ratio of Sodium Acetate to Sodium
Chloride Reaches as High as 15:1**

Wastewater Treatment — Pesticide Wastewater Treatment

Project Background

During pesticide production, a certain enterprise generates a phosphorus-containing wastewater stream with a flow rate of approximately 220 tons/day. Due to long-term non-compliance with discharge standards, the plant faced the risk of production shutdown. Based on customer requirements and verified through extensive preliminary experiments, the technical route for the project was finally determined.

Water Quality Characteristics

High levels of organic matter, total nitrogen, and total phosphorus; complex pollutant composition; difficult to degrade, resulting in non-compliance with water quality standards.



**Spiral-wound Flat-sheet NF
Membrane Product
MNF-8040-300**

Treatment objective: Reduce total phosphorus concentration to below 1 mg/L

Effluent quality: Primary NF permeate total phosphorus below 8 mg/L, meeting discharge standards; secondary NF permeate total phosphorus below 1 mg/L, meeting reuse standards.

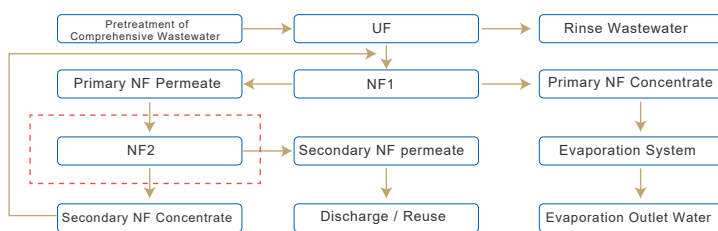
Power consumption per ton of water: 82 kWh/m³

Treatment cost: Wastewater treatment cost reduced by 60%, carbon emissions reduced by 72%

Treatment capacity: 220 tons/day

Operation duration: >1 year

Process Flow



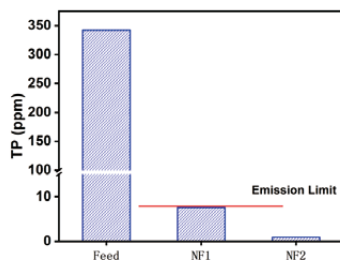
Integrated Process Flow for Pesticide Wastewater Treatment

Project Site

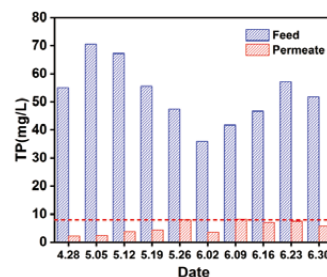


Membrane Treatment System for Pesticide Wastewater

Treatment Performance



Primary NF permeate total phosphorus concentration below 8 mg/L, meeting local discharge standards; secondary NF permeate total phosphorus below 1 mg/L, meeting the enterprise's reclaimed water quality standards.



After two months of continuous operation, total phosphorus in the primary NF permeate remained below the discharge limit.

Wastewater Treatment — Landfill Leachate Treatment

Project Background

At a municipal solid waste landfill, the leachate treatment capacity is approximately 300 tons/day. Due to the complex water quality of the leachate, the previously used membrane elements had a short service life and required frequent cleaning. The customer sought to improve membrane fouling resistance and extend service life.

Water Quality Characteristics

High levels of organic matter, ammonia nitrogen, and color; complex pollutant composition.



**Spiral-wound Flat-sheet NF
Membrane Product
MNF-8040-300**

Treatment objective: Reduce total phosphorus concentration to below 1 mg/L

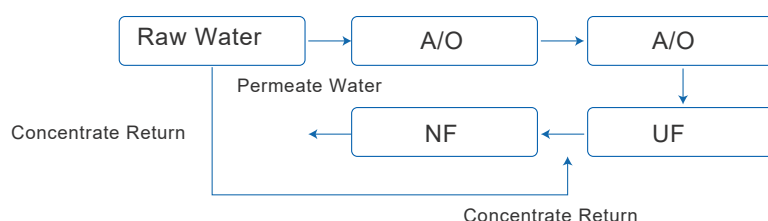
Effluent quality: Primary NF permeate total phosphorus below 8 mg/L, meeting discharge standards; secondary NF permeate total phosphorus below 1 mg/L, meeting reuse standards. Power consumption per ton of water: 82 kWh/m³

Treatment cost: Wastewater treatment cost reduced by 60%, carbon emissions reduced by 72%

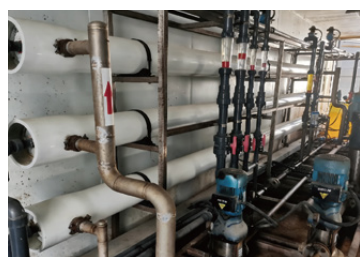
Treatment capacity: 220 tons/day

Operation duration: >1 year

Process Flow



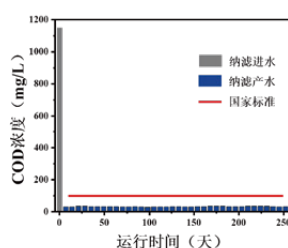
Project Site



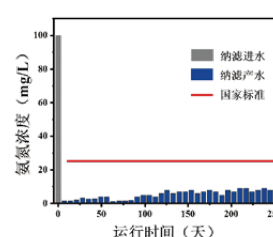
Treatment Performance



Decolorization Rate above 99%



Long-term Stable High COD Removal Rate



Long-term Stable Ammonia Nitrogen Removal Rate

Wastewater Treatment — Printing and Dyeing Wastewater

Project Background

During production, a printing and dyeing chemical enterprise generates a large amount of printing and dyeing wastewater, with a flow rate of approximately 1000 tons/day. The enterprise now aims to achieve resource utilization of this wastewater stream. Based on customer requirements and verified through experiments, the final technical route for the project was determined, featuring a combined process centered on biochemical treatment, sedimentation, and hollow fiber NF.

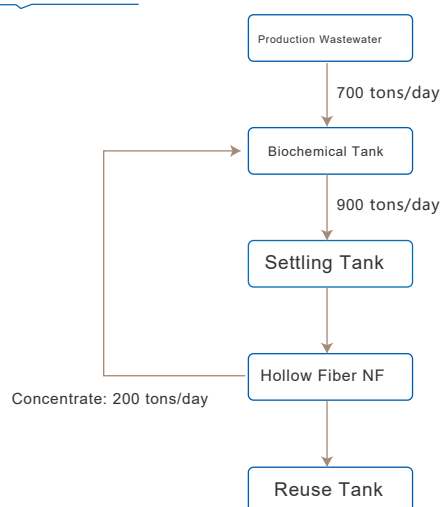
Water Quality Characteristics

High color, high hardness, high suspended solids (SS).

Feed Water Quality

Number	Test item	Unit	Value	Reuse Value
1	Color	hazen	285	10
2	pH		6-8	6-8
3	Fe ³⁺	mg/L	6	0.1
4	Mn ²⁺	mg/L	4	0.1
5	SS	mg/L	98	10
6	Total Hardness	mg/L	300	150
7	Chloride	mg/L	2100	\
8	TDS	mg/L	7200	\

Process Flow



Project Site



Permeate Water Quality

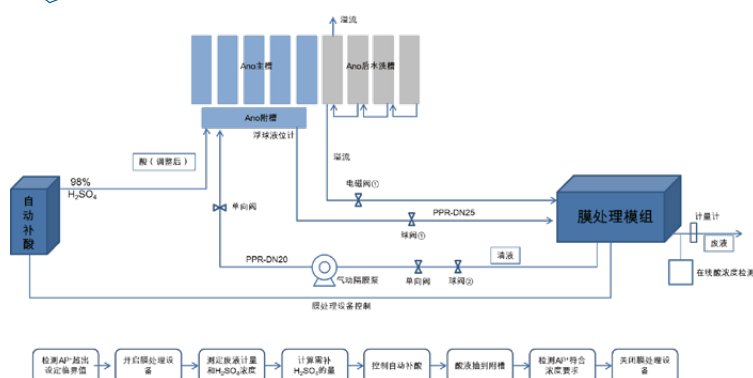
Number	Test Item	Unit	Value	Reuse Value
1	Color	hazen	7.6	10
2	pH		7.5	6-8
3	Fe ³⁺	mg/L	\	0.1
4	Mn ²⁺	mg/L	\	0.1
5	SS	mg/L	1.0	10
6	Total Hardness	mg/L	140	150
7	Chloride	mg/L	1900	\
8	TDS	mg/L	4500	\

The enterprise reduced wastewater discharge by 70%, with treatment cost reduced by 5 RMB per ton of water, saving 1.155 million RMB annually.

Metal Surface Treatment — Waste Acid Recovery

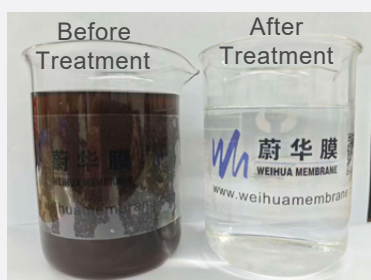
Anodizing is commonly used in metal surface treatment, and this process generates large quantities of waste acid. Conventional treatment methods are costly and result in significant chemical waste. Acid-resistant NF membranes can selectively permeate acid solutions such as sulfuric acid, phosphoric acid, and oxalic acid while retaining metal ions from the waste acid, thereby enabling acid recovery and reuse and significantly reducing waste acid treatment costs. The total treatment cost decreased from 1000 RMB/day to 125 RMB/day, acid procurement was reduced by 80%, and annual waste acid treatment costs were saved by 288,700 RMB.

Process Flow



Process Flow Diagram of Anodizing Acid Recovery Process

Treatment Effect



Project Site



5 tons/day anodizing acid recovery unit

Project Data

Tank	Acid Ratio	Status	H ₃ PO ₄ g/L	H ₂ SO ₄ g/L	Al ppm
Anodizing Tank	20%	Stock Solution	/	169.71	3842
		Permeate		162.13	358.9
		Retention Rate		95.53	9.34
Chemical Polishing Tank	15%	Stock Solution	138.2	29.5	1878
		Permeate	127.4	28.8	106.1
		Retention Rate	92.19	97.63	5.65
	10%	Stock Solution	96.6	19.7	1341
		Permeate	88.8	20.3	40.74
		Retention Rate	91.93	103	3.04

Pigment Manufacturing Industry — Titanium Dioxide Washing Wastewater

During titanium dioxide production, a certain enterprise generates strongly acidic sulfuric acid wastewater containing high concentrations of iron ions. Conventional treatment using chemical neutralization results in high chemical costs and acid waste. By replacing the traditional treatment method with a process centered on Weihua's acid-resistant NF membrane technology, the ferrous ion rejection rate exceeds 95%, and the sulfuric acid permeation rate exceeds 80%. The total treatment cost decreased from 11,915 RMB/day to 6,740 RMB/day, saving 1.7 million RMB annually, significantly reducing wastewater treatment costs while enabling waste acid recovery and reuse.



**Spiral-wound Flat-sheet NF
Membrane Product MNF-
A-8040-200**

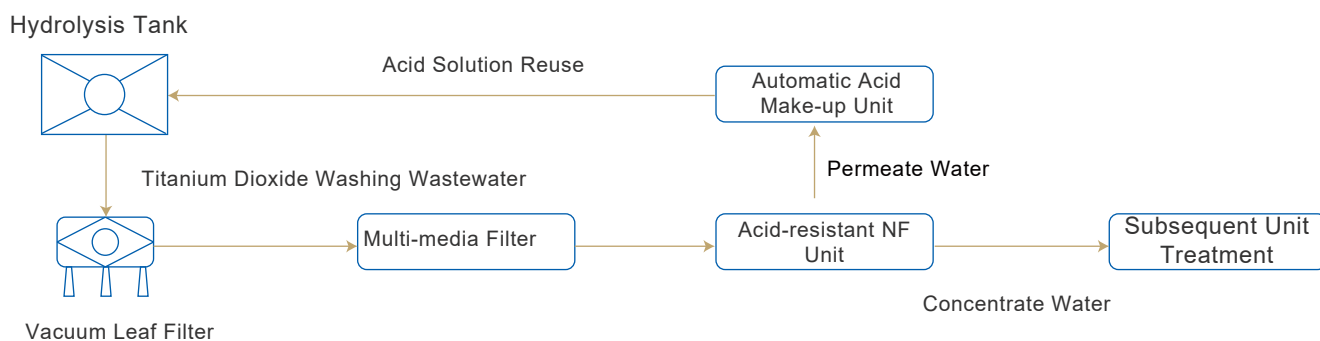
Treatment objective: Reduce treatment cost and recover waste acid

Product model: MNF-A-8040

Separation performance: $R(\text{H}_2\text{SO}_4) < 20\%$, $R(\text{Fe}^{2+}) > 95\%$

Acid treatment capacity: 100 tons/day

Process Flow



Project Site



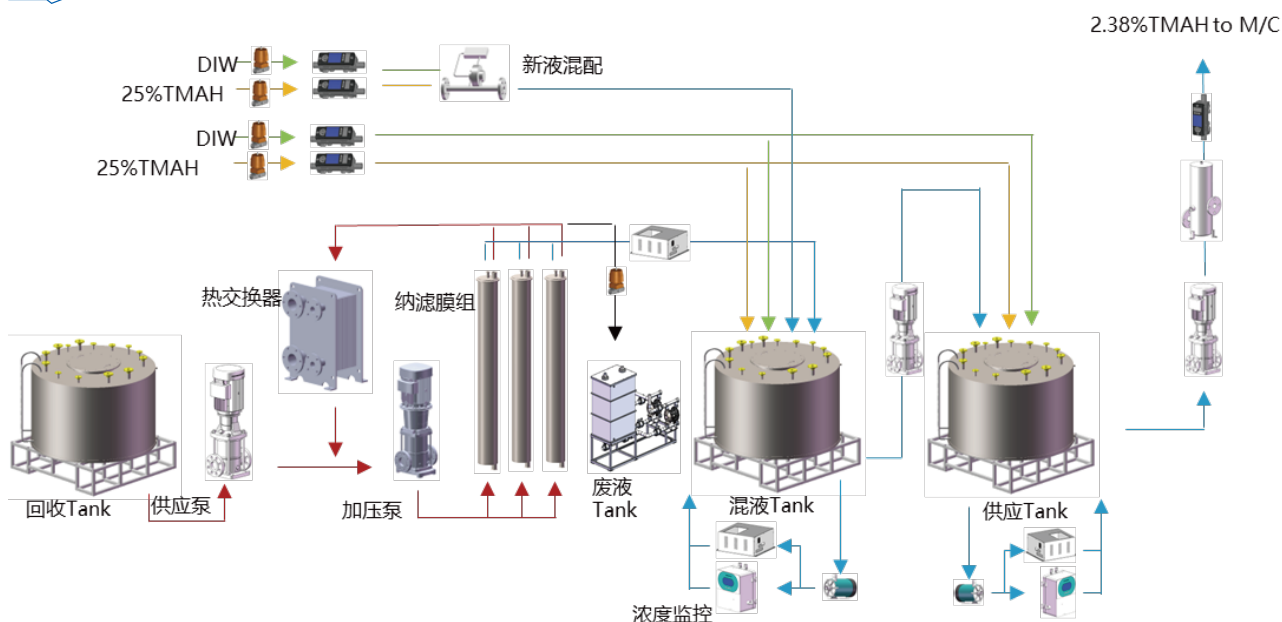
Project Data

Date	Feed Water		Permeate Water		Rejection Rate	
	$\text{Fe}^{2+}(\text{g/L})$	$\text{H}_2\text{SO}_4(\%)$	$\text{Fe}^{2+}(\text{g/L})$	$\text{H}^+(\%)$	$\text{Fe}^{2+}(\%)$	$\text{H}_2\text{SO}_4(\%)$
7.30	11.94	6.47	0.4	5.72	96.65	11.59
7.31	9.86	6.09	0.35	5.71	96.45	6.24
8.01	9.9	5.69	0.25	4.96	97.47	12.83
8.05	7.23	4.59	0.35	4.62	95.16	-0.65
8.06	6.29	4.17	0.3	3.68	95.23	11.75
8.08	5.73	4.09	0.2	3.28	96.51	19.80
8.09	5.80	3.86	0.25	3.37	95.69	12.69
8.12	7.21	4.62	0.3	3.92	95.84	15.16
8.13	8.04	4.77	0.25	3.94	96.89	17.4

Semiconductor Industry — Developer Production Wastewater

A certain enterprise has a stream of developer production wastewater containing TAMH (tetramethylammonium hydroxide, molecular weight 91 Da), PR (photoresist impurities, molecular weight 1200 Da), and carbonates. Currently, the wastewater is mainly treated by off-site disposal, which incurs high costs and results in significant waste of TAMH materials, failing to comply with national policies on wastewater resource utilization. Using Weihua's alkali-resistant NF membrane for separation, the effluent meets direct discharge standards, with a TMAH recovery rate exceeding 90%, while retaining PR and carbonates, thereby enabling the reuse of TAMH.

Process Flow



Project Data

Project	Specifications
pH	14
TAMH Recovery Rate	> 90%
PR Removal Rate	> 98%
CO ₃ ²⁻ Permeation Rate	> 70%
NF Membrane Model	MNF-B-600

Biomedicine — Gibberellic Acid Concentration

Gibberellic acid is a highly effective plant growth regulator that can be produced on a large scale via microbial fermentation. The fermentation broth contains gibberellic acid, microbial metabolites, and incompletely utilized nutrients, and requires separation and purification to obtain a high-purity product.

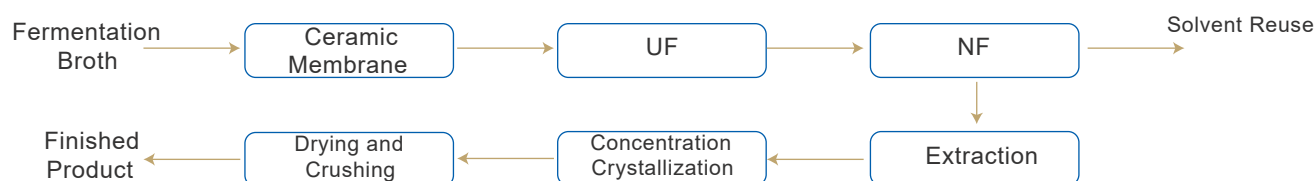
► Traditional Process: Vacuum Thin-film Concentration

The process is simple, but it requires a large footprint, has high energy consumption, and low efficiency.

► UF+NF

The process is simple, requires a small footprint, has low energy consumption, and high efficiency.

Process Flow



Project Site



600 tons/day Gibberellic Acid Fermentation Broth NF Unit



Gibberellic Acid Finished Product

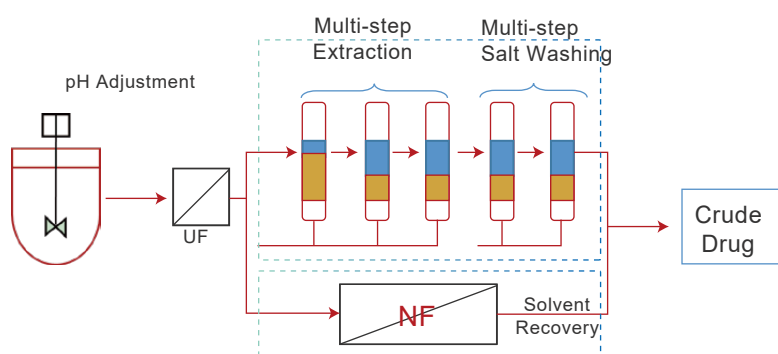
Project Data

Basic Project Information	
Product Model	MNF-FF-8040
Gibberellic Acid Rejection Rate	95%
Ethanol Recovery Rate	70%
Operating Pressure	12 bar

Biomedicine — Omeprazole Sodium Purification

The biopharmaceutical industry has a significant demand for the separation and purification of drugs. To address the issues of long process flows, high costs, and heavy pollution associated with traditional purification methods such as extraction and salt washing, the company has developed an NF membrane-based purification process. This process significantly shortens the purification procedure, improves efficiency, and saves enterprises millions of RMB per year in purification costs.

Process Flow



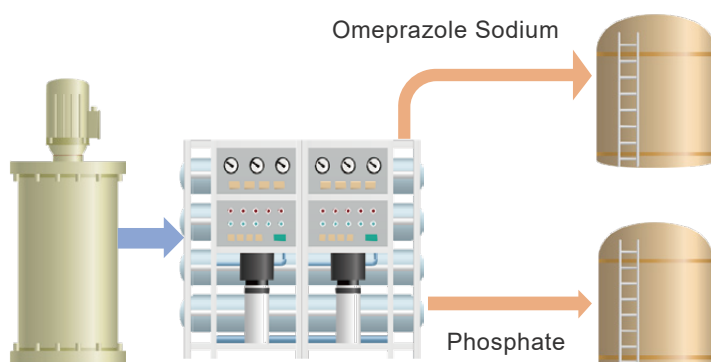
Omeprazole Sodium Purification NF Integrated Process — Drug Purification

Project Site

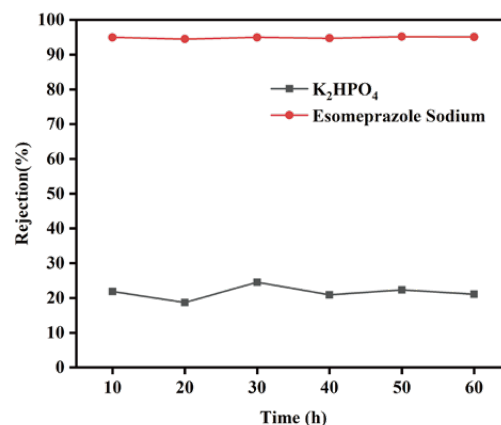


Integrated Unit for Drug Purification

Treatment Effect



Omeprazole Sodium Purification and Concentration

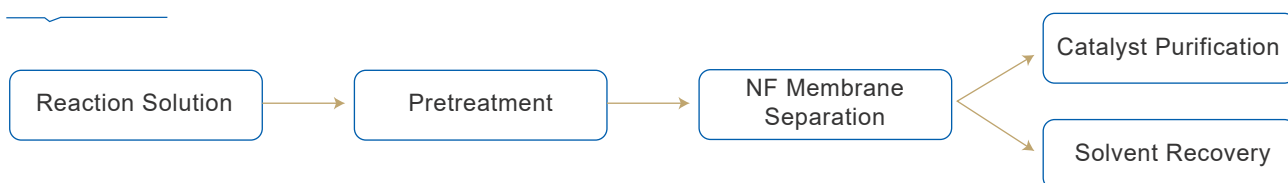


Efficient Drug Separation Performance

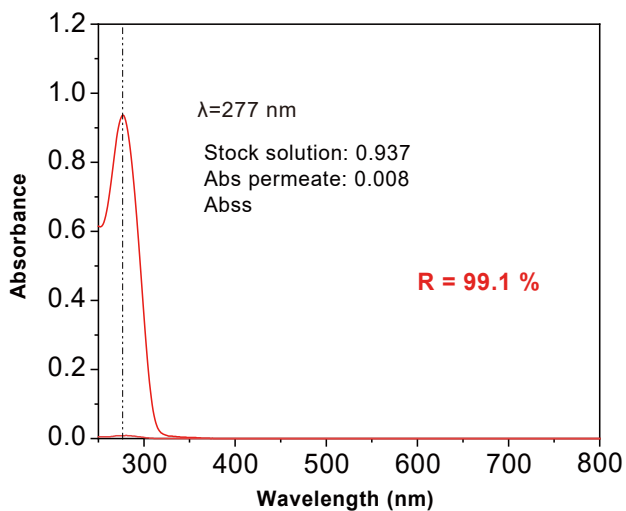
Biomedicine — Homogeneous Catalyst Recovery

Homogeneous metal catalysts such as palladium and rhodium are expensive, and their recovery and reuse often rely on low-temperature evaporation concentration processes, which are energy-intensive. NF membranes, due to their specific pore size range, are particularly suitable for the recycling of precious metal catalysts. However, the reaction media for precious metal catalysts are often corrosive, requiring the use of specialty solvent-resistant NF membranes to meet corrosion resistance requirements.

Process Flow



Treatment Performance



Specialty Solvent-resistant Hollow Fiber NF Membrane

Achieve Efficient Retention of Palladium Homogeneous Catalysts and Recovery and Reuse of Solvents

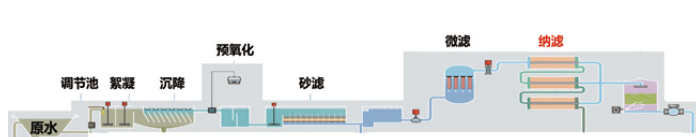
Domestic Water Conservation — Municipal Water Treatment

Demand and current process status:

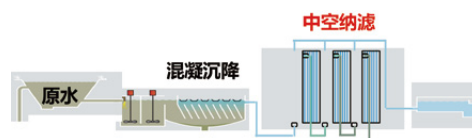
The safety of drinking water quality is a fundamental material guarantee related to the national economy and people's livelihood. NF deep treatment for drinking water can effectively address multiple pollution sources in water bodies, but still faces challenges such as lengthy processes, low recovery rates, and high treatment costs.

Wei Hua membrane solution:

Wei Hua Membrane Technology Co., Ltd. has developed an externally pressurized, reinforced hollow fiber NF membrane featuring high packing density, fouling resistance, and easy cleaning. Using a short-process "coagulation + hollow fiber NF" treatment process, it enables safe drinking water supply with a high recovery rate.



Traditional NF Treatment Process for Drinking Water



Wei Hua's Short-process Hollow Fiber NF Process

Project overview:

Treatment objective: Advanced treatment of drinking water

Product model: HNF-W-3060-400

Feed water quality: Surface water

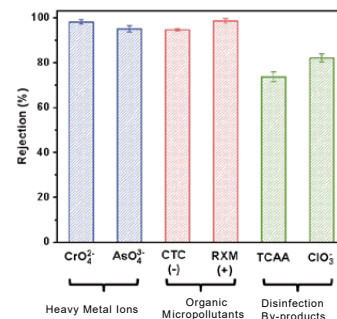
TDS rejection rate (at 95% recovery): ~20%

TOC removal rate (at 95% recovery): ≥85%

Effluent quality: Superior to national standards

Ions	Ion concentration (mg/L)		Rejection Rate
	Raw Water	Permeate Water	
Na ⁺	12.91	10.00	22.6%
Ca ²⁺	31.14	20.31	34.8%
Mg ²⁺	4.42	3.91	11.6%
Cl ⁻	29.71	33.47	-13.5%
SO ₄ ²⁻	25.76	9.06	64.8%
TDS	191	153	20.0%
TOC	8.0	1.2	85.0%

Short-process Water Treatment Performance (at 95% Recovery)



Risk Removal Capability for Multiple Water Sources

(Test Conditions: Pressure 6 bar, Temperature 25°C; Water Source: Yangtze River Water)

Core Advantages

- Unique fouling resistance and easy cleaning characteristics, reducing process flow by over 30% and lowering equipment investment.
- Achieves 95% system recovery; for a 300,000-ton-scale project, this increases high-quality drinking water output by 30,000 tons.
- Lower operating footprint, maintenance costs, and energy consumption.

Domestic Water Conservation — Industrial Circulating Water

Project Background and Requirements:

A state-owned enterprise uses Yellow River surface water as raw water for its boiler feed. Two-stage reverse osmosis (RO) is used to produce boiler makeup water, while simultaneously generating a large volume of high-salinity, high-hardness concentrate, reaching 2400 tons/day. In response to the "Implementation Plan for Industrial Wastewater Recycling" issued by six national ministries, and to reduce water purchase costs (raw water cost of 3.5–5 RMB/ton), the enterprise needs to treat and reuse the RO concentrate.

Weiuhua Membrane Solution:

Based on customer requirements, a fouling-resistant and scaling-resistant hollow fiber NF membrane is used to directly treat the two-stage RO concentrate, reducing hardness and achieving moderate desalination. The permeate water meets the enterprise's process water requirements.

On-site Hollow Fiber NF Membrane Testing Unit

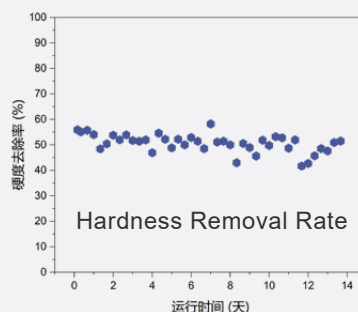
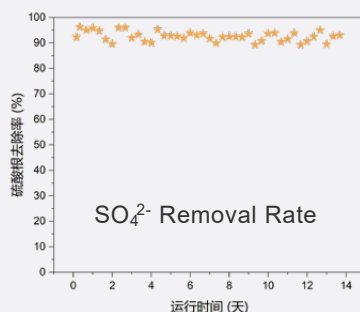
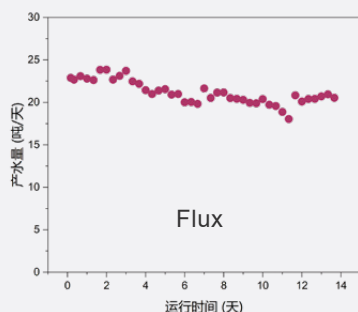
Membrane Model: HNF-8060-400;
Membrane Element Size: 8 inches;
Membrane Area: 80 m²; Operating
Pressure: 5.5-6 bar; Recovery Rate:
55%.



On-site Water Quality Table

Project	Unit	Value
TDS	mg/L	1822
SO ₄ ²⁻	mg/L	700
Ca ²⁺	mg/L	317
Mg ²⁺	mg/L	139
Hardness	mg/L	1366
Alkalinity	mg/L	693
TOC	mg/L	27
Turbidity	mg/L	0.9

On-site Operation Data of Hollow Fiber NF Membrane



Core Advantages

- ▶ The hollow fiber NF membrane efficiently removes 90% of sulfate and 50% of hardness, with the permeate water quality meeting the enterprise's process water requirements.
- ▶ Pilot-scale promotion is expected to provide the enterprise with 500,000 tons of reclaimed water annually, saving over 2 million RMB per year in water purchase costs.
- ▶ This provides an effective approach for the recycling of industrial circulating water and cooling water in the Yellow River basin.

Domestic Water Conservation — Brackish Water Treatment

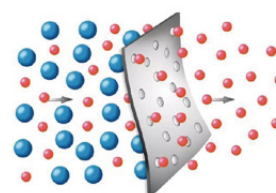
The key to brackish water desalination is desalination treatment to meet the salinity requirements for industrial water, agricultural irrigation water, and drinking water. The main desalination technologies are divided into two categories: thermal processes and membrane processes.

Thermal Desalination



Mature Process, High Investment Cost

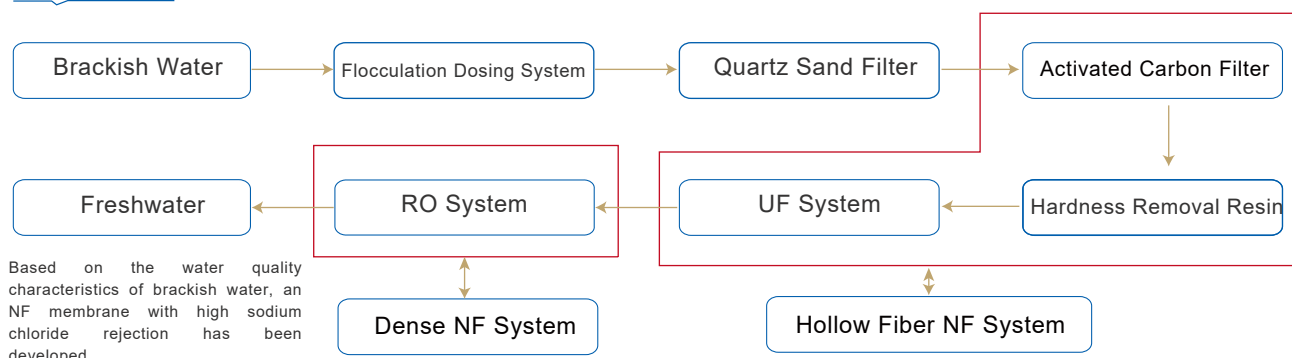
Membrane Desalination



Low Investment Cost, Low Energy Consumption



Process Flow



Process Route 1: Long process flow, resin requires frequent regeneration (without resin, membrane scaling is severe), high chemical costs, high energy consumption.

Process Route 2: Simplified process flow, significantly reduced risk of membrane scaling, low energy consumption.

Statistical Data on Chemical Components of Brackish Water in A Certain Location in Xinjiang



3 tons/day Hollow Fiber NF Equipment

Project	Average Value	Process Route 1	Process Route 2	Sanitary Standard Value for Drinking Water	Limit Value	Irrigation Water Quality Standard Limit Value	Unit
pH	7.79	7.86	7.82	6.5-8.5		5.5-8.5	/
Hardness	1132	1.2	10.2	450		/	mg/L
TDS	4193	20.3	356	1000		2000	mg/L
K ⁺ +Na ⁺	1164	5.82	134	/		/	mg/L
Cl ⁻	1583	7.94	208	250		450	mg/L
SO ₄ ²⁻	920	1.85	10.3	250		/	mg/L
HCO ₃ ⁻ +CO ₃ ²⁻	312	2.31	10.4	/		/	mg/L



2 tons/day Spiral-wound NF Equipment

Process Comparison (Membrane Section only, Based on 1000 tons/day)

Project	Water Quality	Power Consumption (Photovoltaic Power)	Chemicals	Cleaning Cycle
Project Route 1	Compliant	0.6 RMB/ton	0.6 RMB/ton	24 Day
Project Route 2	Compliant	0.17 RMB/ton	0.1 RMB/ton	40 Day

Domestic Water Conservation — Power Plant Pipeline Circulating Water

After multiple cycles of use, the levels of organic matter, calcium and magnesium ions, and salt in power plant pipeline circulating water gradually increase, which can easily lead to scaling, corrosion, and biological growth in the units, thereby affecting the plant's energy efficiency. Hollow fiber NF technology can effectively reduce the content of organic matter, calcium and magnesium ions, and salt in the water, preventing scaling, corrosion, and biological growth in the power generation units.

Project Site



Hollow Fiber NF Pilot-scale Operation Unit

Project Data

		Conductivity uS/cm	TDS mg/L	Ca ²⁺ mg/L	Na ⁺ mg/L	Mg ²⁺ mg/L	Cl ⁻ mg/L	SO ₄ ²⁻ mg/L
Raw Water		1494	746.7	203.2	116.0	45.9	149.8	218.0
Without Specifying Recovery Rate	Permeate Water	874.3	437.2	86.2	95.3	15.7	132.4	8.8
	Concentrate Water	1517	759.0	208.8	117.4	48.5	155.5	245.0
90% Recovery Rate	Permeate Water	1016	506.2	105.7	105.4	17.6	139.9	14.0
	Concentrate Water	3798	1898	845.8	165.3	232.6	229.9	1663

At 90% recovery rate, calcium and magnesium ions are removed by 50%, and sulfate by 95%, significantly reducing the risk of scaling!

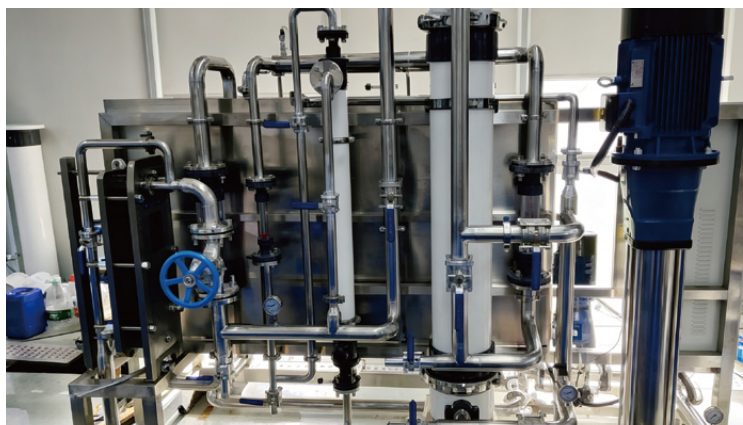
Domestic Water Conservation — Yangtze River Water Purification

Cities such as Shanghai, Nanjing, Wuhan, Chongqing, and other Jiangsu cities along the Yangtze River primarily use Yangtze River water as their main source of drinking water. Yangtze River water contains particulate matter, suspended solids, heavy metal ions, and organic pollutants, requiring purification treatment to meet drinking water standards. Using NF technology to produce high-quality drinking water has become one of the trends in modern water treatment plants for water purification.

Project Site



Yangtze River Water in Nanjing



Small-scale Hollow Fiber NF Unit with a Daily Treatment Capacity of 60 tons

Project Data

Project	Yangtze River Water Quality Parameters	Hollow Fiber NF Membrane Permeate Water	Removal Rate
Color (Hazen)	165.9	<0.01	> 99.9
Turbidity (NTU)	30.225	<0.01	> 99.9
Ammonia Nitrogen (mg/L)	0.241	0.03	87
Total Phosphorus (mg/L)	0.072	0.002	97
TOC (mg/L)	8	0.97	88
TDS (mg/L)	191	115.3	40

The permeate water meets high-quality drinking water standards.

**NANJING WEIHUA
MEMBRANE
TECHNOLOGY CO., LTD.**

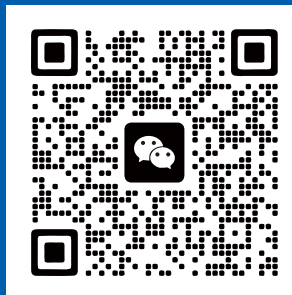
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