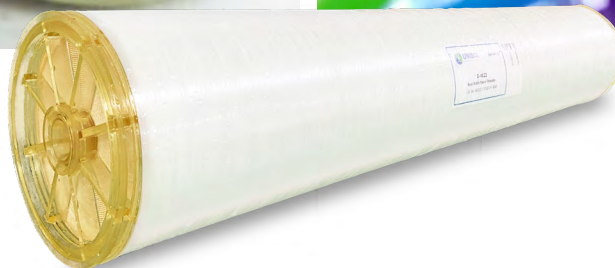


AMS Membrane Series



Acid-Stable | Base-Stable | Solvent-Stable
Special Membrane

Overview

UNISOL Membrane Technology is a global membrane & membrane module manufacturer, providing a wide portfolio of products and seriousness in business proceedings according to customer needs.

We offer a complete product line of extreme acid, alkaline, solvent, thermal- and pressure-stable AMS membranes. The AMS membrane series represent our chemically and thermally stable ultrafiltration (UF) and nanofiltration (NF) membranes and modules. It aims to provide filtration technology for industries that employ aggressive solutions, such as mining & metals, pulp & rayon, as well as treating process solutions in chemical and pharmaceutical industry, CIP streams in food & beverages sector.

UNISOL core technology adds significant value in various applications and industries; by way of cost savings, improved recovery rates, greater supply reliability and clear environmental benefits.

Application

AMS membranes are used for more than 10 years on the market, working in various industries under harsh conditions to recover acids, alkali, solvents.



Chemicals

Organic solvent nanofiltration (OSN) and end products concentration (e.g. chlor-alkali plants)



Pharmaceuticals

Solvent recovery and API concentration (e.g. antibiotics and antibiotic intermediates)



Food & Beverages

Caustic soda recovery from Clean-in-Place lines



Pulp & Rayon

Caustic and celluloid recovery from pulping liquors



Mining & Metals

Acid recovery from leaching circuits, electrolysis and electrowinning units, galvanization baths



Paints & Coatings

Solvent and paint recovery from spent production line wash streams

Testimonies

- With its superior durability, AMS membranes vastly expanded our possibility frontier, allowing to create new products and save on reagent cost.
— *Chief Process Engineer. Global chemical company.*
- AMS became highly-valued solution for us amid growing pressure from environmental regulation, namely ZLD initiative.
— *Head of Innovation. Top indian conglomerate in mining and metallurgy.*
- With AMS membrane system we use twice less trucks to get the product stream from the well to the extraction site. Given 200 km distance, this is an enormous savings in time, fuel and labor cost.
— *Chief Technical Officer. Large uranium producer.*

Advantages

AMS membranes generate value through multiple drivers: reagent recovery (e.g., acid or caustic purification and upstream re-use), product concentration (e.g., upgrade of metal solution for improved extraction or active pharmaceutical ingredient concentration), waste minimization (e.g., concentration of impurities in small volume for cheaper disposal).

The membrane products became global by geographical and industrial scope; it is used by chemical conglomerates in Europe, pharmaceutical companies in US and Canada, base-metal mining companies in Latin America, pulp & rayon plants in China, hemicellulose companies in India, food & beverages industry in Australia, rare-earth metals producers in Africa.

AMS Flat Sheet Membrane

Product Line	Stability	Membrane	Cut-off [Da]	pH Range	Pressure [bar] ([psi])	Temperature [°C] ([°F])	Typical Solutions
NanoPro™ (Nanofiltration)	1 Acid	A-3011	100	0 - 12	70 (1,015)	80 (176)	20% H ₂ SO ₄ 20% HCl 4% HNO ₃ 30% H ₃ PO ₄ 15% CH ₃ COOH
		A-3012	200	0 - 12	70 (1,015)	80 (176)	
		A-3014	400	0 - 12	40 (580)	80 (176)	
	2 Base (Alkali)	B-4021	100	3 - 14	60 (870)	60 (140)	20% NaOH 10% KOH
		B-4022	200	3 - 14	60 (870)	60 (140)	
		B-4024	400	3-14	40 (580)	60 (140)	
	3 Solvent	S-3011	100	2 - 12	70 (1,015)	60 (140)	Methanol, Ethanol, Propanol, Hexane, THF, Acetone, Acetonitrile, Ethyl acetate, DMF
		S-3012	200	2 - 12	70 (1,015)	60 (140)	
		S-3014	400	2 - 12	40 (580)	50 (122)	
UltraPro™ (Ultrafiltration)	4 Acid	A-U301	2,500	0 - 12	40 (580)	50 (122)	20% H ₂ SO ₄ 20% HCl 4% HNO ₃ 30% H ₃ PO ₄ 15% CH ₃ COOH
		A-1801	10,000	0 - 12	10 (145)	80 (176)	
	5 Solvent	S-U301	2,500	2 - 12	40 (580)	50 (122)	Methanol, Ethanol, Propanol, Hexane, THF, Acetone, Acetonitrile, Ethyl acetate, DMF
		S-1801	10,000	2 - 12	10 (145)	50 (122)	

* The maximum pressure and temperature are only applicable to the flat sheet membrane. For the performance of membrane element please refer to the latest parameter datasheet.

1 NanoPro™ A-class

It is developed for long-term performance with high and stable fluxes in very acidic environment, featuring high pressure and temperature compatibility.

The elements are used for acid purification and metals concentration in low pH streams.

2 NanoPro™ B-class

It is developed for long-term performance with high and stable fluxes in a very base environment, featuring high pressure and temperature compatibility.

The elements are used for alkali purification and components concentration in high-pH streams.

3 NanoPro™ S-class

It is developed for long-term performance with high and stable fluxes in presence of solvents, featuring high pressure and temperature compatibility.

The elements are used for solvent purification and component concentration.

4 UltraPro™ A-class

It is developed for long-term performance with high and stable fluxes in very acidic environment, featuring high pressure and temperature compatibility.

The elements are used for either pre-filtration before nanofiltration or as stand-alone membranes in acid purification and metals concentration.

5 UltraPro™ S-class

It is developed for long-term performance with high and stable fluxes in presence of solvents, featuring high pressure and temperature compatibility.

The elements are used for either pre-filtration before nanofiltration or as stand-alone membranes in solvent purification and component concentration.

AMS membrane series is a result of decades of research and industrial operations. As the industries constantly change and evolve, so does the AMS series. Together with our customers we improve our product and explore tomorrow's applications: lithium to satisfy batteries demand, fertilizers to help phosphate crisis, pharmaceuticals to reduce R&D costs, chemicals to produce novel materials and composites.



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