

AMS NanoPro™ A–3011

Acid Stable Nanofiltration Spiral Wound Element

Description	The AMS NanoPro™ membrane is developed for long-term performance with high and stable fluxes in very acidic environment, featuring high pressure and temperature compatibility. AMS NanoPro™ elements are used for acid purification and metals concentration in low pH streams. Typical solutions include: <ul style="list-style-type: none"> • 20% H₂SO₄ • 20% HCl • 4% HNO₃ • 30% H₃PO₄ • 15% CH₃COOH 				
Performance	Cut-off Rate ⁽¹⁾ :	100 dalton			
	Water Flux ^(2, 3) :	65 liter/m ² /hour (38 gal/ft/day)			
	MgSO ₄ Rejection ^(2, 4) :	≥ 99.5 %			
Limits	Max Pressure:	70 bar (1015 psi)			
	Max Pressure Drop:	0.5 bar (7.3 psi)			
	Max Temperature ⁽⁵⁾ :	Operating: 80 °C (176 °F) Cleaning: 80 °C (176 °F)			
	pH Range ⁽⁵⁾ :	Operating: 0 – 12 Cleaning: 0 – 13			
	Recirculation Flow:	1.8" element: 4.0 – 8.0 liter/min (1.0 – 2.1 gal/min) 2.5" element: 7.5 – 19 liter/min (2.0 – 5.0 gal/min) 4" element: 22 – 65 liter/min (5.8 – 17 gal/min) 8" element: 90 – 280 liter/min (23 – 74 gal/min)			
Area	m² (ft²)	1.8"	2.5"	4"	8"
		(aka 1812)	(aka 2540)	(aka 4040)	(aka 8040)
	31 mil Spacer	0.32 (3.4)	1.8 (19)	6.2 (67)	30 (320)
	46 mil Spacer	0.25 (2.7)	1.6 (17)	4.9 (53)	24 (260)

(1) Only for indication;

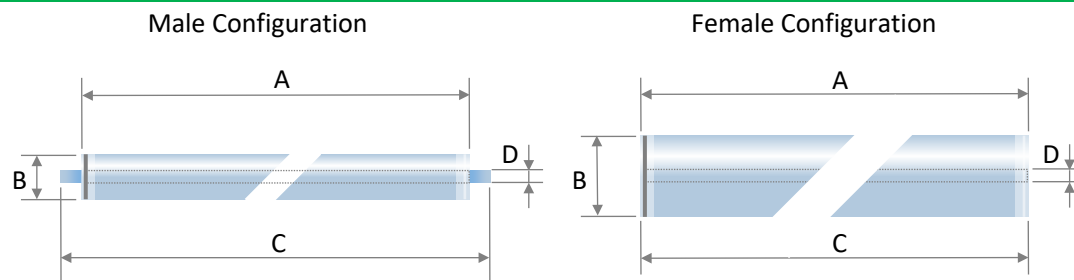
(2) Test conditions: pressure 40 bar (580 psi), temperature 30 °C (86 °F);

(3) Flux measured with demineralized (RO) water, flux may vary for individual element within ±20% range;

(4) Feed solution is 0.2% MgSO₄ in demineralized (RO) water;

(5) Consult UNISOL Membrane Technology when intend to operate at elevated pressure, temperature or concentrations.

Dimensions



mm (inch)	1.8" (aka 1812)	2.5" (aka 2540)	4" (aka 4040)	8" (aka 8040)
Type	Female	Male	Male	Female
A	305 (12)	965 (38)	965 (38.0)	1016 (40.00)
B (∅)	46 (1.8)	62 (2.4)	99.4 (3.9)	200.5 (7.9)
C	305 (12)	1016 (40.0)	1016 (40.0)	1016 (40.00)
D (∅)	16 (0.6)	19 (0.75)	19 (0.75)	28.8 (1.13)

Handling

Recommended Cleaning Materials. Depending on the nature of the feed material, a choice can be made among the following cleaning agents:

- Sodium hydroxide at pH 10 – 12, temperature $\leq 40\text{ }^{\circ}\text{C}$ (104 °F);
- Hydrochloric acid at pH 1 – 2, temperature $\leq 40\text{ }^{\circ}\text{C}$ (104 °F);
- Nitric acid at pH 1 – 2, temperature $\leq 40\text{ }^{\circ}\text{C}$ (104 °F);
- Na-EDTA of 0.2 – 1.0 % w/w at pH 10.5 – 11, temperature $\leq 35\text{ }^{\circ}\text{C}$ (91 °F);
- Anionic surfactant (e.g. sodium dodecyl sulfate) of 0.5 % at pH 10.5 – 11, temperature $\leq 35\text{ }^{\circ}\text{C}$ (91 °F).

Only demineralized (RO) water must be used for cleaning. Consult UNISOL Membrane Technology regarding the use of other cleaning materials.

Lubricants. During installation, use only water or glycerin to lubricate seals. The use of petroleum or vegetable-based oils or solvents may damage the element and void any warranty.

Preservation and Storage. Plan ahead to use new membranes. The element should not be allowed to dry: store it in a sealed bag, at 4 – 30 °C (39 – 86 °F). Storage solutions should be made with: 1 % w/w sodium metabisulfite. Please refer to “UNISOL Membrane Element Storage and Handling Instructions.”

Chemical Exposure. Do not expose the membrane to chlorine or other oxidants. Sodium metabisulfite (without catalysts such as cobalt) is the preferred chemical to eliminate free chlorine or other oxidizers in the feed.