AMS NanoPro™ A–3012

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: • 20% H_2SO_4 • 20% HCl • 30% H_3PO_4 • 10% CH_3COOH				
Performance	Cut-off Rate(1):	200 dalton			
	Water Flux(2, 3):	75 liter/m^2/hour (39 gal/ft/day)			
	MgSO4 Rejection(2, 4):	≥ 96 %			
Limits	Typical operating pressure:	15-40 bar (217-580 psi)			
	Max Pressure Drop:	0.5 bar (7.3 psi)			
	Max Temperature(5):	Operating: 50 °C (122 °F)			
		Cleaning: 50 °C (122 °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 – 17 liter/min (2.0 – 4.4 gal/min)			
		4″ element: 22 – 42 liter/min (5.8 – 11.1 gal/min)			
		8″ element: 90 – 167 liter/min (23 – 42.7 gal/min)			
	Pressurization& Depressurization rate	< 0.7 bar/second (10psi/second)			
	Heating & cool down rate	< 5°C /minute (41 °F/minute)			
Area	**m^2 (ft^2)**	1812	2540	4040	8040
	B 31 mil Spacer	0.32 (3.4)	1.8 (19)	6.2 (67)	29 (312)
	C 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);

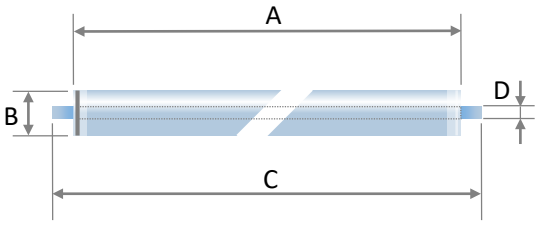
(3) Flux measured with demineralized (RO) water, flux may vary for individual element within ±20% range;

(4) Feed solution is 0.2% $MgSO_4$ in demineralized (RO) water;

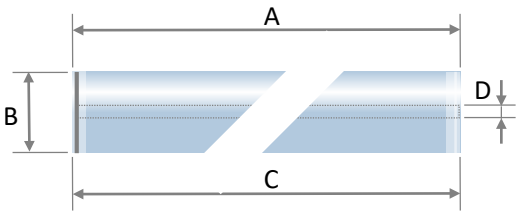
(5) Consult UNISOL Membrane Technology when intend to operate at elevated pressure, temperature or concentrations.

Dimensions

Male Configuration



Female Configuration



mm (inch)	1812	2540	4040	8040
Type	Female	Male	Male	Female
A	305 (12)	965 (38.0)	965 (38.0)	1016 (40.0)
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 (40.0)
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 ⩽ 40 °C (104 °F);
- Hydrochloric acid at pH 1 – 2, temperature ⩽ 40 °C (104 °F);
- Nitric acid at pH 1 – 2, temperature ⩽ 40 °C (104 °F);
- Na-EDTA of 0.2 – 1.0 % w/w at pH 10.5 – 11, temperature ⩽ 35 °C (91 °F);
- Anionic surfactant (e.g. sodium dodecyl sulfate) of 0.5 % at pH 10.5 – 11, temperature ⩽ 35 °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: 1.5 % 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.