AMS NanoPro™ Base Elements

Base Stable Nanofiltration Spiral Wound Elements

Description

The AMS NanoPro™ B-series membranes are developed for long-term performance with high and stable fluxes in a very base environment, featuring high pressure and temperature compatibility. AMS NanoPro™ B-series elements are used for alkali purification and components concentration in high-pH streams. Typical solutions include:

- 20% NaOH
- 10% KOH

Characteristics

Membrane	Cut-off Rate (Da)	Water Flux[1]	$MgSO_4$ Rejection[1]
B-4021	100	35 LMH	99.0%
B-4022	200	40 LMH	97.5%
B-4024	400	50 LMH	92.0%

Limits

Max Operating Pressure	40 bar (580psi)
Max Pressure Drop	1 bar (14.5 psi) for individual element
Max. Operating Temperature	50 °C (104 °F)
Max. Cleaning Temperature	50 °C (104 °F)
Operating pH range	3-14
Cleaning pH range	2-14
Recirculation Flow	2540: 7.5 – 17 liter/min (2.0 – 4.4 gal/min) 4040: 22 – 42 liter/min (5.8 – 11.1 gal/min) 8040: 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)

Size	2540	4040	8040
31mil (B)	1.6 (17)	6.1 (66)	28 (300)
46mil (C)	/	4.7 (51)	23 (250)

[1] Test condition:
a. 2000ppm $MgSO_4$ solution, 225psi (15.5bar), 86°F (30°C), pH7.0;
b. Permeate flow for individual elements may vary ± 20%;

[2] Test condition: 5% Glucose solution, 225psi (15.5bar), 86°F (30°C), pH7.0;

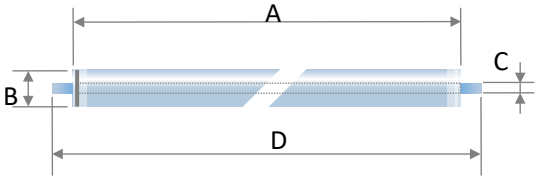
[3] For the purpose of improvement, specifications may be updated periodically

[4] Consult UNISOL Membrane Technology when intend to operate at elevated pressure, temperature, concentrations.

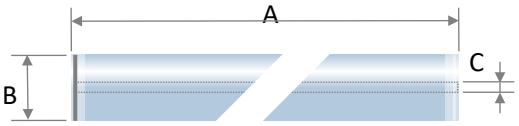
[5] Stabilized salt rejection is generally achieved within 24 – 48 hours of continuous use, depending upon feed water characteristics and operating conditions.

Dimensions

Male Configuration



Female Configuration



Size mm(inch)	A[1]	⌀B[2]	⌀C[3]	D	Permeate tube
2540	965 (38)	62 (2.4)	19 (0.748)	1016 (40)	Male
4040	965 (38)	99 (3.9)	19 (0.748)	1016 (40)	Male
8040	1016 (40)	200.5 (7.9)	28.9 (1.138)	/	Female

[1] Tolerance: -2~0 mm
[2] Tolerance: -2~0 mm
[3] 2540/4040-M tolerance: 0~+0.1mm. 8040 tolerance: -0.2~0mm.

Handling

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.
* ***NB:*** *Please do not use tap water while testing or cleaning the module since the residule chlorine contained in the tap water could negatively affect the membrane performance.*

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 pH10.5 – 11, temperature ≤35 °C (91 °F).

Only demineralized (RO) water must be used for cleaning. **Please flush the module by permeate after processing.** 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.”

Annex

Nomenclature: AMS–B-4021–8040–B

AMS	B-4021	8040	B
Design/Application	Membrane	Diameter & Length	Feed spacer
AMS	**B-4021**	2540	**B: 31mil /0.78mm (diamond)**
AMS Membrane series	B-4022	4040	C: 46mil /1.1mm (diamond)
	B-4024	**8040**	M: 34mil /0.86mm (diamond)