



FILMTEC Membranes

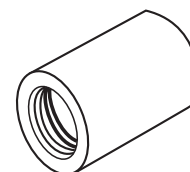
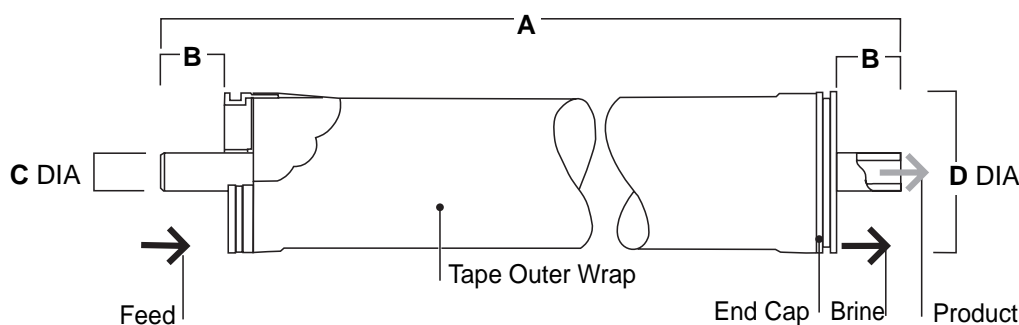
FILMTEC Extra Low Energy (XLE) Elements for Commercial Systems

New FILMTEC® XLE elements offer better system performance and economics by operating at very low applied pressure. XLE membrane, made with a patented technology, provides consistent and reliable system performance. And for added convenience, XLE elements are available in a dry state for rapid start-up (see Figure 1 on reverse). The new XLE series of elements replaces TW30LE elements which were made with an older membrane technology.

Product Specifications

Product	Part Number	Active Area ft ² (m ²)	Applied Pressure psig (bar)	Permeate Flow Rate gpd (m ³ /d)	Stabilized Salt Rejection (%)
XLE-2521	154530	13 (1.2)	100 (6.9)	330 (1.3)	99.0
XLE-2540	154543	28 (2.6)	100 (6.9)	770 (2.9)	99.0
XLE-4021	154540	36 (3.3)	100 (6.9)	1000 (3.8)	99.0
XLE-4040	154546	82 (7.6)	100 (6.9)	2400 (9.1)	99.0

1. Permeate flow and salt rejection based on the following test conditions: 500 ppm NaCl, 77°F (25°C) and recovery as indicated below.
2. Permeate flows for individual elements may vary +/-20%.
3. Minimum stabilized salt rejection is 98.0%.
4. Product specifications may vary slightly as improvements are implemented.



FilmTec sells coupler part number 89055 for use in multiple element housings. Each coupler includes two 2-210 EPR o-rings, FilmTec part number 89255.

Product	Maximum Feed Flow Rate, gpm (m ³ /h)	Typical Recovery Rate (%)	Dimensions – Inches (mm)			
			A	B	C	D
XLE-2521	6 (1.4)	8	21.0 (533)	1.19 (30.2)	0.75 (19)	2.4 (61)
XLE-2540	6 (1.4)	15	40.0 (1016)	1.19 (30.2)	0.75 (19)	2.4 (61)
XLE-4021	14 (3.2)	8	21.0 (533)	1.05 (26.7)	0.75 (19)	3.9 (99)
XLE-4040	14 (3.2)	15	40.0 (1016)	1.05 (26.7)	0.75 (19)	3.9 (99)

1. Typical recovery rate shown is for a single element. Recovery rate is calculated by dividing permeate flow rate by feed flow rate.
2. Refer to FilmTec Design Guidelines for multiple-element systems.
3. XLE-2521 and XLE-2540 elements fit nominal 2.5-inch I.D. pressure vessel. XLE-4021 and XLE-4040 elements fit nominal 4-inch I.D. pressure vessel.

1 inch = 25.4 mm

Operating Limits

Membrane TypePolyamide Thin-Film Composite
 Maximum Operating Temperature113°F (45°C)
 Maximum Operating Pressure600 psig (41 bar)
 Maximum Pressure Drop13 psig (0.9 bar)
 pH Range, Continuous Operation^a2–11
 pH Range, Short-Term Cleaning (30 min.)^b1–12
 Maximum Feed Silt Density Index (SDI)SDI 5
 Free Chlorine Tolerance^c<0.1 ppm

^a Maximum temperature for continuous operation above pH 10 is 95°F (35°C).

^b Refer to Cleaning Guidelines in specification sheet 609-23010/CH 172-086-E.

^c Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. Since oxidation damage is not covered under warranty, FilmTec recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to technical bulletin 609-22010/CH 172-144-E for more information.

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FILMTEC Membranes

For more information about FILMTEC membranes, call Dow Liquid Separations business:

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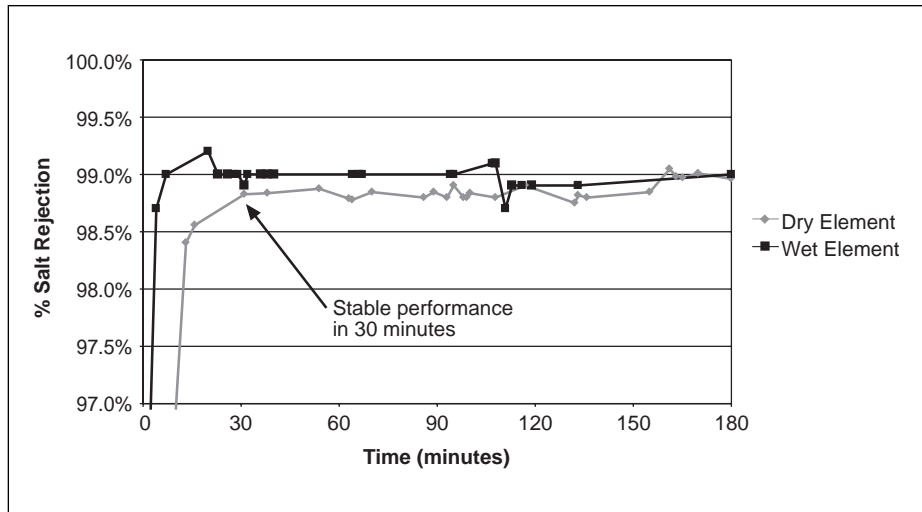
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Figure 1. XLE-4040 Start-up Rejection Data



Important Information

Proper start up of reverse osmosis water treatment systems is essential to prepare the membranes for operating service and to prevent membrane damage due to overfeeding or hydraulic shock. Following the proper start up sequence also helps ensure that system operating parameters conform to design specifications so that system water quality and productivity goals can be achieved.

Before initiating system start up procedures, membrane pretreatment, loading of the membrane elements, instrument calibration and other system checks should be completed.

Please refer to the application information literature entitled "How to

Start Up an RO Membrane System" (Form No. 609-00070/CH 172-085-E) for more information.

Operation Guidelines

Avoid any abrupt pressure or cross-flow variations on the spiral elements during start-up, shutdown, cleaning or other sequences to prevent possible membrane damage. During start-up, a gradual change from a standstill to operating state is recommended as follows:

- Feed pressure should be increased gradually over a 30-60 second time frame.
- Cross-flow velocity at set operating point should be achieved gradually over 15-20 seconds.
- Permeate obtained from first hour of operation should be discarded.

General Information

- Keep elements moist at all times after initial wetting.
- If operating limits and guidelines given in this bulletin are not strictly followed, the limited warranty will be null and void.
- To prevent biological growth during system shutdowns, it is recommended that membrane elements be immersed in a preservative solution.
- The customer is fully responsible for the effects of incompatible chemicals and lubricants on elements.
- Maximum pressure drop across an entire pressure vessel (housing) is 30 psi (2.1 bar).
- Avoid permeate-side backpressure at all times.

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