FILMTEC™ Membranes

FILMTEC Tape-Wrapped **TW30-4040** Elements for Commercial Applications

Features

A complete range of FILMTEC™ 4040-size elements is available to meet a wide variety of customer needs for commercial applications, from the highest purity water to the lowest total system costs.

- FILMTEC XLE-4040 is the most productive, lowest pressure RO membrane available, delivering the lowest total system cost.
- FILMTEC LP-4040 delivers high quality water at low pressure operation. LP-4040 replaces many "first generation" low pressure membrane elements and will purify more water in many older systems, especially on cold water feeds.
- FILMTEC TW30-4040 is the industry standard for reliable operation and production of the highest quality water.

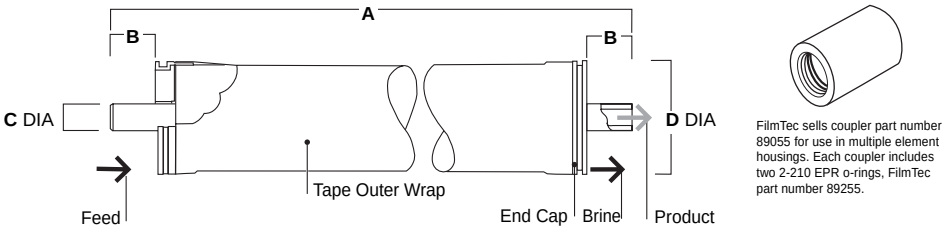
Tape-wrapped elements are built with the same high quality membranes and materials of construction as industrial elements, except for the hard outershell, and are more economical for commercial systems with one or two elements per housing.

Product Specifications

Product	Part number	Active Area ft² (m²)	Feed Spacer Thickness (mil)	Permeate Flow Rate gpd (m³/d)	Stabilized Salt Rejection (%)
XLE-4040	154546	87 (8.1)	28	2,600 (9.8)	99.0
LP-4040	212819	78 (7.2)	34	2,900 (11.0)	99.2
TW30-4040	80610	78 (7.2)	34	2,400 (9.1)	99.5

1. Permeate flow and salt rejection based on the following test conditions: 77°F (25°C), 15% recovery and applied pressure: 100 psig (6.9 bar) for XLE-4040, 145 psig (10 bar) for LP-4040 and 225 psig (15.5 bar) for TW30-4040. FILMTEC TW30-4040 specifications are based on a 2,000 ppm NaCl feed stream. FILMTEC LP-4040 and FILMTEC XLE-4040 specifications are based on a 500 ppm NaCl feed stream.
2. Permeate flows for individual elements may vary +/-20%.
3. For the purpose of improvement, specifications may be updated periodically.

Figure 1



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.

	Dimensions – Inches (mm)			
Product	**A**	**B**	**C**	**D**
XLE-4040	40.0 (1,016)	1.05 (26.7)	0.75 (19)	3.9 (99)
LP-4040	40.0 (1,016)	1.05 (26.7)	0.75 (19)	3.9 (99)
TW30-4040	40.0 (1,016)	1.05 (26.7)	0.75 (19)	3.9 (99)

1. Refer to FilmTec Design Guidelines for multiple-element systems.
2. FILMTEC TW30-4040, FILMTEC LP-4040 and FILMTEC XLE-4040 elements fit nominal 4-inch I.D. pressure vessel.

1 inch = 25.4 mm

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Operating Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature	113°F (45°C)
• Maximum Operating Pressure	600 psig (41 bar)
• Maximum Feed Flow Rate	14 gpm (3.2 m^3/hr)
• Maximum Pressure Drop	13 psig (0.9 bar)
• pH Range, Continuous Operation[a]	2 - 11
• pH Range, Short-Term Cleaning (30 min.)[b]	1 - 13
• 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.

[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 for more information.

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 “Start-Up Sequence” (Form No. 609-02077) 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 prolonged 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 static permeate-side backpressure at all times.

Regulatory Note

These membranes may be subject to drinking water application restrictions in some countries: please check the application status before use and sale.

FILMTEC™ Membranes
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Notice: The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

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