FILMTEC™ Membranes

FILMTEC SW30HR LE-4040 Seawater Reverse Osmosis Element

Features

FILMTEC™ SW30HR LE-4040 reverse osmosis element is a four-inch diameter version of SW30HR LE-400, the industry's leading seawater element which offers an unprecedented combination of high salt rejection and productivity to enable the lowest total cost of purifying high salinity water.

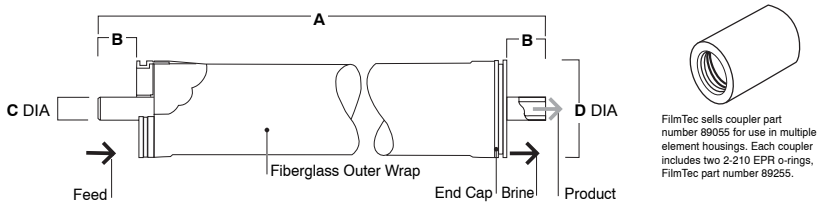
- SW30HR LE-4040 may be used as a pilot element to demonstrate performance for the design of larger systems.
- SW30HR LE-4040 delivers the highest sodium chloride and boron rejection to help meet World Health Organization (WHO) and other drinking water standards.
- SW30HR LE-4040 elements deliver high performance over the operating lifetime without the use of oxidative post-treatments like many competitive products. This is one reason FILMTEC elements are more durable and may be cleaned more effectively over a wider pH range (1-13) than other RO elements.

Product Specifications

Product	Part Number	Active Area ft^2 (m^2)	Permeate Flow Rate gpd (m^3/d)	Minimum Salt Rejection %	Stabilized Salt Rejection %	Stabilized Boron Rejection %
SW30HR LE-4040	255048	85 (7.9)	1,600 (6.1)	99.60	99.75	91.0

1. Permeate flow and salt rejection based on the following test conditions: 32,000 ppm NaCl, 5 ppm boron, 800 psi (5.5 MPa), 77°F (25°C), 8% recovery, pH 8.
2. Permeate flows for individual elements may vary +/-20%.
3. For the purpose of improvement, specifications may be updated periodically.

Figure 1



Product	Feed Spacer (mil)	Dimensions – Inches (mm) A	B	C	D
SW30HR LE-4040	28	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. Elements fit nominal 4-inch I.D. pressure vessel.

1 inch = 25.4 mm

Operating Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature	113°F (45°C)
• Maximum Operating Pressure	1,200 psig (83 bar)
• Maximum Element Pressure Drop	15 psig (1.0 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.

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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 50 psi (3.4 bar).
- Avoid static permeate-side backpressure at all times.

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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