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DOW™ FILMTEC™ Membranes

DOW FILMTEC **SW30HR LE-400** Seawater Reverse Osmosis Element

Features

Dow Water & Process Solutions offers various premium seawater reverse osmosis (RO) elements designed to reduce capital and operation cost of seawater RO systems. DOW™ FILMTEC™ elements combine premium membrane performance with automated precision fabrication and maximize system output to provide unprecedented performance.

The DOW™ FILMTEC™ SW30HR LE-400 element offers a combination of high rejection and low energy requirements to allow lower total costs with medium and high salinity feedwater. Benefits of the DOW FILMTEC SW30HR LE-400 element include:

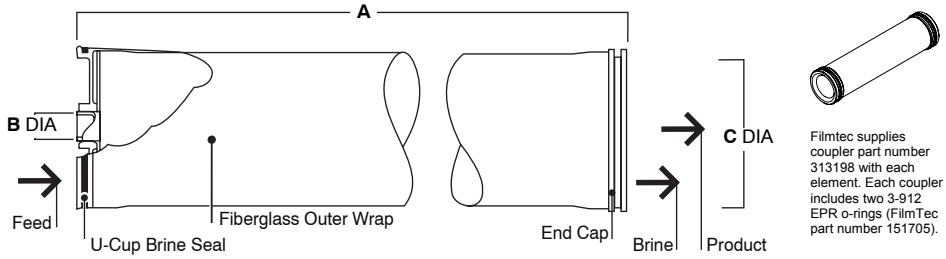
- Enables systems to be designed and operated to optimize operating cost through lower energy consumption or to optimize capital cost through higher productivity at lower operating fluxes.
- High NaCl and boron rejection to help meet World Health Organization (WHO) and other drinking water standards.
- Effective use in permeate staged seawater desalination systems without impairing the performance of the downstream stage.
- High performance over the operating lifetime without the use of oxidative post-treatments. This is one reason DOW FILMTEC elements are more durable and may be cleaned more effectively over a wider pH range (1-13) than other RO elements.
- Automated, precision fabrication with a greater number of shorter membrane leaves reducing the effect of overall fouling and maximizing element efficiency, helping to lower your cost of operation.

Product Specifications

Product	Part number	Active area ft^2 (m^2)	Maximum operating pressure psig (bar)	Permeate flow rate gpd (m^3/d)	Stabilized boron rejection %	Minimum salt rejection %	Stabilized salt rejection %
SW30HR LE-400	217822	400 (37)	1,200 (83)	7,500 (28)	92	99.65	99.80

1. The above values are normalized to the following conditions: 32,000 ppm NaCl, 5 ppm boron, 800 psi (5.5 MPa), 77°F (25°C), pH 8, 8% recovery.
2. Permeate flows for individual elements may vary +/-15%.
3. Product specifications may vary slightly as improvements are implemented.
4. Active area guaranteed +/-5%. Active area as stated by Dow Water & Process Solutions is not comparable to the nominal membrane area figure often stated by some element suppliers. Measurement method described in Form No. 609-00434.

Figure 1



Product	Feed Spacer (mil)	Dimensions – Inches (mm) A	B	C
SW30HR LE-400	28	40 (1,016)	1.125 (29)	7.9 (201)

1. Refer to FilmTec Corporation Design Guidelines for multiple-element systems.
2. Elements fit nominal 8-inch (203 mm) I.D. pressure vessel.

1 inch = 25.4 mm

Operating Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature[a]	113°F (45°C)
• 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 Form No. 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 Corporation 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. Refer to DOW™ FILMTEC™ Reverse Osmosis and Nanofiltration Element Three-Year Prorated Limited Warranty (Form No. 609-35010).
- 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.

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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.