FILMTEC™ Membranes

FILMTEC™ SW30XHR-400*i* Seawater Reverse Osmosis Element with *iLEC*™ Interlocking Endcaps

Features and Benefits

Dow Water Solutions offers various premium seawater reverse osmosis (RO) elements designed to produce high quality water which may reduce capital and operation cost of seawater RO systems. These products combine premium membrane performance with automated precision fabrication to provide reliable and consistent performance.

FILMTEC™ SW30XHR-400*i* element is the highest rejection seawater element in the FILMTEC element range, enabling stringent water quality requirements to be met with single pass seawater systems in most situations. The benefits of FILMTEC SW30XHR-400*i* elements include:

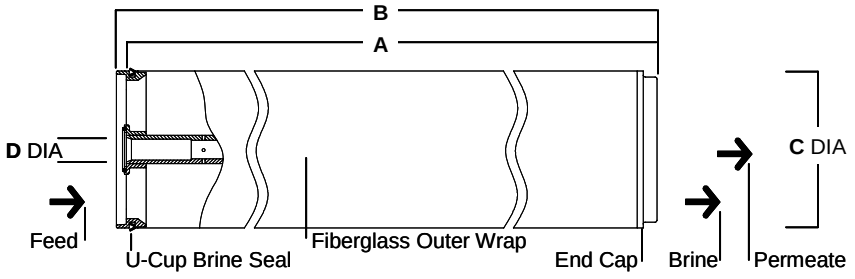
- Very high NaCl and boron rejection to help meet World Health Organization (WHO) and other drinking water standards more cost effectively.
- Utilization of the distinct *iLEC*™ interlocking endcaps that help reduce system operating costs and reduce the risk of o-ring leaks that cause poor water quality.
- Guaranteed active area of 400 square feet maximizes productivity and enables accurate and predictable system design and operating flux.
- 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. FILMTEC elements are more durable and may be cleaned 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.

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 %
SW30XHR-400*i*	293991	400 (37)	1,200 (83)	6,000 (23)	93	99.60	99.80

1. The above benchmark values are based on the following test conditions: 32,000 ppm NaCl, 800 psi (5.5 MPa), 77°F (25°C), pH 8 and 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 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	D
SW30XHR-400*i*	28	40 (1,016)	40.5 (1,029)	7.9 (201)	1.125 (29)

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

™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

Operating Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature	113°F (45°C)
• Maximum Element 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 form number 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 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.
- Wear protective eye shields, gloves, and sleeves to avoid prolonged contact with eyes, skin, and clothing.

FILMTEC™ Membranes
For more information about FILMTEC membranes, call the Dow Water Solutions business:

North America:	1-800-447-4369
Latin America:	(+55) 11-5188-9222
Europe:	(+32) 3-450-2240
Pacific:	+60 3 7958 3392
Japan:	+813 5460 2100
China:	+86 21 2301 9000

http://www.dowwatersolutions

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.

Notice: No freedom from any patent owned by Seller or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN EXCEPT FOR ANY LIMITED PERFORMANCE WARRANTY SET FORTH HEREIN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow