



DOW™ FILMTEC™ Membranes

DOW™ FILMTEC™ SW30XHR-440/ Seawater Reverse Osmosis Element with *iLEC*™ Interlocking Endcaps

Features

Dow Water & Process Solutions offers various premium seawater reverse osmosis (RO) elements designed to produce high quality water which may reduce capital and operation costs of desalination systems. FILMTEC™ products combine excellent membrane quality with automated precision fabrication to take system performance to unprecedented levels.

The DOW™ FILMTEC™ SW30XHR-440/ element is the highest rejection seawater RO element in the DOW FILMTEC element portfolio, enabling stringent water quality requirements to be met reliably with single pass seawater systems in most situations. In addition, the combination of highest active area and thickest feed spacer results in higher productivity and lower cleaning frequency which enable sustainable lower lifecycle cost. Benefits of the FILMTEC SW30XHR-440/ element include:

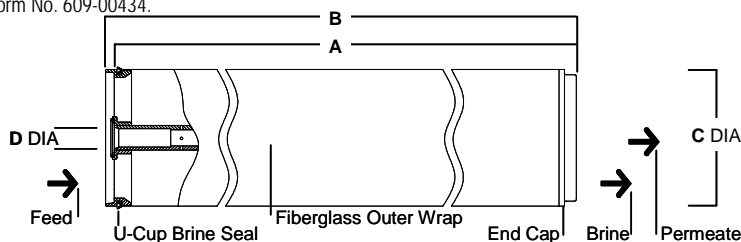
- Highest NaCl and boron rejection to help meet World Health Organization (WHO) and other drinking water standards more cost effectively.
- The highest guaranteed active area of 440 ft² (41 m²) permits lowest system cost by maximizing productivity and enables accurate and predictable system design and operating flux.
- The combination of highest active area with thickest feed spacer (28 mil) allows low cleaning frequency and high cleaning efficiency.
- Utilization of the distinct *iLEC*™ interlocking endcaps helps reduce system operating costs and reduce the risk of o-ring leaks that can cause poor water quality (See Form No. 609-00446 for information on cost-saving benefits).
- Sustainable high performance over the operating lifetime, because oxidative treatments are not used in membrane production. This is one reason DOW FILMTEC elements are more durable and may be cleaned more effectively over a wider pH range (1-13) than most other RO elements, which use oxidative treatments.
- Effective use in permeate staged seawater desalination systems without impairing the performance of the downstream stage.

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-440/ | | 440 (41) | 1,200 (83) | 6,600 (25.0) | 93 | 99.7 | 99.82 |

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 & 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 | D |
| SW30XHR-440/ | 28 | 40 (1,016) | 40.5 (1,029) | 7.9 (201) | 1.125 (29) |

1. Refer to Dow 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 | 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, Dow 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.

Please refer to the product technical manual.

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.[]

DOW™ FILMTEC™ Membranes

For more information about DOW FILMTEC membranes, call the Dow Water & Process Solutions business:

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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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