FILMTEC™ Membranes

FILMTEC™ **SW30ULE-400i** Seawater Reverse Osmosis Element with *iLEC*™ Interlocking Endcaps

Features and Benefits

Dow Water Solutions offers various premium seawater Reverse Osmosis (RO) elements which combine premium membrane performance with automated precision fabrication and maximize system output to unprecendented performance.

FILMTEC™ SW30ULE-400*i* is an element with one of the highest flow rates in the industry, and high rejection of NaCl and boron. This performance can lead to significant capital and operation cost savings, especially when this element is mixed with other element types in the same pressure vessel, using the "internally staged design" approach. The benefits of the FILMTEC SW30ULE-400*i* elements include:

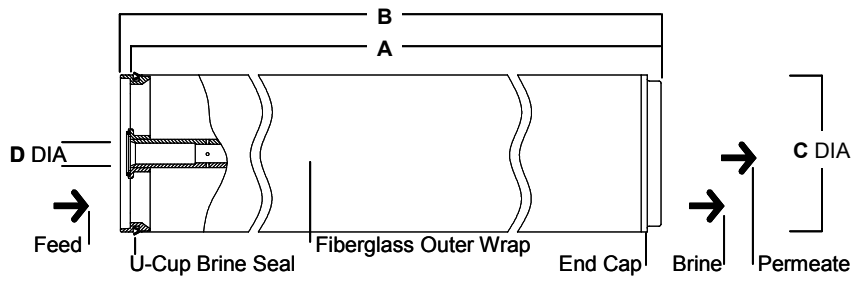
- One of the highest seawater element flow rate in the industry. This may lead to lower capital and operation cost in a seawater system.
- High NaCl and Boron rejection to help meet World Health Organization (WHO) and other drinking water standards.
- Effective use in permeate staged seawater desalination systems without impairing the performance of the downstream stage.
- High performance over the operating lifetime without the use of oxidative post-treatments.
- Automated, precision fabrication with a greater number of shorter membrane leaves reduces the effect of overall fouling and maximizes 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 %
SW30ULE-400*i*	259124	400 (37)	1,200 (83)	11,000 (41.6)	89	99.55	99.70

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. Developmental product available for sale.

Figure 1



Product	Feed Spacer (mil)	Dimensions – Inches (mm) A	B	C	D
SW30ULE-400*i*	28	40 (1,016)	40.5 (1,029)	7.9 (201)	1.125 (29)

1. Refer to FilmTec Design Guidelines for multiple-element systems.
2. Elements fit nominal 8-inch (203 mm) 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 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 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 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 "How to Start-Up an RO Membrane System" (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 the FILMTEC™ Reverse Osmosis and Nanofiltration Element Three-Year Prorated Limited Warranty (609-35010) for more detail.
- 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.

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: For products that are "developmental," i.e. have an EB, XUS, XY or XZ number: (1) quality specifications may not be fully determined; (2) hazards may not be fully evaluated, and additional caution in handling and use is required; and (3) seller reserves the right to change specifications and/or discontinue its sale. Users are cautioned to confirm opinions, findings and data by their tests and to determine the suitability of such products for the purposes intended prior to use.

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 REFERENCED HEREIN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

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