Product Data Sheet

DOW FILMTEC™ SW30ULE–400i Element

Seawater Reverse Osmosis Element with *iLEC*™ Interlocking Endcaps

Description

Dow Water & Process Solutions offers various premium seawater Reverse Osmosis (RO) elements which combine premium membrane performance with automated precision fabrication which takes system performance to exceptional levels.

DOW FILMTEC™ SW30ULE–400i Elements have 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. Benefits of the DOW FILMTEC SW30ULE–400i element include:

- One of the highest seawater element flowrates 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 Type

Spiral-wound element with polyamide thin-film composite membrane.

Product Specifications: Standard Test performed at 700 psi (4.8 MPa)

DOW FILMTEC™ Element	Active Area (ft^2)	Active Area (m^2)	Feed Spacer Thickness (mil)	Permeate Flow Rate (GPD)	Permeate Flow Rate (m^3/d)	Stabilized Boron Rejection (%)	Stabilized Salt Rejection (%)
SW30ULE–400i	400	37	28	8,400	31.8	86.4	99.60

1. The above benchmark values are based on the following test conditions: 32,000 ppm NaCl, 700 psi (5.5 MPa), 77°F (25°C), pH 8 and 8% recovery.
2. Permeate flows for individual elements may vary ± 15%.
3. Minimum Salt Rejection is 99.50%.
4. Stabilized salt rejection is generally achieved within 24 – 48 hours of continuous use; depending upon feedwater characteristics and operating conditions.
5. Product specifications may vary slightly as improvements are implemented.

Each DOW FILMTEC™ SW30ULE–400i Element is tested on flow and rejection performance using a standard test at 700 psi. Further information about these tests is available in the literature (Form No. 609-02161). Potential defects in element construction are detected and elements which do not comply with the quality protocol are discarded. The results of the standard test at 700 psi may be reported in a Certificate of Analysis (COA). All DOW FILMTEC elements comply with the performance given in the above table; the

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Certificate of Conformance (COC) provides assurance for a customer that the DOW FILMTEC element complies with the specified performance.

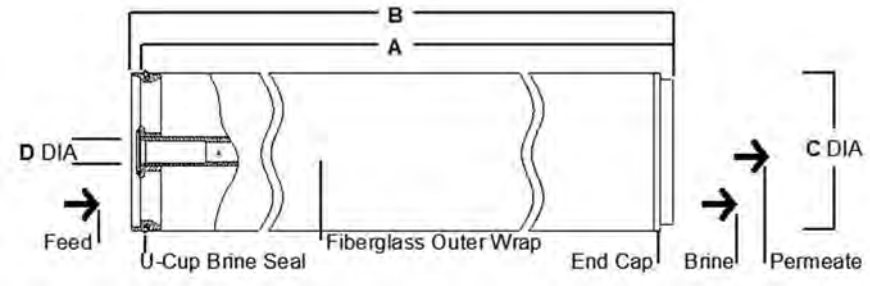
It is evident the expected results of standard tests performed at 700 psi and 8% recovery are different from the nominal performance condition of 800 psi and 8% recovery. In order to help with the interpretation of Certificates of Analysis, the performance expectations are described in the table below.

Expected Performance at Common Standard Test Conditions: 800 psi (5.5 MPa)

DOW FILMTEC™ Element	Active Area (ft^2)	Active Area (m^2)	Feed Spacer Thickness (mil)	Permeate Flow Rate (GPD)	Permeate Flow Rate (m^3/d)	Stabilized Boron Rejection (%)	Stabilized Salt Rejection (%)
SW30ULE–400i	400	37	28	11,000	41.6	89	99.70

1. The above values are normalized from the 700-psi specification standard test to the following conditions: 32,000 ppm NaCl, 800 psi (5.5 MPa), 77°F (25°C), pH 8 and 8% recovery. Due to the high permeability of SW30ULE elements, they are not tested at the typical feed pressure for standard test conditions of 800 psi but at a lower feed pressure of 700 psi.
2. Permeate flows for individual elements may vary ± 15%.
3. Minimum Salt Rejection is 99.60%.
4. Stabilized salt rejection is generally achieved within 24 – 48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

Element Dimensions



DOW FILMTEC™ Element	A (in.)	A (mm)	B (in.)	B (mm)	C (in.)	C (mm)	D (in.)	D (mm)
SW30ULE–400i	40.0	1,016	40.5	1,029	7.9	201	1.125 ID	29 ID

1. Refer to Dow Water & Process Solutions Design Guidelines for multiple-element applications. 1 inch = 25.4 mm
2. Elements fit nominal 8-inch (203-mm) I.D. pressure vessel.
3. Individual elements with *iLEC*™ Interlocking Endcaps measure 40.5 inches (1,029 mm) in length (B). The net length (A) of the elements when connected is 40.0 inches (1,016 mm).

Operating and Cleaning Limits

Maximum Operating Temperature [a]	113°F (45°C)
Maximum Operating Pressure	1.200 psig (83 bar)
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 guidelines in "Cleaning Procedures" for more information.

[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 Water & Process Solutions recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to technical bulletin "Dechlorinating Feedwater" for more information.

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Additional Important Information

Before use or storage, review these additional resources for important information:

- Usage Guidelines for DOW FILMTEC™ 8" Elements
- System Operation: Initial Start-Up
- Handling, Preservation and Storage

Regulatory Note

These membranes may be subject to drinking water application restrictions in some countries; please check the application status before use and sale.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support.

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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