Product Data Sheet

FilmTec™ SW30ULE-440i Element

Seawater Reverse Osmosis Element with iLEC™ Interlocking Endcaps

Description

DuPont Water Solutions offers various premium seawater reverse osmosis (RO) elements designed to help reduce capital and operation cost of desalination systems. FilmTec™ Elements combine premium membrane quality with automated precision fabrication which takes system performance to exceptional levels.

FilmTec™ SW30ULE-440i Elements are an element of choice for low- to medium-salinity and temperature waters, for permeate staged systems for stringent water quality targets, and for high feed salinity brackish water applications. It has a sustainable flowrate, coupled with 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. In addition, the combination of highest active area and a thick feed spacer results in higher productivity and lower cleaning frequency enabling sustainable lower lifecycle cost. Benefits of the FilmTec™ SW30ULE-440i Element include:

- High flowrate, coupled with high rejection, allowing ultra-low energy consumptions. This enables lowest capital and operation cost in a seawater system.
- The highest guaranteed active area of 440 ft^2 (41 m^2) permits lowest system cost by maximizing productivity and enables accurate and predictable system design and operating flux.
- The combination of highest active area with wide feed spacer (28 mil) allows low cleaning frequency and high cleaning efficiency.
- 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 (see Storage and Shipping of New FilmTec™ Elements (Form No. 45-D01633-en) for information on the cost-saving benefits).
- Sustainable high performance over the operating lifetime, because oxidative treatments are not used in membrane production. This is one reason 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.
- Can effectively be used in permeate staged seawater desalination systems without impairing the performance of the downstream stage.
- Automated, precision fabrication with a greater number of shorter membrane leaves reduces the effect of overall fouling and maximizes element efficiency, lowering cost of operation.

Product Type

Spiral-wound element with polyamide thin-film composite membrane

Form No. 45-D01683-en, Rev. 5
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Typical Properties

Standard Test performed at 700 psi (4.8 MPa)

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-440i	440	41	28	9,000	34.1	86.4	99.60

1. The above values are normalized to the following 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 ± 17%.
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.
6. Active area guaranteed ± 5%. Active area as stated by DuPont Water Solutions is not comparable to the nominal membrane area figure often stated by some element suppliers.

Each 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 FilmTec™ Elements comply with the performance given in the above table; the Certificate of Conformance (COC) provides assurance for a customer that the FilmTec™ Element complies with the specified performance.

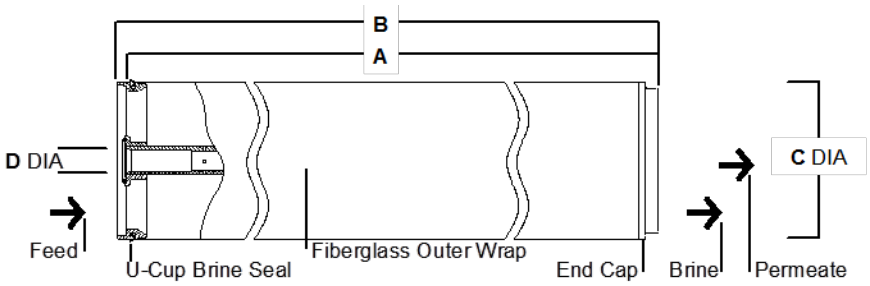
It is evident the expected results of standard tests performed at 700 psi and 8% recovery are different from the nominal performance condition of 800 psi and 8% recovery. In order to help with the interpretation of Certificates of Analysis, the performance expectations are described in the table below.

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

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-440i	440	41	28	12,000	45.4	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 ± 17%.
3. Minimum Salt Rejection is 99.6%.
4. Stabilized salt rejection is generally achieved within 24 – 48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

Element Dimensions



Dimensions – inches (mm)								1 inch = 25.4 mm
	A		B		C		D	
FilmTec™ Element	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)
SW30ULE-440i	40.0	1,016	40.5	1,029	7.9	201	1.125 ID	29 ID

1. Refer to FilmTec™ Design Guidelines for multiple-element systems of 8-inch elements (Form No. 45-D01695-en).
2. Element to 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] [b]	113°F (45°C)
Maximum Operating Pressure [b]	1,200 psig (83 bar)
Maximum Element Pressure Drop	15 psig (1 bar)
pH Range	
Continuous Operation [a]	2 – 11
Short-Term Cleaning (30 min.) [c]	1 – 13
Maximum Feed Silt Density Index (SDI)	SDI 5
Free Chlorine Tolerance [d]	< 0.1 ppm

a. Maximum temperature for continuous operation above pH 10 is 95°F (35°C).
b. Operation at pressures up to 1,200 psig (83 bar) is allowable under certain conditions. Consult your DuPont representative for advice on applications above 1,000 psig (69 bar) and/or above 95°F (35°C).
c. Refer to guidelines in FilmTec™ Cleaning Guidelines (Form No. 45-D01696-en) for more information.
d. 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, DuPont Water Solutions recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to Dechlorinating Feedwater (Form No. 45-D01569-en) for more information.

Additional Important Information

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

- Usage Guidelines for FilmTec™ 8" Elements (Form No. 45-D01706-en)
- Start-Up Sequence (Form No. 45-D01609-en)
- Storage and Shipping of New FilmTec™ Elements (Form No. 45-D01633-en)

Product Stewardship

DuPont 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 DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

DuPont strongly encourages its customers to review both their manufacturing processes and their applications of DuPont products from the standpoint of human health and environmental quality to ensure that DuPont products are not used in ways for which they are not intended or tested. DuPont personnel are available to answer your questions and to provide reasonable technical support. DuPont product literature, including safety data sheets, should be consulted prior to use of DuPont products. Current safety data sheets are available from DuPont.

Please be aware of the following:

- 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.
- Permeate obtained from the first hour of operation should be discarded.

Regulatory Note

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

Have a question? Contact us at:

www.dupont.com/water/contact-us

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