Product Datasheet

A Product of Thinking

DOW FILMTEC™ ECO Line RO Elements

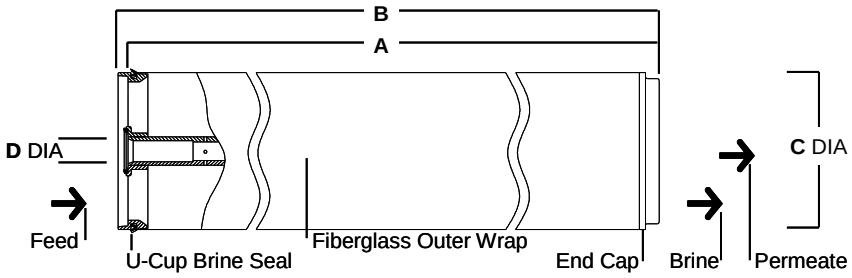
DOW FILMTEC™ ECO elements offer exceptional rejection and flow performance for your industrial water needs, enabling lower energy usage and reduced regeneration costs in downstream polishing units. With a new industry-leading performance of 99.7% rejection at 150 psi, Dow ECO elements provide robust performance over a longer element life. At high quality, the elements can deliver 40% lower salt passage at 30% less energy, when compared to standard RO elements –an ecologic and economic win.

Product Specifications

Product	Part number	Active area ft^2 (m^2)	Feed spacer thickness (mil)	Permeate flow rate gpd (m^3/d)	Typical Stabilized salt rejection (%)	Minimum salt rejection (%)
ECO-400*i*	11026673	400 (37)	34-LDP	11,500 (44)	99.7	99.5
ECO-440*i*	11026679	440 (41.2)	28-LDP	12,650 (48)	99.7	99.5

1. Permeate flow and salt (NaCl) rejection based on the following standard test conditions: 2,000 ppm NaCl, 150 psi (10.3 bar), 77°F (25°C), pH 8 and 15% recovery.
2. Flow rates for individual elements may vary but will be no more than +/- 15%.
4. Sales specifications may vary as design revisions take place.
5. Active area guaranteed +/-3%. Active area as stated by Dow Water & Process Solutions is not comparable to nominal membrane area often stated by some manufacturers. Measurement method described in Form No. 609-00434.

Figure 1.



Dimensions – inches (mm)

Products	A	B	C	D
ECO-400*i*, ECO-440*i*,	40.0 (1,016)	40.5 (1,029)	7.9 (201)	1.125 ID (29)

1. Refer to Dow Water & Process Solutions Design Guidelines for multiple-element applications. 1 inch = 25.4 mm
2. Element to fit nominal 8-inch (203 mm) I.D. pressure vessel.
3. Individual elements with *iLEC* 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 Limits

• Membrane Type	Polyamide Thin-Film Composite
• Maximum Operating Temperature[a]	113°F (45°C)
• Maximum Operating Pressure	600 psig (41 bar)
• Maximum Pressure Drop	15 psig (1.0 bar)
• pH Range, Continuous Operation[a]	2 - 11
• pH Range, Short-Term Cleaning (30 min.)[b]	1 - 13
• Maximum Feed Silt Density Index	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, Dow Water & Process Solutions recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to technical bulletin 609-22010 for more information.

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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.
- To control 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 drops are 15 psi (1.0 bar) per element or 50 psi (3.4 bar) per multi element pressure vessel (housing) which ever value is more limiting.
- Avoid static permeate-side backpressure at all times.

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.

DOW FILMTEC™ Membranes

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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