



## **FilmTec™ Membranes 8" Semiconductor Grade Reverse Osmosis Elements**

### **Description**

Ultrapure water specifications and analytical measurement capabilities have advanced to meet the exacting needs of microprocessor, semiconductor and other silicon based device manufacturers.

FilmTec™ SG30-400/34i and SG30LE-440i Reverse Osmosis Elements have been developed to meet the requirements of higher overall rejection, higher rejection of lower molecular weight organic compounds and silica and an accelerated TOC rinse down profile. These high surface area elements allow for system design with fewer elements and a lower applied operating pressure, thus optimizing amortization of capital costs while lowering operating cost.

Both elements now come with the unique iLEC™ interlocking endcaps that reduce system operating costs, reduce the risk of o-ring leaks and the generation of small particles that lead to poor water quality, and eliminate the need for lubricants. For more information on the benefits of iLEC interlocking endcaps, see [iLEC™ Interlocking Endcap Technology – Benefits of Use](#) (Form No. 45-D01135-en).

SG30-400/34i is intended primarily for polishing use in traditional UPW systems designed for higher pressure operation. It features a 34 mil spacer to lessen the impact of fouling and pressure drop across a vessel, increasing running time between cleaning and enhancing cleaning effectiveness.

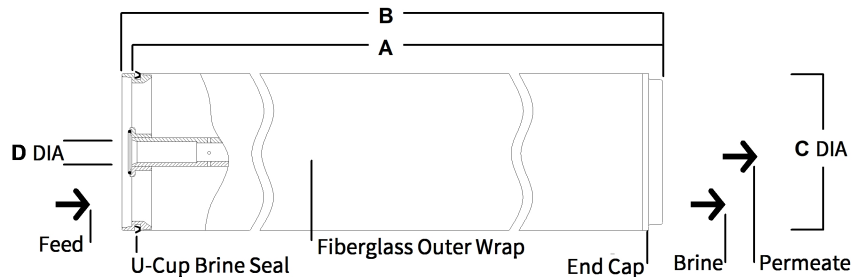
SG30LE-440i is intended primarily for polishing use in newer UPW equipment where the benefits of lower capital cost and lower energy consumption add value.

## Typical Properties

| Product      | Part Number | Active Area<br>ft <sup>2</sup> (m <sup>2</sup> ) | Permeate Flow Rate<br>gpd (m <sup>3</sup> /d) |
|--------------|-------------|--|---|
| SG30-400/34i | 272569      | 400 (37)   | 10,200 <sup>1</sup> (38.6)                    |
| SG30LE-440i  | 272573      | 440 (41)   | 10,000 <sup>2</sup> (38)                      |

1. Pure water flow based on the following conditions: 225 psi (1.55 MPa), 77°F (25°C) and 15% recovery.
2. Pure water flow based on the following conditions: 107 psi (0.74 MPa), 77°F (25°C) and 15% recovery.
3. Flow rates for individual elements may vary but will be not more than 15% below the value shown.
4. Product specifications may vary slightly as improvements are implemented.
5. Typical stabilized salt rejection (Cl<sup>-</sup>) for individual element is 99.5% under the test conditions of 2,000 ppm NaCl, 225 psi (1.55 MPa) for SG30-400/34i and 150 psi (1.03 MPa) for SG30LE-440i, 77°F (25°C), pH 8 and 15% recovery. At lower TDS (<5 ppm), ion rejections are decreased depending on ionic strength, pH and ionic species.

## Element Dimensions



| 1 inch = 25.4 mm | Maximum Feed Flow Rate  | Typical Recovery Rate | Dimensions – Inches (mm) |              |           |               |
|------------------|-------------------------|-----------------------|--------------------------|--------------|-----------|---------------|
| Product          | gpm (m <sup>3</sup> /h) | (%)                   | A                        | B            | C         | D             |
| SG30-400/34i     | 85 (19)                 | 15                    | 40.0 (1,016)             | 40.5 (1,029) | 7.9 (201) | 1.125 ID (29) |
| SG30LE-440i      | 85 (19)                 | 15                    | 40.0 (1,016)             | 40.5 (1,029) | 7.9 (201) | 1.125 ID (29) |

1. Typical recovery rate shown is for a single element. Recovery rate is calculated by dividing permeate flow rate by feed flow rate.
2. Refer to [FilmTec™ Design Guidelines for multiple-element systems of 8-inch elements](#) (Form No. 45-D01695-en).
3. SG30-400/34i and SG30LE-440i Elements fit nominal 8.0-inch (203 mm) I.D. pressure vessel.
4. SG30LE-440i now has an industry standard 1.125-inch I.D. permeate tube. If required, SG30LE-440i can be connected in series with the old SG30LE-430 (1.5-inch I.D. tube) using interconnector part number 196309.

## Operating Limits

|  |                               |
|--|-------------------------------|
| Membrane Type                                | Polyamide Thin-Film Composite |
| Maximum Operating Temperature <sup>a</sup>   | 113°F (45°C)                  |
| Maximum Sanitization Temperature (@ 25 psig) | 185°F (85°C)                  |
| Maximum Operating Pressure                   | 600 psig (41 bar)             |
| Maximum Element Pressure Drop                | 15 psig (1.0 bar)             |
| pH Range                                     |                               |
| Continuous Operation <sup>a</sup>            | 2 – 11                        |
| Short-Term Cleaning <sup>b</sup>             | 1 – 13                        |
| Maximum Feed Silt Density Index (SDI)        | SDI 5                         |
| Free Chlorine Tolerance <sup>c</sup>         | < 0.1 ppm                     |

- a. Maximum temperature for continuous operation above pH 10 is 95°F (35°C).
- b. Refer to [FilmTec™ Cleaning Guidelines](#) (Form No. 45-D01696-en).
- 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, residual free chlorine should be removed by pretreatment prior to membrane exposure. Please refer to [Dechlorinating Feedwater](#) (Form No. 45-D01569-en) for more information.

## Organic Rejection Data

Rejection data for organic species are tabulated below.

**Table 1: Typical organic compounds rejection**

| Organic compound | MW | Rejection (%) SG30-400/34i <sup>1</sup> | Rejection (%) SG30LE-440i <sup>2</sup> |
|------------------|----|---|--|
| Methanol         | 32 | 14                                      | 13                                     |
| Ethanol          | 46 | 50                                      | 40                                     |
| Acetone          | 58 | 68                                      | 48                                     |
| Isopropanol      | 60 | 95                                      | 92                                     |

Test conditions:

1. Feed concentration 10 ppm, 214 psi (1.47 MPa), 25°C, pH 7 and 15% recovery.
2. Feed concentration 10 ppm, 107 psi (0.74 MPa), 25°C, pH 7 and 15% recovery.

## Important Operating 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. 45-D01609-en) for more information.

## 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 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 (0.34 MPa).
- Avoid static permeate-side backpressure at all times.

## 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.
- Any concentrate or permeate obtained from the first hour of operation should be discarded.

Have a question? Contact us at:

[www.dupont.com/water/contact-us](http://www.dupont.com/water/contact-us)

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