



## DOW FILMTEC™ Membranes

### DOW FILMTEC Maple Sap Mark E4 Reverse Osmosis Element

#### Features

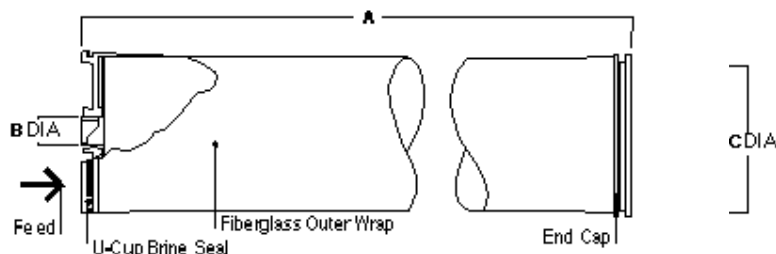
The DOW FILMTEC™ Maple Sap Mark E4 product is a premium reverse osmosis element designed specifically for maple sap concentration. The Mark E4 element has high active area that enables high process productivity in concentration steps. The product benefits from Dow's industry-leading automated rolling technology to produce a highly consistent and reliable design in a standard sized four inch diameter element.

The Mark E4 element was designed to deliver exceedingly high retention of sugars and minerals with high throughput, and is rugged enough to withstand repeated caustic cleaning cycles without compromising membrane retention or flow. This combination of high retention and high flow make the Mark E4 an excellent choice for maple sap applications.

#### Product Specifications

Product	Part Number	Nominal Active Surface Area ft <sup>2</sup> (m <sup>2</sup> )
Maple Sap Mark E4	361904	87

Figure 1



Product	Dimensions - Inches (mm)		
	A	B	C
Maple Sap Mark E4	40 (1,016)	.75 (19)	3.9 (99)

1. Element to fit nominal 4.00-inch I.D. pressure vessel.

1 inch = 25.4 mm

#### Operating Limits

- Membrane Type Polyamide Thin-Film Composite
- Maximum Operating Temperature<sup>a</sup> 113°F (45°C)
- Maximum Operating Pressure 600 psig (41 bar)
- Maximum Pressure Drop 13 psig (0.9 bar)
- pH Range, Continuous Operation 3-9
- pH Range, Short-Term Cleaning<sup>b</sup> 2-11
- Maximum Feed Flow 14 gpm (3.2 m<sup>3</sup>/hr)
- Free Chlorine Tolerance<sup>c</sup> <0.1 ppm

<sup>b</sup> Contact Original Equipment Manufacturer (OEM) for specific cleaning recommendations.

<sup>c</sup> 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.

## Important Information

Proper start-up of membrane systems is essential to prepare the elements 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 retention 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.

## 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 Maple Sap Element three-year, prorated limited warranty (609-00514) 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.
- Avoid permeate-side backpressure at all times.

### DOW FILMTEC™ Membranes

For more information about DOW FILMTEC™ membranes, call the Dow Water & Process Solutions business:

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