



## FILMTEC™ Membranes

High-Rejection Reverse Osmosis Elements for Polishing and Concentrating

### Features

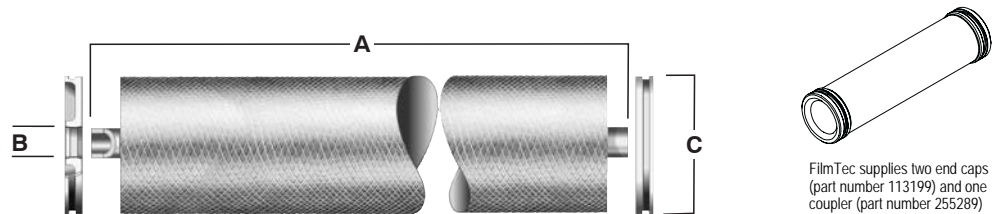
FILMTEC™ reverse osmosis (RO) elements contain high-rejection FT30 reverse osmosis membrane that has successfully been used to process a wide range of food and dairy streams. These elements are especially effective in dewatering or product concentration. The full-fit configuration is optimal for cleaning and minimizing “dead spaces.” These elements are designed for use in food processing where USDA sanitary standards are not required.

The FILMTEC RO-390-FF product is the industry’s premier membrane for evaporator condensate polishing. RO-390-FF has more active membrane area than competitive elements to maximize performance and reduce capital cost by requiring the fewest elements for polishing applications.

### Product Specifications

Product	Part number	Design active area - ft <sup>2</sup> (m <sup>2</sup> )
RO-390-FF (8040 style)	116314 / 100608	390 (36.2)

Figure 1



FilmTec supplies two end caps (part number 113199) and one coupler (part number 255289) with each element. Each coupler includes four 2-119 EPR o-rings (part number 151705).

Product	Dimensions – Inches (mm)		
	A	B	C
RO-390	40.0 (1,016)	1.125 (28.58)	7.9 (200)

All 8-inch diameter elements are designed to fit Schedule 40, 8-inch stainless pipe (nominal 7.98 inch ID).

1 inch = 25.4 mm

### Operating Limits

- Maximum Operating Pressure 800 psi (54.8 bar)
- Maximum Operating Temperature<sup>a</sup> 122°F (50°C)
- pH Range, Continuous Operation<sup>a</sup> 2 - 11
- pH Range, Short-Term Cleaning<sup>b</sup> (max. @ 50°C) 1 - 11.5
- Free Chlorine Tolerance<sup>c</sup> < 0.1 ppm
- Hydrogen Peroxide Usage Limit:
  - Continuous Operation 20 ppm
  - Short-Term Cleaning (@ 77°F/25°C max.) 1,000 ppm

<sup>a</sup> Maximum temperature for continuous operation above pH 10 is 95°F (35°C).

<sup>b</sup> Refer to Cleaning Guidelines in specification sheet 609-00077.

<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, FilmTec recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to technical bulletin 609-22010 for more information.

## Design Guidelines

Product	Max. recirculation cross-flow – gpm (m <sup>3</sup> /h)	Max. element $\Delta P^{\dagger}$ – psi (bar)
RO-390-FF	80 (18.2)	13 (0.9)

<sup>†</sup> Maximum pressure drop across entire vessel is 60 psi (4.1 bar).

### Important Information

New RO spiral elements must be cleaned prior to initial use. The cleaning procedure should be based on the application for which the elements are to be used. If cleaning with formulated agents is not available, an alkaline wash with wetting agent is recommended prior to initial use.

An appropriate alkaline wash consists of the following:

- Flushing with water (ensure water quality meets guidelines found in bulletin 609-00077).
- Heating water to 45°C (113°F) in recirculation mode.
- Adding 0.2% Na-EDTA and NaOH to pH 11 and recirculating for 30 minutes.
- Flushing with water until neutral pH is obtained.

### 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.
- Before initiating cross-flow at high permeate flux conditions (e.g., start-up with high-temperature water), the set operating pressure should be maintained for 5-10 minutes.
- Cross-flow velocity at set operating point should be achieved gradually over 15-20 seconds.

### General Information

- Keep elements moist at all times after initial wetting.
- If operating specifications given in this Product Information 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 60 psi (4.1 bar).
- Avoid permeate-side backpressure at all times.

#### FILMTEC™ Membranes For more information about FILMTEC membranes, call the Dow Liquid Separations business:

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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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