# FILMTEC™ Membranes

FILMTEC BW30-400/34*i*-FR Durable High Productivity Fouling Resistant RO Element with *iLEC*™ Interlocking Endcaps

## Features

The FILMTEC™ BW30-400/34*i*-FR has optimized construction for durable, high rejection, high productivity performance in purifying water with high biological fouling tendency. With Dow's proprietary FR membrane technology that provides superior fouling resistance and cleanability, this product combines the best features of the FILMTEC BW30-365-FR and BW30-400-FR elements.

The BW30-400/34*i*-FR element features:

- A wide 34 mil feed spacer to lessen the impact of fouling and enhance cleaning effectiveness.
- 400 square feet active area for more productivity without increasing the operating flux.
- High rejection FILMTEC RO membrane that has the widest pH cleaning range in the industry (pH 1-13) that allows for effective cleaning of scale, organic compounds and biofilm.
- Automated, precision fabrication with a greater number of shorter membrane leaves, reduces the overall effect of fouling and maximizes membrane efficiency.
- *iLEC*™ interlocking endcaps, which reduce system operating costs and the risk of o-ring leaks that compromise system integrity and cause poor water quality.

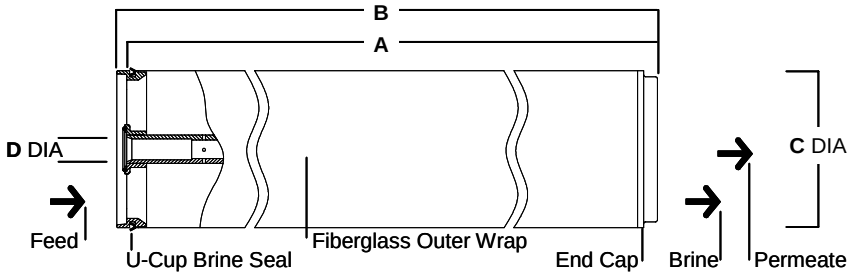
This unique combination of features offers system operators the best long-term economics and most trouble-free operation currently available for RO membrane purification of fouling waters.

## Product Specifications

| Product | Part number | Active area $ft^2$ ($m^2$) | Feed spacer thickness (mil) | Permeate flow rate gpd ($m^3$/d) | Stabilized salt rejection (%) | Minimum salt rejection (%) |
|---|---|---|---|---|---|---|
| BW30-400/34*i*-FR | 273805 | 400 (37) | 34 | 10,500 (40) | 99.5 | 99.0 |

1. Permeate flow and salt rejection based on the following standard conditions: 2,000 ppm NaCl, 225 psi (15.5 bar), 77°F (25°C), pH 8 and 15% recovery.
2. Flow rates for individual elements may vary but will be no more than 7% below the value shown.
3. Sales specifications may vary as design revisions take place.
4. Active area guaranteed +/-5%. Active area as stated by FilmTec 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)

| Product | A | B | C | D |
|---|---|---|---|---|
| BW30-400/34*i*-FR | 40.0 (1,016) | 40.5 (1,029) | 7.9 (201) | 1.125 ID (29) |

1. Refer to FilmTec Design Guidelines for multiple-element applications. 1 inch = 25.4 mm
2. BW30-400-FR fits 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).


™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

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

## 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 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 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.

FILMTEC™ Membranes
For more information about FILMTEC membranes, call the Dow Water Solutions business:

| | |
|---|---|
| North America: | 1-800-447-4369 |
| Latin America: | (+55) 11-5188-9222 |
| Europe: | (+32) 3-450-2240 |
| Pacific: | +60 3 7958 3392 |
| Japan: | +813 5460 2100 |
| China: | +86 21 2301 9000 |

http://www.filmtec.com

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.

Notice: No freedom from any patent owned by Seller or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer’s use and for ensuring that Customer’s workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow