



FILMTEC Membranes

FILMTEC NF90-400 Nanofiltration Element

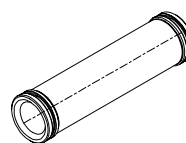
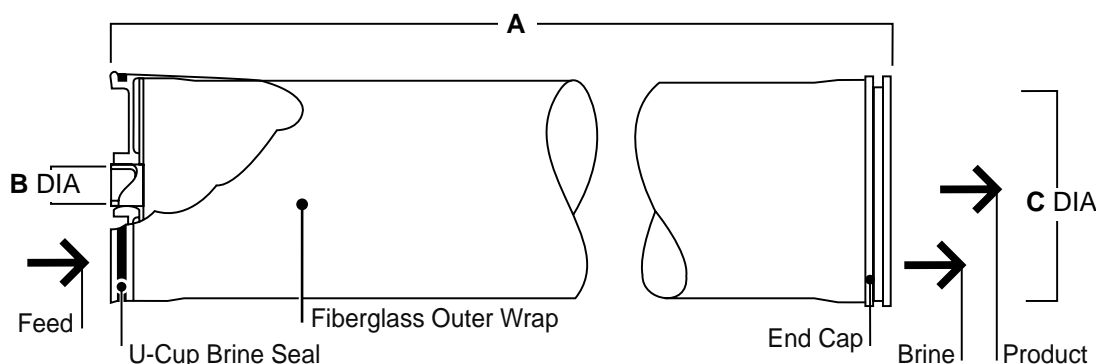
The FILMTEC™ NF90-400 Nanofiltration element is a high area, high productivity element designed to remove a high percentage of salts, nitrate, iron, and organic compounds such as pesticides, herbicides, and THM precursors.

The high active membrane area combined with the low net driving pressure of the membrane allows the removal of these compounds at low operating pressures.

Product Specifications

Product	GMID	Nominal Active Surface Area ft ² (m ²)	Product Water Flow Rate gpd (m ³ /d)	Stabilized Salt Rejection (%)
NF90-400	149985	400 (37)		
NaCl			7,500 (28.4)	85 - 95
MgSO₄			9,500 (36.0)	>97

- Permeate flow and salt passage based on the following test conditions:
2000 mg/l NaCl, 70 psi (0.48 MPa), 77°F (25°C), and 15% recovery.
2000 mg/l MgSO₄, 70 psi (0.48 MPa), 77°F (25°C), and 15% recovery.
- Flow rates for individual elements may vary ±15%.
- The above values are benchmark values. Please be sure to operate according to our system design guidelines.



FilmTec supplies coupler part number 118027 with each element. Each coupler includes two 2-125 EPR o-rings (FilmTec part number 102284).

Product	Single-Element Recovery	Dimensions – Inches (mm)		
		A	B	C
NF90-400	15%	40 (1,016)	1.5 (38)	7.9 (201)

- Consult the most recent DESIGN GUIDELINES for multiple-element applications and recommended element recovery rates for various feed sources.
- Element to fit nominal 8.00-inch (203 mm) I.D. pressure vessel.

1 inch = 25.4 mm

Operating Limits

Membrane Type	Polyamide Thin-Film Composite
Maximum Operating Temperature	113°F (45°C)
Maximum Operating Pressure	600 psig (41 bar)
Maximum Pressure Drop	15 psig (1.0 bar)
pH Range, Continuous Operation ^a	3–10
pH Range, Short-Term Cleaning (30 min.) ^b	1–12
Maximum Feed Flow	70 gpm (15.9 m ³ /h)
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/CH 172-086-E.

^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/CH 172-144-E for more information.

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FILMTEC Membranes

For more information about FILMTEC membranes,

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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 "How to

Start Up an RO Membrane System" (Form No. 609-00070/CH 172-085-E) 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 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 (3.4 bar).
- Avoid permeate-side backpressure at all times.

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.

Published May 2002.



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Form No. 609-00345-502XQRP
CH 172-275-E-502R