FILMTEC™ Membranes

FILMTEC **NF90-2540** Nanofiltration Elements for Commercial Systems

Features

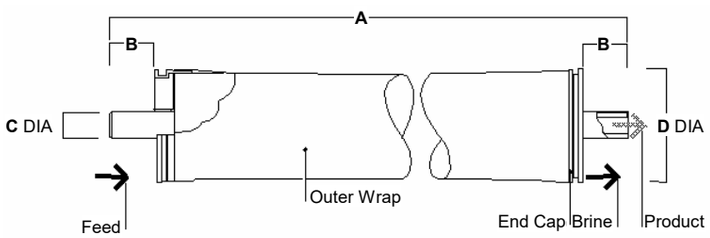
The FILMTEC™ NF90 membrane elements provide high productivity performance while removing a high percentage of salts, nitrate, iron and organic compounds such as pesticides, herbicides and THM precursors. The low net driving pressure of the NF90 membrane allows the removal of these compounds at low operating pressures.

Product Specifications

Product	Part Number	Active Area ft² (m²)	Applied Pressure psig (bar)	Permeate Flow Rate gpd (m³/d)	Stabilized Salt Rejection (%)
NF90-2540	149982	28 (2.6)	70 (4.8)	680 (2.6)	>97.0
NF90-4040	149983	82 (7.6)	70 (4.8)	2,000 (7.6)	>97.0

1. Permeate flow and salt rejection based on the following test conditions: 2,000 ppm $MgSO_4$, 77°F (25°C) and 15% recovery at the pressure specified above.
2. Permeate flows for individual NF90-2540 elements may vary by -20% / +30%. NF90-4040 individual elements may vary -15% / +50%.
3. Developmental products available for sale.

Figure 1



FilmTec sells coupler part number 89055 for use in multiple element housings. Each coupler includes two 2-210 EPR o-rings, FilmTec part number 89255.

Product	Dimensions – Inches (mm) A	B	C	D
NF90-2540	40.0 (1,016)	1.19 (30)	0.75 (19)	2.4 (61)
NF90-4040	40.0 (1,016)	1.05 (27)	0.75 (19)	3.9 (99)

1. Refer to FilmTec Design Guidelines for multiple-element systems.
2. NF90-2540 has a tape outer wrap. NF90-4040 has a fiberglass outer wrap.

1 inch = 25.4 mm

Operating Limits

- Membrane Type — Polyamide Thin-Film Composite
- Maximum Operating Temperature — 113°F (45°C)
- Maximum Operating Pressure — 600 psi (41 bar)
- Maximum Feed Flow Rate - 4040 elements — 16 gpm (3.6 m³/hr)
  - 2540 elements — 6 gpm (1.4 m³/hr)
- Maximum Pressure Drop - tape wrapped — 13 psig (0.9 bar)
  - fiberglassed — 15 psig (1.0 bar)
- pH Range, Continuous Operation[a] — 2 – 11
- pH Range, Short-Term Cleaning (30 min.)[b] — 1 – 12
- 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 for NF90.

[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 drop across an entire pressure vessel (housing) is 30 psi (2.1 bar).
- Avoid static permeate-side backpressure at all times.

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