DuPont™ FilmTec™ elements

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Product Data Sheet | Reverse Osmosis

FilmTec™ HSRO-4040-FF Element

Heat Sanitizable Reverse Osmosis Element

Key Features

- Delivers outstanding quality water with the added capability to withstand sanitization with hot water to eliminate the need for chemical sanitizers.
- High active membrane area that allows system design with either lower operating flux or cost savings from fewer membrane elements.
- Full-fit configuration design that helps minimize stagnant areas for sanitary designs.

Key Applications

- Purified water in the pharmaceutical, medical, and biotechnology applications
- Permeate polishing in food and dairy processes.

Typical Properties

Product	Active Area ft² (m²)	Permeate Flow Rate gpd (m³/d)	Minimum Salt Rejection (%)
FilmTec™ HSRO-4040-FF element	90 (8.4)	2,900 (11)	97

1. Permeate flow and salt rejection based on the following test conditions: 2,000 ppm NaCl, 125 psi (8.6 bar), 77°F (25°C), pH 8, and 15% recovery before any heat treatment.
2. Flow rates for individual elements may vary but will be no more than 20% below the value shown.
3. Sales specifications may vary as design revisions take place.

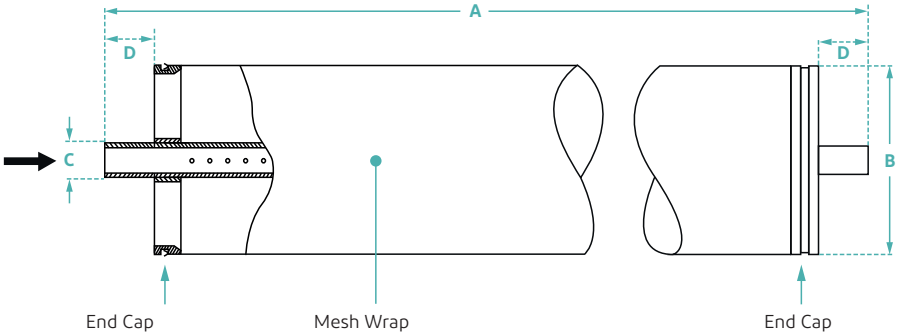
Exemplary Projections

For optimal performance, elements must be pre-conditioned by exposure to hot water prior to initial use. An initial flux loss and rejection increase will occur after pre-conditioning. An exact percentage of these performance change is difficult to predict since it depends on many factors and can differ from system to system. For more information about projected performance and DuPont's recommended protocol for element pre-conditioning refer to Heat Sanitization (Form No. 45-D01632-en).

Product	Feed Pressure psi (bar)	Average Flux gfd (lmh)	Calculated Permeate Flow gph (m³/h)	Recovery (%)	Feed TDS (NaCl ppm)	Calculated Permeate TDS (ppm)	Calculated Rejection (%)
FilmTec™ HSRO-4040-FF element	135 (9.3)	15.3 (26)	1,056 (4)	75	500	11.11	97.8

1. Results are based on WAVE modeling after heat treatment of a 2-stages (2:1) system with 6-element pressure vessel, operated at 77°F (25°C), pH 7, feed flow 1,400 gph (5.33 m³/h) and a Flow Factor 0.85.
2. WAVE version: contact your DuPont representative for more help with projections..
3. No warranty is provided for the application of this information since use conditions and applicable laws may differ from one location to another and may change with time.
4. Piloting will give the best performance approach for any specific application.

Element Dimensions



DuPont supplies two end caps (part number 102109) with each HSRO-4040-FF element. DuPont sells coupler (part number 89048) for use in multiple element housing. Each coupler includes two 2-210 EPR O-rings (part number 89255).

	Dimensions – inches (mm)
A	40.0 (1,016)
B	3.9 (99)
C	0.75 (19)
D	1.05 (27)

1 inch = 25.4 mm

Form No. 45-D01511-en, Rev. 11
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Suggested Operating and Cleaning Conditions

Membrane Type	Polyamide Thin-Film Composite
Maximum Operating Temperature[1]	113°F (45°C)
Maximum Sanitization Temperature (@ 25 psi)	185°F (85°C)
Maximum Operating Pressure	600 psi (41 bar)
Maximum Pressure Drop	
Per Element	15 psi (1.0 bar)
Per Pressure Vessel	60 psi (4.1 bar)
pH Range	
Continuous Operation[1]	2 - 11
Short-Term Cleaning (30 min.)[2]	1 - 12
Maximum Feed Silt Density Index (SDI)	SDI 5
Free Chlorine Tolerance[3]	< 0.1 ppm

1. Maximum temperature for continuous operation above pH 10 is 95°F (35°C).
2. Refer to Cleaning Procedures for FilmTec™ Elements (Form No. 45-D01696-en), for cleaning limits to Food Processing and Sanitary Elements Cleaning Guide (Form No. 45-D01686-en) and in addtion refer to Temperature and pH best practices in preparation of Cleaning Solutions (Form No. 45-D04358-en).
3. Oxidation damage is not covered under warranty, DuPont recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to Dechlorinating Feedwater (Form No. 45-D01569-en) for more information.

Important General Information

- Keep elements moist at all times after initial wetting.
- For successful operation of Reverse Osmosis (RO) and Nanofiltration (NF) membrane systems, the operation must follow the guidelines provided in the FilmTec™ Reverse Osmosis / Nanofiltration Elements Operation Excellence and Limiting Conditions Tech Fact (Form No. 45-D04388-en).
- 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 static permeate-side backpressure at all times.
- Permeate obtained from the first hour of operation should be discarded.
- 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.

Please consider good operating practices for the optimal performance of the Reverse Osmosis membrane elements to assure damage free operation:

1. Loading of Pressure Vessels – Preparation & Element Loading (Form No. 45-D01602-en)
2. System Operation, including plant Start-Up Sequence (Form No. 45-D01609-en) and RO & NF Systems Shutdown (Form No. 45-D01613-en)
3. Handling, Preservation, and Storage (Form No. 45-D03716-en)

Full information of plant design, system operation, and troubleshooting is given in the FilmTec™ Reverse Osmosis Membranes Technical Manual (Form No. 45-D01504-en).

Regulatory Note

These products are listed to NSF/ANSI 61. For more information visit:
http://www.nsf.org/Certified/PwsComponents/Listings.asp?Company=0N280&Standard=061

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Have a question? Contact us at:
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