DuPont™ FilmTec™ elements

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Product Data Sheet | Reverse Osmosis

FilmTec™ Hypershell™ HSRO-390 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.
- Hard outer shell for maximum durability.

Key Applications

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

Typical Properties

Product	Part Number	Active Area ft² (m²)	Permeate Flow Rate gpd (m³/d)	Minimum Salt Rejection (%)
FilmTec™ Hypershell™ HSRO-390 element	346586	390 (36)	14,500 (55)	97

1. Permeate flow and salt rejection based on the following test conditions: 2,000 ppm NaCl, 150 psi (10.3bar), 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.

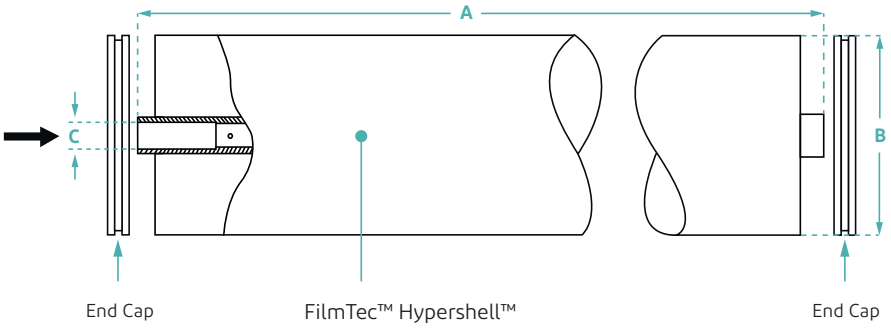
Exemplary Projections

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™ Hypershell™ HSRO-390 element	130.5 (9)	15.3 (26)	4,490 (17)	75	500	11.98	97.6

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 6,000 gph (22.7 m³/h) and a Flow Factor 0.85.
2. 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.
3. Piloting will give the best performance approach for any specific application.

Element Dimensions



For model 390 DuPont supplies two end caps (part number 113199) and one coupler (part number 255289) with each RO-390 element. Each coupler includes two 3-912 EPR O-rings (part number 151705).

	Dimensions – inches (mm)
A	40.0 (1,016)
B	7.9 (201)
C	1.125 ID (29)

ID = Inner Diameter
1 inch = 25.4 mm

Form No. 45-D01685-en, Rev. 8
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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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