Product Data Sheet
Reverse Osmosis Membranes

FilmTec™ Hypershell™ HTRO-8038/48 and FilmTec™ Hypershell™ HTRO-4040/48 Elements

Sanitary High Temperature Reverse Osmosis Elements for Food & Beverage Processing

Key Features

- Operating temperatures up to 80°C, enabling reduced OPEX and CAPEX by requiring smaller or no cooling and heating systems.
- Robust FilmTec™ RO flat sheet to withstand extreme conditions.
- More efficient cleaning than standard mesh wrap elements, reducing CIP chemicals and water usage.

Key Applications

- Sugar concentration
- Beverage concentration
- Hot evaporator condensate reuse

Feed Flow vs Pressure Drop

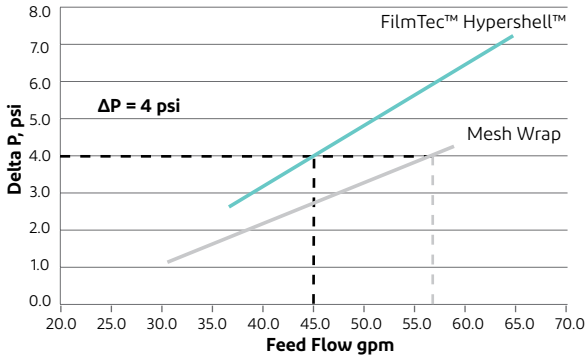


Figure 1: Feed Flow vs Pressure Drop for Mesh Wrap and FilmTec™ Hypershell™ 8038 Elements.

FilmTec™ Hypershell™ Elements have less exterior bypassing and require approximately 30% less flow than mesh wrap for an equivalent pressure drop.

The graph indicates the flow comparison at 4psi ΔP. Energy can be saved by reducing flow.

Typical Properties

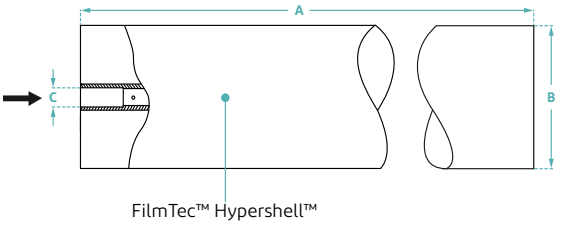
Product	Active Area ft² (m²)	Feed Spacer Thickness (mil)	Max.recirculation cross-flow gpm (m³/h)
FilmTec™ Hypershell™ HTRO-8038/48	260 (24.2)	48	80 (18.2)
FilmTec™ Hypershell™ HTRO-4040/48	55 (5.1)	48	30 (6.8)

Dimensions – inches (mm)		
	FilmTec™ Hypershell™ HTRO-8038/48	FilmTec™ Hypershell™ HTRO-4040/48
A	38 (965)	40 (1,016)
B	7.9 (201)	3.9 (99)
C	1.125 ID (28.58)	0.75 OD (19)
D		1.03 (26)

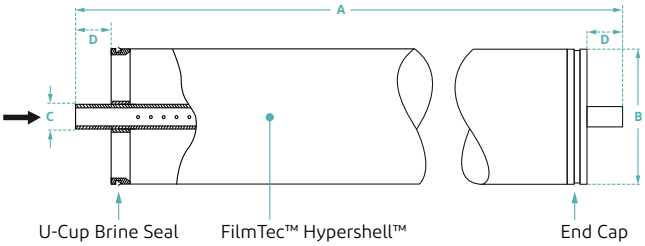
ID = Inner Diameter
OD = Outer Diameter
1 inch = 25.4 mm

Element Dimensions

Model HTRO-8038/48



Model HTRO-4040/48



FilmTec™ coupler part number 89048 is ordered separately for each element. Each coupler includes two 2-210 EPR O-rings (part number 89255).

1. FilmTec™ Hypershell™ 8-inch Elements are designed to fit schedule 40, 8-inch stainless pipe (nominal 7.98-inch ID).
2. FilmTec™ Hypershell™ 4-inch Elements are designed to fit schedule 80, 4-inch stainless pipe (nominal 3.83-inch ID).
3. For 8038 models, end caps, coupler, and O-rings are not included.

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Suggested Operating and Cleaning Conditions

Maximum Operating Temperature[1]	pH 3 – 8 at ≤ 80°C (176°F) pH 2 – 11 at ≤ 45°C (113°F)
Maximum Operating Pressure	1,200 psi (83 bar) at ≤ 45°C / 435 psi (30 bar) at ≤ 80°C
Maximum Pressure Drop	
Per Element	13 psi (0.9 bar) at < 50°C / 4.4 psi (0.3 bar) at < 80°C
Per Pressure Vessel	60 psi (4.1 bar) at < 50°C / 17 psi (1.2 bar) at < 80°C
pH Range	2 - 11
Hydrogen peroxide usage limit[2]	
Continuous Operation	20 ppm
Short-Term Cleaning (77°F/25°C maximum)	1,000 ppm
Free Chlorine Tolerance[3]	Below Detectable Limits
CIP pH Range[4]	pH 1.8 – 11 at 45 – 50°C pH 1 – 13 at < 45°C

1. See Figure 2, maximum allowed temperature and pressure for NF245N-8038/48 and NF245N-3838/48.
2. Refer to Sanitizing RO&NF Membrane System (Form No. 45-D01630-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.
4. Refer to Food Processing and Sanitary Elements Cleaning Guide (Form No. 45-D01686-en). And to Temperature and pH best practices in preparation of Cleaning Solutions (Form No. 45-D04358-en).

Operating Temperature and Pressure Limits

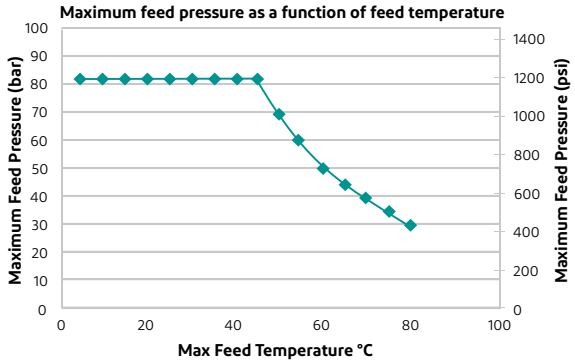

Figure 2: Maximum allowed temperature and pressure for FilmTec™ Hypershell™ HTRO-8038/48 and FilmTec™ Hypershell™ HTRO-4040/48

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 Nanofiltration 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

This product may be subject to drinking water application restrictions in some countries; please check the application status before use and sale.

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Have a question? Contact us at:
dupont.com/water/contact-us

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