



FilmTec™ Fortilife™ UHP

Ultra-high Pressure, High Rejection, Reverse Osmosis Element for Industrial Brine Concentration

Key Features

- Optimized module construction for ultra-high-pressure operation up to 120 bar (1740 psi)
- Reduced water volume to thermal treatment for zero-liquid discharge (ZLD)
- High salt, COD, and silica rejection providing high-quality permeate water for reuse
- Robust and fouling resistant membrane chemistry enabling a wide pH range for operation and cleaning

Key Applications

Industrial wastewater minimum- and zero-liquid discharge (MLD/ZLD) wastewater, such as in:

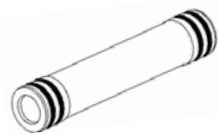
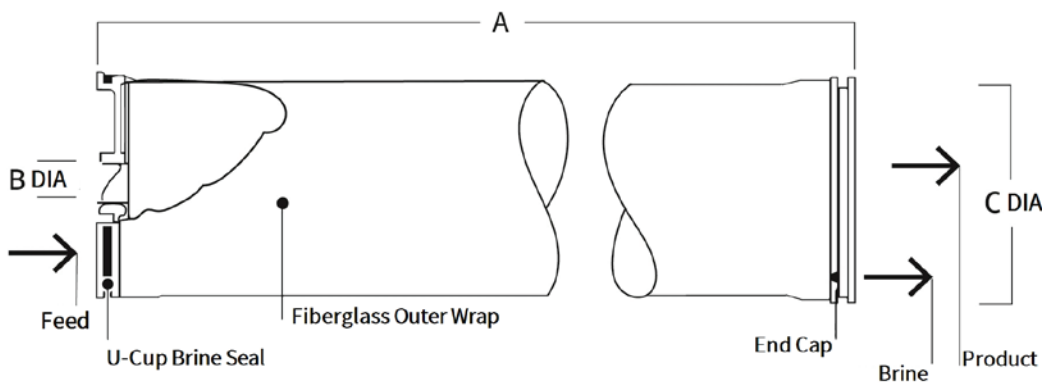
- Chemical & Petrochemical
- Lithium-ion battery industry
- Steel & iron industry
- Power generation
- Pulp & Paper
- Textiles

Typical Properties

FilmTec™ Element	Active Area ft ² (m ²)	Feed Spacer Thickness (mil)	Permeate Flow Rate gpd (m ³ /d)	Stabilized Salt Rejection (%)	Minimum Salt Rejection (%)
Fortilife™ UHP	350 (32.5)	34	7,700 (29.2)	99.7	99.5

1. Permeate flow and salt rejection based on the following standard conditions: 32,000 ppm NaCl, 800 psi (55 bar), 77°F (25°C), pH 8 and 8% recovery.
2. Flow rates for individual elements may vary but will be no more than 15% below the value shown.
3. Sales specifications may vary as design revisions take place.

Element Dimensions



FilmTec™ supplies coupler part number 99098178 with each element. Each coupler includes four 2-119 80 durometer EPDM O-rings (part number 99098201).

FilmTec™ Fortilife™ UHP Dimensions	inches	mm
A	40.0	1,016
B	1.125 ID	29
C	7.9	201

1. For element weight information refer to [What is the weight of FilmTec™ elements as delivered?](#)
2. For element packaging and shipping information refer to [How are FilmTec™ elements packaged and shipped?](#)

Suggested Operating Conditions

General	Details	
Membrane Type	Polyamide Thin-Film Composite	
Maximum Operating Temperature ^{1,6}	113°F	45°C
Maximum Operating Pressure ^{2,6}	1740 psig	120 bar
Maximum Pressure Drop		
Per Element	15 psig	1.0 bar
Per Pressure Vessel (Minimum 4 Elements)	60 psig	4.1 bar
pH Range		
Continuous Operation ¹	2 - 11	
Short-Term Cleaning (30 min.) ³	1 - 13	
Maximum Feed Flow ⁴	65 gpm	14.7 m ³ /hr
Maximum Feed Silt Density Index	SDI 5	
Free Chlorine Tolerance ⁵	< 0.1 ppm	

1. Maximum temperature for continuous operation above pH 10 is 95°F (35°C).

2. Maximum operating pressure for continuous operation up to and including 86°F (30°C).

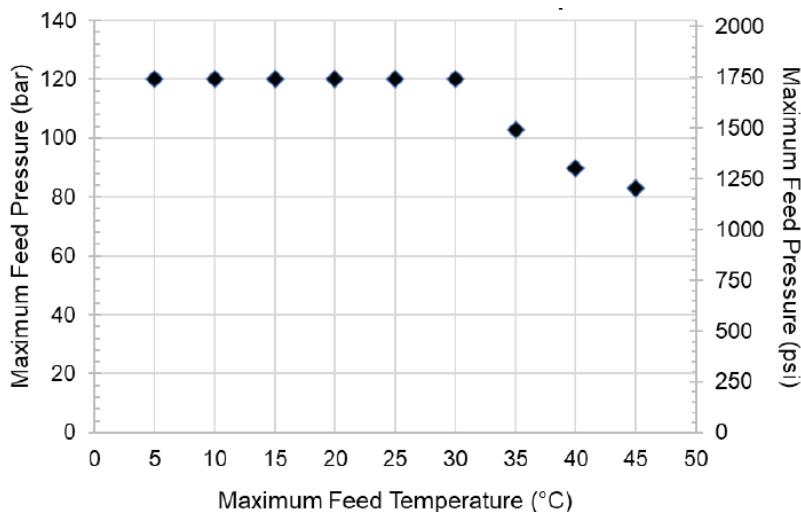
3. Refer to [FilmTec™ Cleaning Guidelines](#) (Form No. 45-D01696-en).

4. For recommended feed and permeate flow rates, flux, and recovery for various feed sources, refer to [FilmTec™ Design Guidelines for multiple-element systems of 8-inch elements](#) (Form No. 45-D01695-en).

5. 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.

6. For guidance on the maximum operating feed pressure and temperature, see Figure 1 below.

Maximum Feed Pressure vs. Temperature



Maximum Feed Temperature		Maximum Feed Pressure	
(°C)	(°F)	(bar)	(psi)
5	41	120	1740
10	50	120	1740
15	59	120	1740
20	68	120	1740
25	77	120	1740
30	88	120	1740
35	95	103	1494
40	104	90	1305
45	113	83	1200

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.

Important Information

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) and [Loading of Pressure Vessels – Shimming of Elements](#) (Form No. 45-D01057-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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