Product Data Sheet

**FILMTEC™ FORTILIFE™ CR100 Element**
Highly Durable, Contaminant Resistant, Biofouling Resistant, Brackish Water RO Element

**Description**

The FILMTEC™ FORTILIFE™ product family offers industrial users a reliable and highly efficient option to help solve highly difficult water challenges, such as wastewater reuse and minimal liquid discharge.

The FILMTEC™ FORTILIFE™ CR100 element is one of the industry’s most advanced fouling resistant element technology specially designed to provide relief from biological fouling. The element’s ultra-low differential pressure (Figure 1) provides improved hydraulic balance (more even distribution of flux across all the elements in the system) in a biological fouling environment such as wastewater treatment. This product also boasts a reliable and durable membrane chemistry, providing organic fouling resistance, cleanability, low energy operation, and excellent solute rejection.

With FILMTEC™ FORTILIFE™ CR100, an end user that performs frequent cleanings due to biofouling, typically indicated by a rapid increase of the 1st stage differential pressure, can expect 1:

- Up to 50% reduction in the number of cleanings
- More effective and efficient cleaning of biofilm, organic compounds and scale, achieved through the widest pH range in cleaning (pH 1 – 13), made possible by the most advanced FILMTEC™ RO membrane sheet available today
- Up to 10% energy savings at the same water productivity

1Relative to leading fouling resistant products currently available in the market

![Element differential pressure as a function of flow rate for FILMTEC™ FORTILIFE™ CR100 elements vs. standard elements](image)

**Product Type**

Spiral-wound element with polyamide thin-film composite membrane
Typical Properties

<table>
<thead>
<tr>
<th>FILMTEC™ Element</th>
<th>Active Area (m²)</th>
<th>Permeate Flow Rate (gpd)</th>
<th>Minimum Salt Rejection (%)</th>
<th>Stabilized Salt Rejection (%)</th>
<th>Element dP (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILMTEC™ FORTILIFE™ CR100</td>
<td>400 (37)</td>
<td>11,500 (44)</td>
<td>99.4</td>
<td>99.7</td>
<td>0.1</td>
</tr>
</tbody>
</table>

1. Permeate flow and salt (NaCl) rejection is based on the following standard test conditions: 2,000 ppm NaCl, 225 psi (15.5 bar), 77°F (25°C), pH 8 and 15% recovery.
2. Flow rates for individual elements may vary but will be no more than +/- 15%.
3. Sales specifications may vary as design revisions take place.
4. Active area guaranteed +/- 3%. Active area as stated by DuPont Water Solutions is not comparable to nominal membrane area often stated by some manufacturers. Measurement method described in Form No. 609-00434.
5. Element dP (differential pressure) is a typical value for an element operated with a permeate flow of 11,500 gpd and 15% recovery (average feed-concentrate flow: 11.2 m³/h)

Element Dimensions

<table>
<thead>
<tr>
<th>FILMTEC™ Element</th>
<th>Feed Spacer (mil)</th>
<th>A inch (mm)</th>
<th>B inch (mm)</th>
<th>C inch (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILMTEC™ FORTILIFE™ CR100</td>
<td>34</td>
<td>40.0 (1,016)</td>
<td>1.125 ID (29)</td>
<td>7.9 (201)</td>
</tr>
</tbody>
</table>

1. Refer to DuPont Water Solutions Design Guidelines for multiple-element applications. 1 inch = 25.4 mm
2. Element to fit nominal 8-inch (203 mm) I.D. pressure vessel

Operating and Cleaning Limits

<table>
<thead>
<tr>
<th>Membrane Type</th>
<th>Polyamide Thin-Film Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Temperature</td>
<td>113°F (45°C)</td>
</tr>
<tr>
<td>Maximum Operating Pressure</td>
<td>600 psig (41 bar)</td>
</tr>
<tr>
<td>Maximum Element Pressure Drop</td>
<td>15 psig (1.0 bar)</td>
</tr>
<tr>
<td>pH Range</td>
<td>Continuous Operation 2-11</td>
</tr>
<tr>
<td></td>
<td>Short-Term Cleaning (30 min.) 1-13</td>
</tr>
<tr>
<td></td>
<td>Maximum Feed Silt Density Index (SDI)</td>
</tr>
<tr>
<td></td>
<td>Free Chlorine Tolerance</td>
</tr>
</tbody>
</table>

1. Maximum temperature for continuous operation above pH 10 is 95°F (35°C)
2. Refer to guidelines in “Cleaning Procedures” for more information.

Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature failure. Since oxidation damage is not covered under warranty, DuPont recommends removing residual free chlorine by pretreatment prior to membrane exposure. Please refer to technical bulletin “Dechlorinating Feedwater” for more information.
Additional Important Information

Before use or storage, review these additional resources for important information:

- Usage Guidelines for FILMTEC™ 8” Elements
- System Operation: Initial Start-Up
- Handling, Preservation and Storage

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.

Please refer to the product technical manual.

Product Stewardship

DuPont has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

DuPont strongly encourages its customers to review both their manufacturing processes and their applications of DuPont products from the standpoint of human health and environmental quality to ensure that DuPont products are not used in ways for which they are not intended or tested. DuPont personnel are available to answer your questions and to provide reasonable technical support. DuPont product literature, including safety data sheets, should be consulted prior to use of DuPont products. Current safety data sheets are available from DuPont.

Please be aware of the following:

- 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.
- Permeate obtained from the first hour of operation should be discarded (or in a few cases: Any concentrate or permeate obtained from the first hour of operation should be discarded).
All information set forth herein is for informational purposes only. This information is general information and may differ from that based on actual conditions. Customer is responsible for determining whether products and the information in this document are appropriate for Customer’s use and for ensuring that Customer’s workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where DuPont is represented. The claims made may not have been approved for use in all countries. Please note that physical properties may vary depending on certain conditions and while operating conditions stated in this document are intended to lengthen product lifespan and/or improve product performance, it will ultimately depend on actual circumstances and is in no event a guarantee of achieving any specific results. DuPont assumes no obligation or liability for the information in this document. References to “DuPont” or the “Company” mean the DuPont legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. No freedom from infringement of any patent or trademark owned by DuPont or others is to be inferred.

DuPont™, the DuPont Oval Logo, and all products, unless otherwise noted, denoted with a ™, ™ or © are trademarks, service marks or registered trademarks of affiliates of DuPont de Nemours Inc. Copyright © 2019 DuPont de Nemours Inc. All rights reserved.