



Product Data Sheet

FILMTEC™ SEAMAXX™ Element

Seawater Reverse Osmosis Element with iLEC™ Interlocking Endcaps

Description

DuPont Water Solutions offers various premium seawater reverse osmosis (SWRO) elements designed to reduce capital and operation cost of desalination systems. FILMTEC™ Elements combine premium membrane quality with automated precision fabrication resulting in outstanding performance, reliability and robustness.

FILMTEC™ SEAMAXX™ Elements are the choice for seawater systems operating at low- to medium-levels of salinity and temperature, as well as for brackish water with relatively high salinity. The element's flowrate is significantly above flowrates of any other SWRO element currently available in the market. This extraordinary high element productivity leads to substantial savings, primarily in energy consumption when compared to conventional low energy SWRO products. In addition,

FILMTEC™ SEAMAXX™ elements include the typical FILMTEC™ product features:

- The 28-mil feed spacer combines low differential pressure with low cleaning frequency and high cleaning efficiency.
- The renowned iLEC™ Interlocking Endcaps help to reduce system operating costs and the risk of O-ring leaks.
- The oxidative-free membrane manufacturing process results in high membrane robustness and long-term stable performance.
- The widest pH range for cleanings (pH 1 – 13) allows effective cleanings even in cases of severe fouling.
- The automated, precision fabrication gives a greater number of shorter membrane leaves thus reducing fouling while maximizing element efficiency.

FILMTEC™ SEAMAXX™ elements are tested on flow and rejection performance using a standard test at 600 psi. Potential defects in element construction are detected and elements which do not comply with the quality protocol are discarded. A 600-psi standard test was introduced to specifically account for the high permeability of this seawater element. The results of standard tests performed at 600 psi and 8% recovery are different from the nominal performance condition of 800 psi and 8% recovery. The test conditions for the Certificate of Analysis are defined in the table below.

Product Type

Spiral-wound element with polyamide thin-film composite membrane.

Typical Properties of Standard Test
performed at 600 psi (4.1 MPa)

FILMTEC™ Element	Active Area		Feed Spacer Thickness (mil)	Permeate Flow Rate		Stabilized Boron Rejection	Stabilized Salt Rejection (%)
	(ft ²)	(m ²)		(GPD)	(m ³ /d)		
SEAMAXX™	440	41	28	9,050	34.2	81.8	99.47

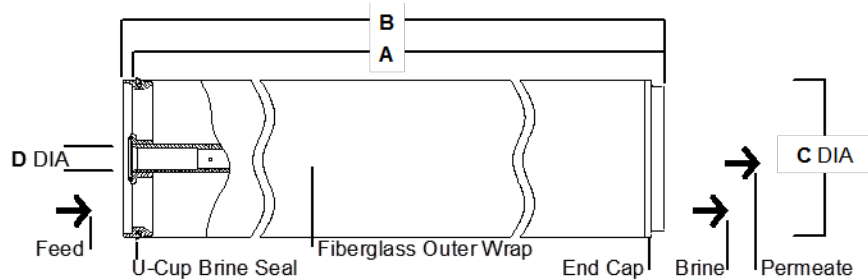
1. The above values are based on the following test conditions: 32,000 ppm NaCl, 600 psi (4.1 MPa), 77°F (25°C), pH 8 and 8% recovery.
2. Permeate flows for individual elements may vary ± 15%.
3. Minimum Salt Rejection is 99.25%.
4. Stabilized salt rejection is generally achieved within 24 – 48 hours of continuous use; depending upon feedwater characteristics and operating conditions.
5. Product specifications may vary slightly as improvements are implemented.
6. Specific boron stabilized rejection based on the following test conditions: 32,000 ppm NaCl, 5 ppm boron, 600 psi (4.1 MPa), 77°F (25°C), pH 8 and 8% recovery.

Expected Properties and Performance at Common Standard Test Conditions:
800 psi (5.5 MPa)

FILMTEC™ Element	Active Area		Feed Spacer Thickness (mil)	Permeate Flow Rate		Stabilized Boron Rejection (%)	Stabilized Salt Rejection (%)
	(ft ²)	(m ²)		(GPD)	(m ³ /d)		
SEAMAXX™	440	41	28	17,000	64.4	89	99.70

1. The above values are normalized from the 600-psi specification standard test to the following conditions: 32,000 ppm NaCl, 800 psi (5.5 MPa), 77°F (25°C), pH 8 and 8% recovery. Due to the very high permeability of FILMTEC™ SEAMAXX™ Elements, they are not tested at the typical feed pressure for standard test conditions of 800 psi but at a lower feed pressure of 600 psi. This allows to standard test the element within its operating guidelines.
2. Permeate flows for individual elements may vary ± 15%.
3. Minimum Salt Rejection is 99.58%.
4. Specific boron stabilized rejection based on the following normalization conditions: 32,000 ppm NaCl, 5 ppm boron, 800 psi (5.5 MPa), 77°F (25°C), pH 8 and 8% recovery.

Element Dimensions



FILMTEC™ Element	A		B		C		D	
	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)
SEAMAXX™	40.0	1,016	40.5	1,029	7.9	201	1.125 ID	29 ID

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.
3. Individual elements with iLEC™ Interlocking Endcaps measure 40.5 inches (1,029 mm) in length (B). The net length (A) of the elements when connected is 40.0 inches (1,016 mm).

Operating and Cleaning Limits

Maximum Operating Pressure and Temperature ^{a b}	1,000 psig (69 bar) at T < 35°C 900 psig (62 bar) at T = 35 – 45°C
Maximum Element Pressure Drop	15 psig (1.0 bar)
pH Range	
Continuous Operation ^c	2 – 11
Short-Term Cleaning (30 min.) ^d	1 – 13
Maximum Feed Silt Density Index (SDI)	SDI 5
Free Chlorine Tolerance ^e	< 0.1 ppm

- The limits for feed pressure and temperature cover the typical operations.
- Operation at pressures up to 1,000 psig (69 bar) is allowable under certain conditions. Consult your DuPont representative for advice on applications above 1,000 psig (69 bar) and/or above 95°F (35°C).
- Maximum temperature for continuous operation above pH 10 is 95°F (35°C).
- Refer to guidelines in ["Cleaning Procedures"](#) for more information.
- Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. Since oxidation damage is not covered under warranty, DuPont Water Solutions 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](#)

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).

Regulatory Note

These membranes may be subject to drinking water application restrictions in some countries: please check the application status before use and sale.

Have a question? Contact us at:

www.dupont.com/water/contact-us

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.

