DUPONT™

Product Data Sheet

FilmTec™ Membranes

FilmTec™ Extra Low Energy (XLE) Elements for Commercial Systems

Description

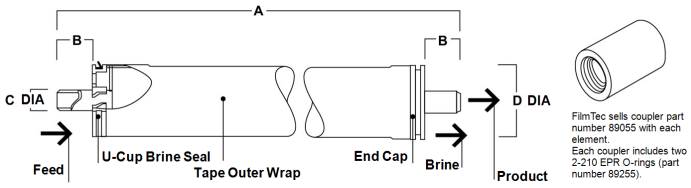
New FilmTec™ XLE Elements offer better system performance and economics by operating at very low applied pressure. XLE membrane, made with a patented technology, provides consistent and reliable system performance. And for added convenience, FilmTec™ XLE Elements are available in a dry state for rapid start-up (see Figure 2 on reverse). The new XLE series of elements replaces TW30LE elements which were made with an older membrane technology.

Typical Properties

Product	Part Number	Applied Pressure psig (bar)	Permeate Flow Rate gpd (m^3/d)	Stabilized Salt Rejection (%)
XLE-2521	154530	100 (6.9)	365 (1.4)	99.0
XLE-2540	154543	100 (6.9)	850 (3.2)	99.0
XLE-4021	154540	100 (6.9)	1,025 (3.9)	99.0
XLE-4040	154546	100 (6.9)	2,600 (9.8)	99.0

1. Permeate flow and salt rejection based on the following test conditions: 500 ppm NaCl feedstream, pressure specified above, 77°F (25°C) and the following recovery rates: XLE-2521, XLE-4021 – 8%; XLE-2540, XLE-4040 – 15%.
2. Permeate flows for individual elements may vary +/-20%.
3. For the purpose of improvement, specifications may be updated periodically.

Element Dimensions



Product	Maximum Feed Flow Rate gpm (m^3/h)	Dimensions – Inches (mm) A	B	C	D	1 inch = 25.4 mm
XLE-2521	6 (1.4)	21.0 (533)	1.19 (30.2)	0.75 (19)	2.4 (61)	
XLE-2540	6 (1.4)	40.0 (1,016)	1.19 (30.2)	0.75 (19)	2.4 (61)	
XLE-4021	14 (3.2)	21.0 (533)	1.05 (26.7)	0.75 (19)	3.9 (99)	
XLE-4040	14 (3.2)	40.0 (1,016)	1.05 (26.7)	0.75 (19)	3.9 (99)	

1. Refer to FilmTec™ Design Guidelines for multiple-element systems of midsize elements (Form No. 45-D01588-en).
2. XLE-2521 and XLE-2540 Elements fit nominal 2.5-inch I.D. pressure vessel. XLE-4021 and XLE-4040 Elements fit nominal 4-inch I.D. pressure vessel.

Operating and Cleaning Limits

Membrane Type	Polyamide Thin-Film Composite
Maximum Operating Temperature[a]	113°F (45°C)
Maximum Operating Pressure	600 psi (41 bar)
Maximum Pressure Drop	13 psig (0.9 bar)
pH Range	
Continuous Operation[a]	2 - 11
Short-Term Cleaning[b]	1 - 13
Maximum Feed Silt Density Index	SDI 5
Free Chlorine Tolerance[c]	<0.1 ppm

a. Maximum temperature for continuous operation above pH 10 is 95°F (35°C).
b. Refer to Cleaning Guidelines (Form No. 45-D01696-en)..
c. 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 FilmTec™ Design Guidelines for multiple-element systems of 8-inch elements (Form No. 45-D01695-en) for more information.

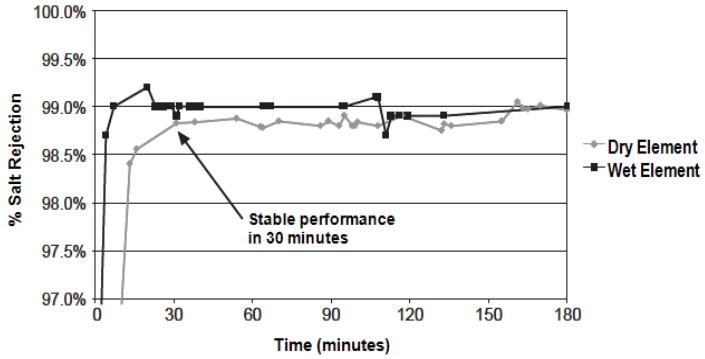


Figure 2: XLE-4040 start-up data

Important Information

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. 45-D01609-en).) 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.

General Information

- Keep elements moist at all times after initial wetting.
- If operating limits and guidelines given in this bulletin are not strictly followed, the limited warranty will be null and void.
- 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.
- Maximum pressure drop across an entire pressure vessel (housing) is 30 psi (2.1 bar).
- Avoid static permeate-side backpressure at all times.

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.

DUPONT™

Product Data Sheet

FilmTec™ Fiberglassed Elements for Light Industrial Systems

Description

FilmTec™ brackish water reverse osmosis membrane elements provide consistent system performance in light industrial applications.

- FilmTec™ BW30-4040 is an industry standard for reliable operation and production of high quality water.
- FilmTec™ BW30-2540 Elements are designed for systems smaller than 1 gpm (0.2 m^3/h) offering a hard shell exterior for extra strength.

Elements with a hard shell exterior are recommended for systems with multiple-element housings containing three or more membranes, as they are designed to withstand higher pressure drops.

Product Type

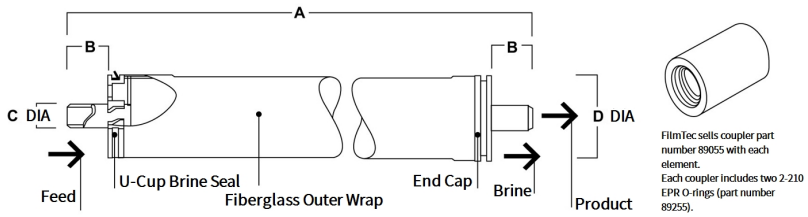
Spiral-wound element with polyamide thin-film composite membrane

Typical Properties

Product	Part Number	Feed Spacer Thickness (mil)	Permeate Flow Rate gpd (m^3/d)	Stabilized Salt Rejection %
BW30-4040	80783	34	2,400 (9.1)	99.5
BW30-2540	80766	28	1,000 (3.8)	99.5

1. Permeate flow and salt rejection based on the following test conditions: 2,000 ppm NaCl and 225 psig (15.5 bar), pH 8, 77°F (25°C) and 15% recovery.
2. Minimum salt rejection is 98.0%.
3. Permeate flows for individual elements may vary +/-20%.

Element Dimensions



Dimensions – inches (mm)				1 inch = 25.4 mm
Product	**A**	**B**	**C**	**D**
BW30-4040	40.0 (1,016)	1.05 (26.7)	0.75 (19)	3.9 (99)
BW30-2540	40.0 (1,016)	1.19 (30.2)	0.75 (19)	2.4 (61)

1. Refer to FilmTec™ Design Guidelines for multiple-element systems of midsize elements (Form No. 45-D01588-en).
2. BW30-2540 Elements fit nominal 2.5-inch I.D. pressure vessel. BW30-4040 Elements fit nominal 4-inch I.D. pressure vessel.

Form No. 45-D01516-en, Rev. 5
June 2020

Operating and Cleaning Limits

Membrane Type	Polyamide Thin-Film Composite
Maximum Operating Temperature[a]	113°F (45°C)
Maximum Operating Pressure	600 psi (41 bar)
Maximum Feed Flow Rate	
4040 Elements	16 gpm (3.6 m^3/h)
2540 Elements	6 gpm (1.4 m^3/h)
Maximum Pressure Drop	15 psig (1.0 bar)
pH Range	
Continuous Operation[a]	2 - 11
Short-Term Cleaning (30 min.)[b]	1 - 13
Maximum Feed Silt Density Index (SDI)	SDI 5
Free Chlorine Tolerance[c]	< 0.1 ppm

a. Maximum temperature for continuous operation above pH 10 is 95°F (35°C).
b. Refer to Cleaning Guidelines (Form No. 45-D01696-en).
c. 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, it is recommended that residual free chlorine be removed by pretreatment prior to membrane exposure. Please refer to Dechlorinating Feedwater (Form No. 45-D01569-en) for more information

Important Information

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. 45-D01609-en) 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.

Please refer to the FilmTec™ Reverse Osmosis Membranes Technical Manual (Form No. 45-D01504-en).

Artículo 123 # 1316 Nte.,
Col. Talleres, Monterrey, N.L.

www.productospolo.com

818-333-9896, 818-333-9696
ventas@productospolo.com

General Information

- Keep elements moist at all times after initial wetting
- If operating limits and guidelines given in this bulletin are not strictly followed, the limited warranty will be null and void. Refer to FilmTec™ Reverse Osmosis and Nanofiltration Three-Year Prorated Limited Warranty (Form No. 45-D00903-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
- Maximum pressure drop across an entire pressure vessel (housing) is 50 psi (3.4 bar)
- Avoid static permeate-side backpressure at all times

Storage

Refer to Storage and Shipping of New FilmTec™ Elements (Form No. 45-D01633-en) for further information.

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.

Regulatory Note

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

Artículo 123 # 1316 Nte.,
Col. Talleres, Monterrey, N.L.

www.productospolo.com

818-333-9896, 818-333-9696
ventas@productospolo.com

DUPONT

Product Data Sheet

FilmTec™ BW30-400/34 Element

Description

Ideal for: reverse osmosis plant managers and operators dealing with challenging waters and wastewaters and looking for consistency, high performance, long element life, increased productivity and low fouling features.

Offering proven performance, FilmTec™ BW30-400/34:

- Delivers high quality permeate water while minimizing CAPEX
- Offers highly effective cleaning performance, robustness and durability due to its widest cleaning pH range (1 – 13) tolerance and the support of FilmTec™ technical representatives

Product Type

Spiral-wound element with polyamide thin-film composite membrane

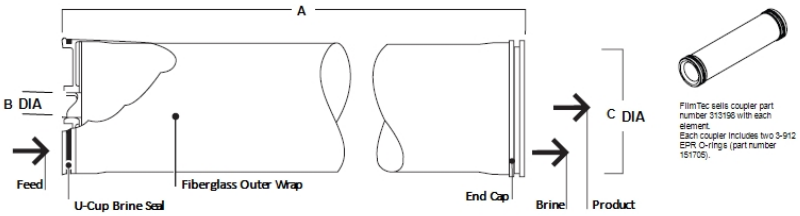
Typical Properties

FilmTec™ Element	Active Area (ft^2)	Active Area (m^2)	Feed Spacer Thickness (mil)	Permeate Flow Rate (GPD)	Permeate Flow Rate (m^3/d)	Typical Stabilized Salt Rejection (%)	Minimum Salt Rejection (%)
BW30-400/34	400	37	34	10,500	40	99.5	99.0

1. Permeate flow and salt (NaCl) rejection based on the following standard test conditions: 2,000 ppm NaCl, 225 psi (15.5 bar), 77°F (25°C), pH 8, 15% recovery.
2. Flow rates for individual elements may vary but will be no more than 15% below the value shown.
3. Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.
4. Sales specifications may vary as design revisions take place.
5. Active area guaranteed ± 3%. Active area as stated by DuPont Water Solutions is not comparable to nominal membrane area often stated by some manufacturers.

Form No. 45-D01704-en, Rev. 5
October 2020

Element Dimensions



Dimensions – inches (mm)						1 inch = 25.4 mm
	A		B		C	
FilmTec™ Element	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)
BW30-400/34	40.0	1,016	1.125 ID	29 ID	7.9	201

1. Refer to FilmTec™ Design Guidelines for multiple-element systems of 8-inch elements (Form No. 45-D01695-en).
2. Element to fit nominal 8-inch (203-mm) I.D. pressure vessel.

Operating and Cleaning Limits

Maximum Operating Temperature [a]	113°F (45°C)
Maximum Operating Pressure	600 psig (41 bar)
Maximum Element Pressure Drop	15 psig (1.0 bar)
pH Range	
Continuous Operation [a]	2 – 11
Short-Term Cleaning (30 min.) [b]	1 – 13
Maximum Feed Silt Density Index (SDI)	SDI 5
Free Chlorine Tolerance [c]	< 0.1 ppm

a. Maximum temperature for continuous operation above pH 10 is 95°F (35°C).
b. Refer to Cleaning Guidelines (Form No. 45-D01696-en).
c. 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 Dechlorinating Feedwater (Form No. 45-D01569-en) for more information.

Additional Important Information

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

- Usage Guidelines for FilmTec™ 8" Elements (Form No. 45-D01706-en)
- Start-Up Sequence (Form No. 45-D01609-en)

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.

Form No. 45-D01704-en, Rev. 5
October 2020

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.

Regulatory Note

This product 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

DUPONT™

Form No. 45-D01704-en, Rev. 5
October 2020