

RO MEMBRANE



OSMOTEC
power of separation

2024

EDITION FOR
REDAWATER GROUP



www.redawatergroup.com



OSMOTEC
power of separation


SM SW- 8040 - 400 HRFR/34

Abbreviation	Membrane Type	Diameter	Length	Active Area	Membrane Series	Feed Spacer
OSMOTEC Membranes	SW: Seawater	80: 8" 40: 4"	40: 40"	440: 440 ft ² 400: 400 ft ² 82: 82 ft ²	HR: High Rejection; XLE: Extra Low Energy; HRLE: High Rejection & Low Energy; HRFR: High Rejection & Fouling Resistance; XHR: Extra High Rejection.	28: 28 mil 34: 34 mil

Seawater Desalination RO Membrane Performance Specifications

Type	Membrane Model	Active Area ft ² (m ²)	Flux gpd (m ³ /d)	Min. Rejection Rate (%)	Stablized Rejection Rate (%)	Stabilized Boron Rejection Rate (%)	Test Conditions		
							Pressure psi (MPa)	Solution NaCl (ppm)	Recovery (%)
HR	SM SW-8040-400HR	400 (37.2)	6,500 (24.5)	99.65	99.80	92.0	800 (5.5)	32,000	8
	SM SW-4040-82HR	82 (7.6)	1,320 (5)	99.60	99.75	/			
XLE	SM SW-8040-400XLE	400 (37.2)	9,000 (34)	99.60	99.80	92.0			
	SM SW-8040-440XLE	440 (41)	9,750 (37)	99.60	99.80	92.0			
	SM SW-4040-82XLE	82 (7.6)	1,660 (6.3)	99.60	99.65	/			
HRLE	SM SW-8040-400HRLE	400 (37.2)	7,400 (28)	99.65	99.80	92.0			
	SM SW-8040-440HRLE	440 (41)	7,900 (30)	99.65	99.80	92.0			
	SM SW-4040-82HRLE	82 (7.6)	1,600 (6.1)	99.60	99.70	/			
HRFR	SM SW-8040-400HRFR/34	400 (37.2)	7,400 (28)	99.65	99.80	92.0			
XHR	SM SW-8040-400XHR	400 (37.2)	6,100 (23)	99.70	99.82	92.0			
	SM SW-8040-440XHR	440 (41)	6,600 (25)	99.70	99.82	92.0			
	SM SW-4040-82XHR	82 (7.6)	1,180 (4.5)	99.60	99.75	/			


SM BW- 8040 - 400 FR/34

Abbreviation	Membrane Type	Diameter	Length	Active Area	Membrane Series	Feed Spacer
 OSMOTEC Membranes	BW: Brackish Water	80: 8" 40: 4"	40: 40"	440: 440 ft ² 400: 400 ft ² 82: 82 ft ²	HR: High Rejection; FR: Fouling Resistance; XFR: Extra Fouling Resistance; XLE: Extra Low Energy; FRLE: Fouling Resistance & Low Energy; HRLE: High Rejection & Low Energy	28: 28 mil 34: 34 mil

Industrial Brackish Water RO Membrane Performance Specification

Type	Membrane Model	Active Area ft² (m²)	Flux gpd (m³/d)	Min. Rejection Rate (%)	Stablized Rejection Rate (%)	Test Conditions		
						Pressure psi (MPa)	Solution NaCl (ppm)	Recovery (%)
HR	SM BW-8040-400HR	400 (37.2)	11,350 (43)	99.4	99.7	225 (1.55)	2,000	15
	SM BW-8040-440HR	440 (41)	12,560 (48)	99.4	99.7			
	SM BW-4040-82HR	82 (7.6)	2,250 (8.6)	99.3	99.5			
FR	SM BW-8040-400FR/34	400 (37.2)	11,100 (42)	99.35	99.5			
	SM BW-4040-82FR/34	82 (7.6)	2,000 (7.6)	99.3	99.5			
XFR	SM BW-8040-400XFR/34	400 (37.2)	11,350 (43)	99.4	99.6			
	SM BW-4040-82XFR/34	82 (7.6)	2,050 (7.8)	99.4	99.6			
XLE	SM BW-8040-400XLE	400 (37.2)	12,550 (47.5)	98.0	99.0	125 (0.86)	500	
	SM BW-8040-440XLE	440 (41)	14,000 (53)	98.0	99.0			
	SM BW-4040-82XLE	82 (7.6)	2,400 (9.1)	98.0	99.0			
FRLE	SM BW-8040-400FRLE/34	400 (37.2)	10,500 (40)	99.1	99.3	150 (1.03)	1500	
	SM BW-4040-82FRLE/34	82 (7.6)	1,900 (7.2)	99.0	99.3			
HRLE	SM BW-8040-400HRLE	400 (37.2)	11,350 (43)	99.1	99.3			
	SM BW-8040-440HRLE	440 (41)	12,560 (48)	99.1	99.3			
	SM BW-4040-82HRLE	82 (7.6)	2,250 (8.5)	99.0	99.3			

SM ULP- 8040 - 400

Abbreviation	Membrane Type	Diameter	Length	Active Area
 Membranes	LP: Low Pressure ULP: Ultra Low Pressure XLP: Extra Low Pressure	80: 8" 40: 4" 25: 2.5"	40: 40" 21: 21"	440: 440 ft ² 400: 400 ft ² 82: 82 ft ²


Brackish Water Membrane Performance Specification

Type	Membrane Model	Active Area ft ² (m ²)	Flux gpd (m ³ /d)	Min. Rejection Rate (%)	Stablized Rejection Rate (%)	Test Conditions		
						Pressure psi (MPa)	Solution NaCl (ppm)	Recovery (%)
LP	SM LP-4040-82	82 (7.6)	2,250 (8.6)	99.3	99.6	225 (1.55)	2,000	15
	SM LP-8040-400	400 (37.2)	11,100 (42)	99.3	99.6			
ULP	SM ULP-4040-82	82 (7.6)	2,250 (8.6)	99.0	99.5	150 (1.03)	1,500	15
	SM ULP-8040-400	400 (37.2)	11,350 (43)	99.0	99.5			
	SM ULP-8040-440	440 (41)	12,650 (48)	99.0	99.5			
XLP	SM XLP-4040-82	82 (7.6)	2,220 (8.4)	98.0	99.0	100 (0.69)	500	15
	SM XLP-8040-400	400 (37.2)	11,900 (45)	98.0	99.0			
	SM XLP-8040-440	440 (41)	13,200 (50)	98.0	99.0			

Commercial Membrane Performance Specification

Type	Membrane Model	Active Area ft ² (m ²)	Flux gpd (m ³ /d)	Min. Rejection Rate (%)	Stablized Rejection Rate (%)	Test Conditions		
						Pressure psi (MPa)	Solution NaCl (ppm)	Recovery (%)
Commercial Seawater Desalination	SM SW-2540-28HR	28 (2.6)	580 (2.2)	99.55	99.7	800 (5.5)	32,000	8
	SM SW-4021-33HR	33 (3.1)	660 (2.5)	99.55	99.65			5
	SM SW-2521-12HR	12 (1.1)	240 (0.9)	99.5	99.6			5
	SM SW-2540-28HRLE	28 (2.6)	680 (2.6)	99.5	99.65			8
	SM SW-4021-33HRLE	33 (3.1)	790 (3)	99.5	99.6			5
	SM SW-2521-12HRLE	12 (1.1)	290 (1.1)	99.4	99.55			5

SM NF - 90 - 80 40 - 400 / 34

Abbreviation	Membrane Type	MWCO	Diameter	Length	Active Area	Feed Spacer
	Nanofiltration	90 150 280 500	80: 8" 40: 4"	40: 40"	400: 400 ft ² 82: 82 ft ²	28: 28 mil 34: 34 mil

Nano Filtration Membrane Performance Specifications

Type	Membrane Model	Active Area ft ² (m ²)	Flux gpd (m ³ /d)	Stablized Rejection Rate (%)	Test Conditions		
					Pressure psi (MPa)	Solution NaCl (ppm)	Recovery (%)
90 Series	SM NF-90-8040-400	400 (37.2)	8,200 (31)	> 98.5	70 (0.48)	2,000 ppm MgSO ₄	15
	SM NF-90-4040-82	82 (7.6)	1,580 (6)	> 98.5			
150 Series	SM NF-150-8040-400/34	400 (37.2)	8,950 (34)	> 98			
	SM NF-150-4040-82	82 (7.6)	1,850 (7)	> 98			
280 Series	SM NF-280-8040-400	400 (37.2)	12,410 (47)	> 97			
	SM NF-280-4040-82	82 (7.6)	2,430 (9.2)	> 97			
500 Series	SM NF-500-8040-400	400 (37.2)	13,200 (50.0)	> 90			
	SM NF-500-4040-82	82 (7.6)	2,900 (11)	> 90			

1. SW SERIES -SEAWATER DESALINATION RO MEMBRANES

HR- High Rejection SWRO Membranes

SM SW-HR series are membrane elements with high rejection rate developed for seawater desalination, which can ensure long-term stable high rejection rate while reaching the standard flux.

Product Highlights

- High boron removal rate and high rejection rate
- Increased sheet thickness and cross-linking degree to ensure the service life and chemical resistance of membranes
- Adopt the short membrane sheet length design to increase the utilization rate of effective area and reduce the fouling rate of membranes



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM SW-8040-400HR	40 (1,016)	/	1.125 (29)	7.9 (201)
SM SW-4040-82HR	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Area ft ² (m ²)	Minimum Rejection Rate %	Stablized Rejection Rate %	Stabilized Boron Rejection Rate %	Flux gpd (m ³ /d)
SM SW-8040-400HR	400 (37.2)	99.65	99.80	92.0	6,500 (24.5)
SM SW-4040-82HR	82 (7.6)	99.60	99.75	/	1,320 (5)

Flux and rejection rate is based on the following standard test conditions: 5.5 MPa (800 psi) pressure, 77°F (25°C), 32000 ppm NaCl solution and pH 8 for feedwater, and 8% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 83 bar (1200 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

1. SW SERIES -SEAWATER DESALINATION RO MEMBRANES

XHR- Extra High Rejection SWRO Membranes

SM SW-XHR series are based on the production process of SM SW-HR series, which increases the density of the sheet and further upgrades the rejection rate. The membrane elements have extra high rejection rate and can maintain high stability in long-term operation.

Product Highlights

- Increased density of the sheet effectively improve the rejection rate of membranes
- High boron removal rate and high rejection rate
- Non-oxidation post-treatment process ensure the service life and chemical stability of membranes
- Adopt short membrane sheet length design to increase the utilization rate of the effective area, make the flux distribution on the membrane surface more uniform, and reduce the fouling rate of membranes



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM SW-8040-400XHR	40 (1,016)	/	1.125 (29)	7.9 (201)
SM SW-8040-440XHR	40 (1,016)	/	1.125 (29)	7.9 (201)
SM SW-4040-82XHR	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Area ft ² (m ²)	Minimum Rejection Rate %	Stablized Rejection Rate %	Stabilized Boron Rejection Rate %	Flux gpd (m ³ /d)
SM SW-8040-400XHR	400 (37.2)	99.70	99.82	92.0	6,100 (23)
SM SW-8040-440XHR	440 (41)	99.70	99.82	92.0	6,600 (25)
SM SW-4040-82XHR	82 (7.6)	99.6	99.75	/	1,180 (4.5)

Flux and rejection rate is based on the following standard test conditions: 5.5 MPa (800 psi) pressure, 77°F (25°C), 32000 ppm NaCl solution and pH 8 for feedwater, and 8% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 83 bar (1200 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

1. SW SERIES -SEAWATER DESALINATION RO MEMBRANES

HRLE- High Rjection & low Energy SWRO Membranes

SM SW-HRLE series are aimed at the problem of high energy consumption of conventional seawater desalination membranes. The membrane performance has been upgraded again to achieve high rejection rate while reducing operating energy consumption and saving costs for users.

Product Highlights

- Help the system to operate at lower energy consumption, or obtain higher flux under the same pressure
- High rejection rate, high flux and high boron removal
- Non-oxidation post-treatment process ensure the service life and chemical stability of membranes
- Adopt short membrane sheet length design to increase the utilization rate of the effective area, make the flux distribution on the membrane surface more uniform, and reduce the fouling rate of membranes



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM SW-8040-400HRLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM SW-8040-440HRLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM SW-4040-82HRLE	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Area ft ² (m ²)	Minimum Rejection Rate %	Stablized Rejection Rate %	Stabilized Boron Rejection Rate %	Flux gpd (m ³ /d)
SM SW-8040-400HRLE	400 (37.2)	99.65	99.80	92.0	7,400 (28)
SM SW-8040-440HRLE	440 (41)	99.65	99.80	92.0	7,900 (30)
SM SW-4040-82HRLE	82 (7.6)	99.60	99.70	/	1,600 (6.1)

Flux and rejection rate is based on the following standard test conditions: 5.5 MPa (800 psi) pressure, 77°F (25°C), 32000 ppm NaCl solution and pH 8 for feedwater, and 8% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 83 bar (1200 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

1. SW SERIES -SEAWATER DESALINATION RO MEMBRANES

HRFR- High Rjection & Fouling Resistance SWRO Membranes

SM SW-HRFR series are developed for seawater with complex water quality or concentrated brine with high hardness and organic matter. The membrane has been specially treated to effectively reduce the adhesion of organic matter and inorganic salts on the membrane surface, and at the same time reduce frequency of chemical cleaning.

Product Highlights

- Adopt the unique anti-pollution rolling design patent and the special treatment process of the sheet to reduce frequency of chemical cleaning
- Anti-pollution coating is added to the sheet to solve the problem of pollutant adhesion and improve the recovery ability after chemical cleaning
- Non-oxidation post-treatment process ensure the service life and chemical stability of membranes
- Adopt short membrane sheet length design to increase the utilization rate of the effective area, make the flux distribution on the membrane surface more uniform, and reduce the fouling rate of membranes



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM SW-8040-400HRFR/34	40 (1,016)	/	1.125 (29)	7.9 (201)

Product Specifications

	Effective Area ft ² (m ²)	Minimum Rejection Rate %	Stablized Rejection Rate %	Stabilized boron rejection rate %	Flux gpd (m ³ /d)
SM SW-8040-400HRFR/34	400 (37.2)	99.65	99.80	92.0	7,400 (28)

Flux and rejection rate is based on the following standard test conditions: 5.5 MPa (800 psi) pressure, 77°F (25°C), 32000 ppm NaCl solution and pH 8 for feedwater, and 8% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 83 bar (1200 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

1. SW SERIES -SEAWATER DESALINATION RO MEMBRANES

XLE- Extra Low Energy SWRO Membranes

SM SW-XLE series are low-energy and high-flux membrane elements developed to reduce the energy consumption of the system. It can effectively reduce the energy consumption of the pump, or achieve higher flux than other SWRO models under the same operating pressure, which is suitable for users who pursue higher flux.

Product Highlights

- High rejection rate and high flux
- Lower energy consumption
- Improve water production economy



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM SW-8040-400XLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM SW-8040-440XLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM SW-4040-82XLE	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Area ft ² (m ²)	Minimum Rejection Rate %	Stablized Rejection Rate %	Stabilized boron rejection rate %	Flux gpd (m ³ /d)
SM SW-8040-400XLE	400 (37.2)	99.60	99.80	92.0	9,000 (34)
SM SW-8040-440XLE	440 (41)	99.60	99.80	92.0	9,750 (37)
SM SW-4040-82XLE	82 (7.6)	99.60	99.65	/	1,660 (6.3)

Flux and rejection rate is based on the following standard test conditions: 5.5 MPa (800 psi) pressure, 77°F (25°C), 32000 ppm NaCl solution and pH 8 for feedwater, and 8% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 83 bar (1200 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

2. BW SERIES- INDUSTRIAL BRACKISH WATER RO MEMBRANES

HR- HIGH REJECTION BWRO MEMBRANES

BW RO membrane elements are mainly used for brackish water desalination. They provide excellent, stable and consistent membrane performance for industrial water treatment systems. The element operates under low pressure providing a more cost effective alternative for industrial-grade water treatment applications. It has high rejection rate for dissolved salts that are difficult to remove, such as TOC, SiO₂, etc., and therefore, applicable to near zero discharge for oil and petrochemical industry waste water treatment and feed water for thermal power plant boilers.

Product Highlights

- Stable performance and high rejection rate for organics
- Low operating pressures, high flux and cost saving
- Meet the demand for near zero discharge



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM BW-8040-400HR	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-8040-440HR	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-4040-82HR	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Minimum Rejection Rate %	Stabilized Rejection Rate %	Flux gpd (m ³ /d)
SM BW-8040-400HR	400 (37.2)	99.4	99.7	11,350 (43)
SM BW-8040-440HR	440 (41)	99.4	99.7	12,560 (48)
SM BW-4040-82HR	82 (7.6)	99.3	99.5	2,250 (8.6)

Flux and rejection rate is based on the following standard test conditions: 1.55 MPa (225 psi) pressure, 77°F (25°C), 2000 ppm NaCl solution and pH 8 for feedwater, and 15% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

2. BW SERIES- INDUSTRIAL BRACKISH WATER RO MEMBRANES

HR- HIGH REJECTION BWRO MEMBRANES

BW RO membrane elements are mainly used for brackish water desalination. They provide excellent, stable and consistent membrane performance for industrial water treatment systems. The element operates under low pressure providing a more cost effective alternative for industrial-grade water treatment applications. It has high rejection rate for dissolved salts that are difficult to remove, such as TOC, SiO₂, etc., and therefore, applicable to near zero discharge for oil and petrochemical industry waste water treatment and feed water for thermal power plant boilers.

Product Highlights

- Stable performance and high rejection rate for organics
- Low operating pressures, high flux and cost saving
- Meet the demand for near zero discharge



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM BW-8040-400HR	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-8040-440HR	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-4040-82HR	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Minimum Rejection Rate %	Stabilized Rejection Rate %	Flux gpd (m ³ /d)
SM BW-8040-400HR	400 (37.2)	99.4	99.7	11,350 (43)
SM BW-8040-440HR	440 (41)	99.4	99.7	12,560 (48)
SM BW-4040-82HR	82 (7.6)	99.3	99.5	2,250 (8.6)

Flux and rejection rate is based on the following standard test conditions: 1.55 MPa (225 psi) pressure, 77°F (25°C), 2000 ppm NaCl solution and pH 8 for feedwater, and 15% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

2. BW SERIES- INDUSTRIAL BRACKISH WATER RO MEMBRANES

FR- FOULING RESISTANCE BWRO MEMBRANES

FR series RO membrane elements are highly resistant to organic and microbial contamination, and are used to treat water sources such as paper plants waste water, dyeing waste water and industrial waste water from thermal power plants. The proprietary technology alters the electric-static charges and smoothness of the membrane surface, and enhances the hydrophilicity of the membrane surface. These alternatives greatly reduce the pollutants and microorganisms attached to the surface layer, therefore it reduces the fouling rate and extends service life. It is capable to tackle with poor feed water quality.

Product Highlights

- Excellent anti-pollution properties with the special process treated on the membrane surface
- Suitable for water treatment systems with poor inlet water quality
- Effectively reduces the frequency of membrane cleaning, thereby prolonging the service life



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM BW-8040-400FR/34	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-4040-82FR/34	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Minimum Rejection Rate %	Stabilized Rejection Rate %	Flux gpd (m ³ /d)
SM BW-8040-400FR/34	400 (37.2)	99.35	99.5	11,100 (42)
SM BW-4040-82FR/34	82 (7.6)	99.3	99.5	2,000 (7.6)

Flux and rejection rate is based on the following standard test conditions: 1.55 MPa (225 psi) pressure, 77°F (25°C), 2000 ppm NaCl solution and pH 8 for feedwater, and 15% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

2. BW SERIES- INDUSTRIAL BRACKISH WATER RO MEMBRANES

XFR- EXTRA FOULING RESISTANCE BWRO MEMBRANES

XFR series RO membranes are manufactured by the optimized formula, reaction conditions and posttreatment. The membrane thin film layer is denser, more hydrophilic, and the membrane surface is smoother. The membrane element is optimized in structure and manufactured with premium material. The membrane can effectively purify feed water with biological and organic pollution. XFR series adopts the latest membrane technology enabling industry's first-class organism fouling resistance and cleanability. It provides membrane elements with excellent fouling resistance and super durability for the difficult waste water treatment.

Product Highlights

- Better anti-fouling performance with smooth membrane surface
- Good recovery performance after chemical cleaning
- Stable flux and high rejection rate



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM BW-8040-400XFR/34	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-4040-82XFR/34	37.9 (963)	1.05(26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Minimum Rejection Rate %	Stabilized Rejection Rate %	Flux gpd (m ³ /d)
SM BW-8040-400XFR/34	400 (37.2)	99.4	99.6	11,350 (43)
SM BW-4040-82XFR/34	82 (7.6)	99.4	99.6	2,050 (7.8)

Flux and rejection rate is based on the following standard test conditions: 1.55 MPa (225 psi) pressure, 77°F (25°C), 2000 ppm NaCl solution and pH 8 for feedwater, and 15% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

2. BW SERIES- INDUSTRIAL BRACKISH WATER RO MEMBRANES

HRLE -HIGH REJECTION & FOULING RESISTANCE BWRO MEMBRANES

HRLE series RO membranes change the surface characteristics through increasing the density of the sheet compared with traditional brackish water membrane elements. The membrane elements have stable rejection rate and the operating pressure is reduced by 33%. The application of this model enables the entire reverse osmosis system to provide the same permeate quality while reducing energy consumption by 1/3, thus improve the system's operating economy. In addition, the number of membrane elements used in the system is reduced to save the construction cost of system.

Product Highlights

- High flux and high rejection rate
- Reduce operating energy consumption while ensuring the permeate quality
- Suitable for wider PH range to achieve good cleaning and recovery performance



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM BW-8040-400HRLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-8040-440HRLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-4040-82HRLE	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Minimum Rejection Rate %	Stabilized Rejection Rate %	Flux gpd (m ³ /d)
SM BW-8040-400HRLE	400 (37.2)	99.1	99.3	11,350 (43)
SM BW-8040-440HRLE	440 (41)	99.1	99.3	12,560 (48)
SM BW-4040-82HRLE	82 (7.6)	99.0	99.3	2,250 (8.5)

Test conditions: 1,500 ppm NaCl, 1.03 MPa (150 psi), 25 °C (77 °F), pH=8, recovery 15%

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

2. BW SERIES- INDUSTRIAL BRACKISH WATER RO MEMBRANES

FRLE- FOULING RESISTANCE & LOW ENERGY BWRO MEMBRANES

FRLE series RO membranes have the characteristic of fouling resistance and low energy. This membrane element is developed for treating water quality with high tendency of biological pollution or organic pollution. Its operating pressure is 30% lower than that of ordinary brackish water reverse osmosis membrane elements, energy consumption is reduced by about 1/3.

Product Highlights

- Reduce the operating energy consumption of system to improve the economic benefits
- Good anti-pollution performance, suitable for high-pollution inlet water quality



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM BW-8040-400FRLE/34	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-4040-82FRLE/34	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Minimum Rejection Rate %	Stabilized Rejection Rate %	Flux gpd (m ³ /d)
SM BW-8040-400FRLE/34	400 (37.2)	99.1	99.3	10,500 (40)
SM BW-4040-82FRLE/34	82 (7.6)	99.0	99.3	1,900 (7.2)

Test conditions: 1,500 ppm NaCl, 1.03 MPa (150 psi), 25 °C (77 °F), pH=8, recovery 15%

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

2. BW SERIES- INDUSTRIAL BRACKISH WATER RO MEMBRANES

XLE- EXTRA LOW ENERGY BWRO MEMBRANES

By changing membrane surface and chemical properties, and upgrading the formulation and production conditions for both the supporting layer and thin film composite layer, XLE Series RO membrane offer enlarged specific surface area and hydrophilicity to maximize permeate flux rate. It is applicable for municipal waste water treatment, and it is one of the membrane elements with the highest water flux and lowest operating pressure. The total cost of the system with this element is the low, therefore it can significantly improve overall operating economy of the membrane system. As the latest RO membrane element with extra-low energy consumption and high performance, its operating pressure is about 1/2 less than regular BW RO membrane elements, and the rejection rate can reach 99%.

Product Highlights

- High flux rate and low operating pressure
- Lower power consumption of membrane systems without compromising high rejection rate



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM BW-8040-400XLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-8040-440XLE	40 (1,016)	/	1.125 (29)	7.9 (201)
SM BW-4040-82XLE	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Minimum Rejection Rate %	Stabilized Rejection Rate %	Flux gpd (m ³ /d)
SM BW-8040-400XLE	400 (37.2)	98.0	99.0	12,550 (47.5)
SM BW-8040-440XLE	440 (41)	98.0	99.0	14,000 (53)
SM BW-4040-82XLE	82 (7.6)	98.0	99.0	2,400 (9.1)

Test conditions: 500 ppm NaCl, 0.86 MPa (125 psi), 25 °C (77 °F), pH=8, recovery 15%

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

3. ORDINARY BRACKISH WATER LP/ULP/XLP SERIES RO MEMBRANES

ORDINARY BRACKISH WATER LP SERIES RO MEMBRANES

LP low-pressure brackish water reverse osmosis membrane element is mainly used for brackish water desalination. It has the characteristics of low operating pressure, high flux, high rejection rate, and stable performance. It is suitable for surface water and groundwater with low salinity. It can be used in Purification of drinking water, preparation of pure water in electronics, electric power and other fields. Thereby reducing the investment cost of relevant pumps, pipelines, containers and other equipment and the operating cost of the RO system, and improving economic benefits.

Product Highlights

- Low operating energy consumption, high rejection rate while ensuring high flux
- Non-oxidation treatment process ensure the stability and service life of the membrane
- Suitable for the water quality and temperature environment in most areas



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM LP-4040-82	37.9 (963)	1.05 (26.7)	0.75 (19)	3.9 (99)
SM LP-8040-400	40 (1,016)	/	1.125 (29)	7.9 (201)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Stabilized Rejection Rate %	Minimum Rejection Rate %	Flux gpd (m ³ /d)
SM LP-4040-82	82 (7.6)	99.6	99.3	2,250 (8.6)
SM LP-8040-400	400 (37.2)	99.6	99.3	11,100 (42)

Flux and rejection rate is based on the following standard test conditions: 1.55 MPa (225 psi) pressure, 77°F (25°C), 2000 ppm NaCl solution and pH 8 for feedwater, and 15% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

3.ORDINARY BRACKISH WATER LP/ULP/XLP SERIES RO MEMBRANES

ORDINARY BRACKISH WATER ULP SERIES RO MEMBRANES

ULP series RO membranes are suitable for desalination treatment of water sources such as surface water, ground water, tap water and municipal water with a salt content below about 2000ppm. They are mainly used in various scales of pure water, boiler feed water, food processing and pharmaceutical manufacturing industries, etc. In this field, it can achieve the same high flux and high rejection rate as conventional low-pressure membranes under ultra-low operating pressure conditions. Its operating pressure is about 2/3 of that conventional low-pressure composite membranes, and the rejection rate can reach 99.5%, thereby reducing the investment costs of related pumps, pipelines, containers and other equipment and the operating costs of reverse osmosis systems, and improving economic benefits.

Product Highlights

- High flux and high rejection rate
- Low operating cost, good economic benefits



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM ULP-4040-82	37.9(963)	1.05 (26.7)	0.75(19)	3.9(99)
SM ULP-8040-400	40 (1,016)	/	1.125 (29)	7.9(201)
SM ULP-8040-440	40 (1,016)	/	1.125 (29)	7.9(201)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Stabilized Rejection Rate %	Minimum Rejection Rate %	Flux gpd (m ³ /d)
SM ULP-4040-82	82 (7.6)	99.5	99.0	2,250 (8.6)
SM ULP-8040-400	400 (37.2)	99.5	99.0	11,350 (43)
SM ULP-8040-440	440 (41)	99.5	99.0	12,650 (48)

Flux and rejection rate is based on the following standard test conditions: 1.03 MPa (150 psi) pressure, 77°F (25°C), 1500 ppm NaCl solution and pH 8 for feedwater, and 15% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.

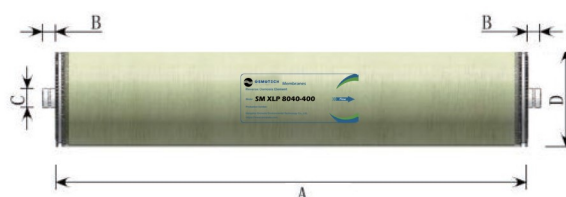
3. ORDINARY BRACKISH WATER LP/ULP/XLP SERIES RO MEMBRANES

ORDINARY BRACKISH WATER XLP SERIES RO MEMBRANES

XLP series RO membranes are suitable for the treatment of low-salinity water sources that do not require high desalination rate, such as surface water, groundwater, tap water and municipal water with a salt content less than 1000ppm, especially suitable for the second segment desalination of two-segment RO system, which can achieve the same high flux and high rejection rate as conventional low-pressure membranes under extremely low operating pressure conditions. Its operating pressure is about 1/2 of that conventional low-pressure composite membranes, and the rejection rate can reach 99.0%. Thereby reducing the investment cost of relevant pumps, pipelines, containers and other equipment and the operating cost of the reverse osmosis system, and improving economic benefits. It is mainly used in various fields such as pure water, boiler feed water, food processing and pharmaceutical manufacturing industries of various scales.

Product Highlights

- High flux and high rejection rate
- Low operating cost, good economic benefits



Product Dimensions

	A inch (mm)	B inch (mm)	C inch (mm)	D inch (mm)
SM XLP-4040-82	37.9(963)	1.05 (26.7)	0.75(19)	3.9(99)
SM XLP-8040-400	40 (1,016)	/	1.125 (29)	7.9(201)
SM XLP-8040-440	40 (1,016)	/	1.125 (29)	7.9(201)

Product Specifications

	Effective Membrane Area, ft ² (m ²)	Stabilized Rejection Rate %	Minimum Rejection Rate %	Flux gpd (m ³ /d)
SM XLP-4040-82	82 (7.6)	99.0	98.0	2,220 (8.4)
SM XLP-8040-400	400 (37.2)	99.0	98.0	11,900 (45)
SM XLP-8040-440	440 (41)	99.0	98.0	13,200 (50)

Flux and rejection rate is based on the following standard test conditions: 0.69 MPa (100 psi) pressure, 77°F (25°C), 500 ppm NaCl solution and pH 8 for feedwater, and 15% recovery.

Operating and Cleaning Limits

- Maximum Operating Pressure: 41 bar (600 psi)
- Maximum Operating Temperature: 45°C (113°F)
- Maximum Element Pressure Drop: 1.0 bar (15 psi)
- pH Range Continuous Operation: 2-11
- pH Range Short-Term Cleaning: 1-13
- Maximum Feed SDI (SDI₁₅): 5.0
- Free Chlorine Tolerance: < 0.1 ppm

Notes

- Permeate flow for individual elements may vary ±15 percent from the value specified.
- Active membrane area guaranteed ±4%.
- Stabilized salt rejection is generally achieved within 24-48 hours of continuous use; depending upon feedwater characteristics and operating conditions.