

LG Water Solutions

TFN RO Membrane Technology



Nano:H₂O™

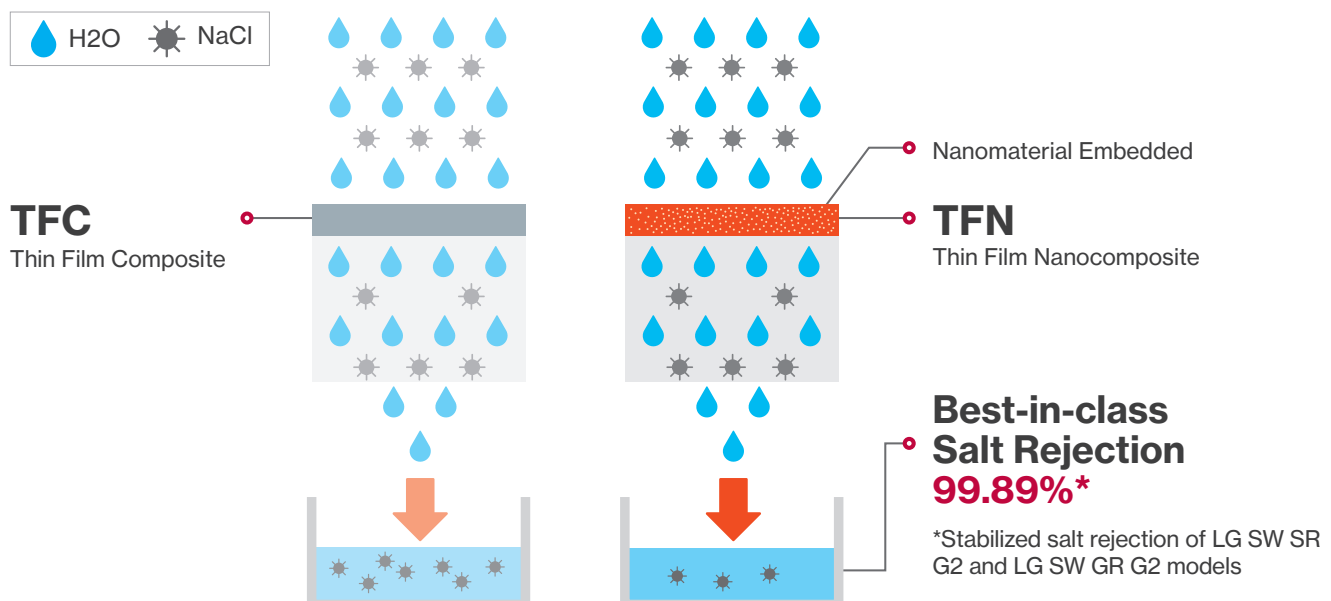
LG Water Solutions



LG Chem manufactures the full line of NanoH₂O™ seawater and brackish water reverse osmosis (RO) membranes based on the breakthrough Thin Film Nanocomposite (TFN) technology. We are constantly evolving and have had great success in winning large desalination projects and continue to strengthen market leadership for seawater RO. Beyond SWRO, our BWRO products have already proven their performance and quality that have led to repeat customers.

Technology

Thin Film Nanocomposite (TFN) technology improves membrane performance by embedding benign nanoparticles in the surface of the membrane. This innovative technology increases membrane flux up to 20% without compromising salt rejection.





Seawater Reverse Osmosis (RO) Membranes

Global Project Wins Driven by Performance

Overview

LG Chem's NanoH₂O™ seawater RO membranes, incorporated with innovative Thin Film Nanocomposite (TFN) technology, deliver industry-leading salt rejection and 20% more flow than the membranes manufactured from conventional technologies. Our seawater RO membranes significantly reduce the cost of desalination while delivering superior water quality. In LG Chem, we do our utmost to fulfill customer needs and provide additional values from excellent commercial and technical supports. With state-of-the-art technology and customer focus, LG Chem has been awarded more than 3,000 Million Liter per Day (MLD) seawater projects since its establishment.



LG SW SR G2, GR G2 and R G2

Next generation membranes with industry-leading salt rejection up to 99.89%



LG SW SR, GR and R

High-rejection membrane ideal for high feed TDS and high permeate quality requirements



LG SW ES

Energy saving membranes ideal for low feed TDS and low temperature seawater applications



Brackish Water Reverse Osmosis (RO) Membranes

Engineered for OPEX Savings

Overview

LG Chem's NanoH₂O™ brackish water RO membranes serve various municipal and industrial applications and have been operating in the major utilities around the world. Incorporating innovative Thin Film Nanocomposite (TFN) technology, all LG BWRO membranes provide superior performance along with intrinsic anti-fouling property and are suitable for applications where consistent and reliable performance is a must.

LG BW AFR G2

Anti-Fouling, High Rejection, High Flow, High Durability

LG BW AFR

Anti-Fouling, High Rejection

LG BW R G2

Superior Rejection, High Flow, High Durability

LG BW ES

Energy Saving

LG BW R Dura

High Rejection, High Durability

LG BW UES

Ultra Low Energy

LG BW R

High Rejection

LG SW G2 Membranes

With industry's **highest** salt rejection, LG SW G2 membranes can provide:

- **Improved permeate quality** without increasing operating pressure
- **Reduced energy cost** without sacrificing the permeate quality
- **Reduced capital and operation costs** for multi-pass SWRO systems

Model	Active Membrane Area, ft ² (m ²)	Permeate Flow Rate, GPD (m ³ /d)	Stabilized Salt Rejection, %	Minimum Salt Rejection, %	Boron Rejection, %	Feed Spacer, mil
LG SW 440 SR G2	440 (41)	6,600 (25.0)	99.89	99.75	93	28
LG SW 400 SR G2	400 (37)	6,000 (22.7)	99.89	99.75	93	28 or 34
LG SW 440 GR G2	440 (41)	8,250 (31.2)	99.89	99.75	93	28
LG SW 400 GR G2	400 (37)	7,500 (28.4)	99.89	99.75	93	28 or 34
LG SW 440 R G2	440 (41)	9,900 (37.5)	99.88	99.75	93	28
LG SW 400 R G2	400 (37)	9,000 (34.1)	99.88	99.75	93	34

Test Conditions : 32,000 ppm NaCl, 5 ppm Boron at 25°C (77°F), 800 psi (55 bar), pH 8, Recovery 8%

LG SW G1 Membranes

Model	Active Membrane Area, ft ² (m ²)	Permeate Flow Rate, GPD (m ³ /d)	Stabilized Salt Rejection, %	Minimum Salt Rejection, %	Boron Rejection, %	Feed Spacer, mil
LG SW 440 SR	440 (41)	6,600 (25.0)	99.85	99.7	93	28
LG SW 400 SR	400 (37)	6,000 (22.7)	99.85	99.7	93	28 or 34
LG SW 440 GR	440 (41)	8,250 (31.2)	99.85	99.7	93	28
LG SW 400 GR	400 (37)	7,500 (28.4)	99.85	99.7	93	28 or 34
LG SW 440 R	440 (41)	9,900 (37.5)	99.85	99.7	93	28
LG SW 400 R	400 (37)	9,000 (34.1)	99.85	99.7	93	28 or 34
LG SW 440 ES	440 (41)	15,070 (57.0)	99.80	99.6	89	28
LG SW 400 ES	400 (37)	13,700 (51.9)	99.80	99.6	89	34

Test Conditions : 32,000 ppm NaCl, 5 ppm Boron at 25°C (77°F), 800 psi (55 bar), pH 8, Recovery 8%

LG BWRO Membranes

Model	Active Membrane Area, ft ² (m ²)	Permeate Flow Rate, GPD (m ³ /d)	Stabilized Salt Rejection, %	Minimum Salt Rejection, %	Feed Spacer, mil	Test Pressure, psi (bar)
High Rejection Standard						
LG BW 440 R G2	440 (41)	12,650 (47.9)	99.78	99.65	28	225 (15.5)
LG BW 440 R Dura	440 (41)	11,550 (43.7)	99.70	99.60	28	225 (15.5)
LG BW 440 R	440 (41)	11,550 (43.7)	99.60	99.50	28	225 (15.5)
LG BW 400 R	400 (37)	10,500 (39.7)	99.60	99.50	34	225 (15.5)
High Rejection Anti-fouling						
LG BW 400 R G2	400 (37)	11,500 (43.5)	99.78	99.65	34, low dP	225 (15.5)
LG BW 400 AFR G2	400 (37)	11,500 (43.5)	99.70	99.60	34, low dP	225 (15.5)
LG BW 400 R Dura	400 (37)	10,500 (39.7)	99.70	99.60	34, low dP	225 (15.5)
LG BW 400 AFR	400 (37)	10,500 (39.7)	99.60	99.50	34	225 (15.5)
Energy Saving						
LG BW 400 ES	440 (41)	11,550 (43.7)	99.60	99.50	28	150 (10.3)
LG BW 400 ES	400 (37)	10,500 (39.7)	99.60	99.50	34	150 (10.3)
LG BW 400 ES L	400 (37)	10,500 (39.7)	99.60	99.50	34, low dP	150 (10.3)
Ultra Energy Saving						
LG BW 440 UES	440 (41)	12,650 (47.9)	99.00	98.00	28	125 (8.6)
LG BW 400 UES	400 (37)	11,500 (43.5)	99.00	98.00	34, low dP	125 (8.6)
Test Conditions : 2,000 ppm NaCl at 25°C (77°F), pH 8, Recovery 15%						



Light Commercial RO Membranes

Model	Active Membrane Area, ft ² (m ²)	Permeate Flow Rate, GPD (m ³ /d)	Stabilized Salt Rejection, %	Minimum Salt Rejection, %	Recovery, %	Test Pressure, psi (bar)
High Rejection¹						
LG BW 4040 R	85 (7.9)	2,500 (9.5)	99.6	99.3	15	225 (15.5)
LG BW 4021 R	34 (3.2)	1,000 (3.8)	99.6	99.3	8	225 (15.5)
LG BW 2521 R	9 (0.9)	345 (1.3)	99.6	99.3	8	225 (15.5)
Low Pressure¹						
LG BW 4040 ES	85 (7.9)	2,500 (9.5)	99.5	99.2	15	150 (10.3)
LG BW 4021 ES	34 (3.2)	1,000 (3.8)	99.5	99.2	8	150 (10.3)
LG WS 2521 ES	9 (0.9)	345 (1.3)	99.5	99.2	8	150 (10.3)
Ultra Low Pressure²						
LG CW 4040 SF*	85 (7.9)	2,900 (11.0)	99.0	98.0	15	100 (6.9)
LG BW 4040 UES	85 (7.9)	2,700 (10.2)	99.0	98.0	15	100 (6.9)
LG BW 4021 UES	34 (3.2)	1,000 (3.8)	99.0	98.0	8	100 (6.9)
LG BW 2540 UES	21 (2.0)	750 (2.8)	99.0	98.0	15	100 (6.9)
LG BW 2521 UES	9 (0.9)	345 (1.3)	99.0	98.0	8	100 (6.9)

¹Test conditions: 2,000 ppm NaCl at 25C (77F), pH 7

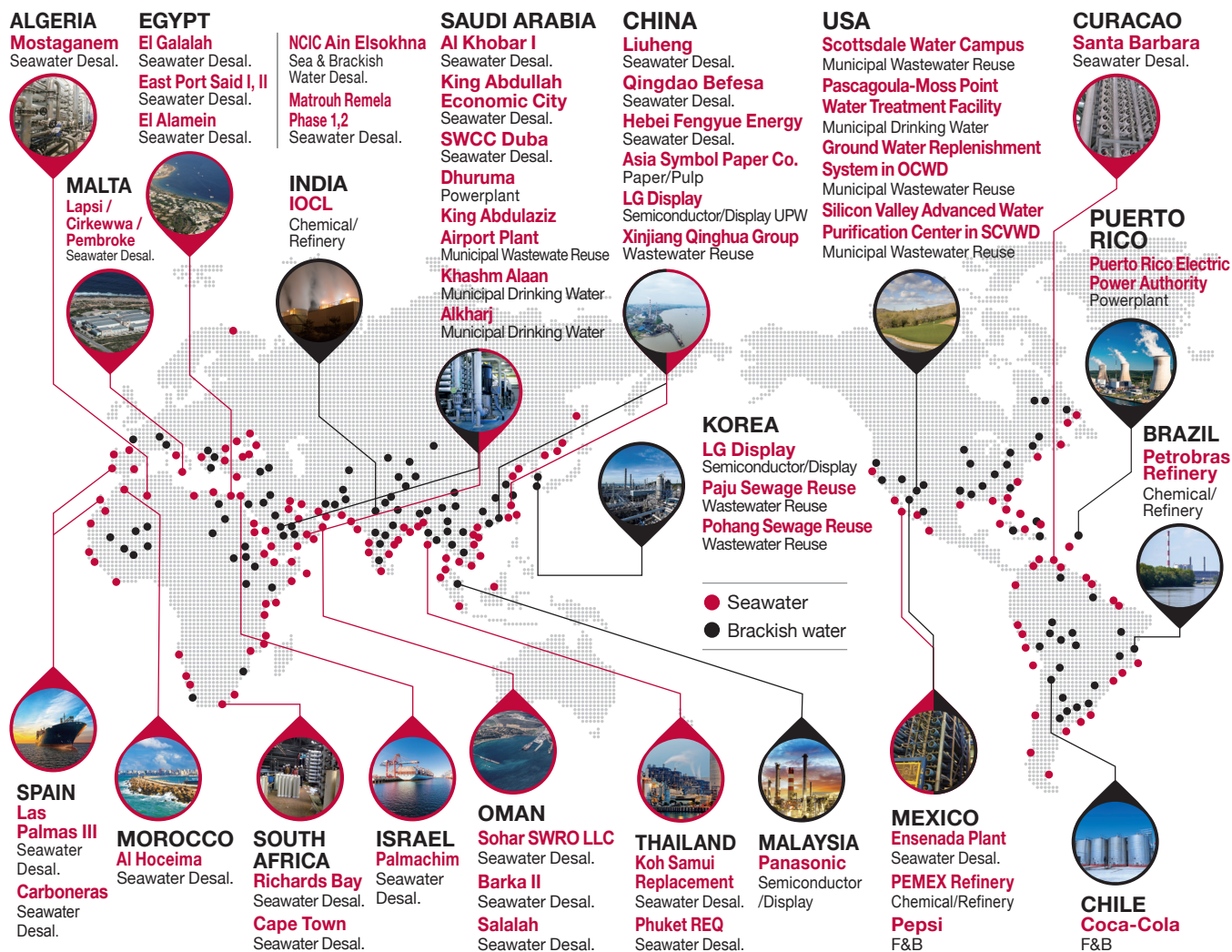
²Test conditions: 500 ppm NaCl at 25C (77F), pH 7

*Shipped dry



Proven Track Record of Performance and Quality

Selected Global References

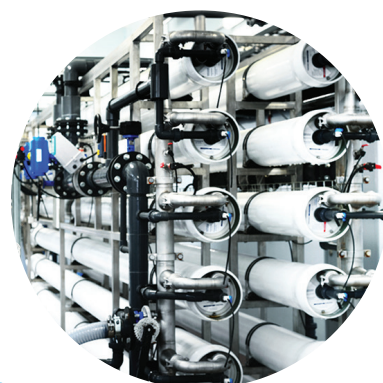




Nano:H₂O™

www.lgwatersolutions.com

Contact LG Water Solutions Today!



Regions	Phone Number	Representative Email
General Inquiries		waterinfo@lgchem.com
America	+1 424 218 4042	nasales@lgchem.com
Europe, Africa (except Egypt)	+34 682 37 73 27	eumanasales@lgchem.com
Middle East, Egypt	+971 50 558 4168	mesales@lgchem.com
Korea	+82 2 6924 3943	krsales@lgchem.com
China	+86 21 60872900	cnsales@lgchem.com
India	+91 9810013345	insales@lgchem.com
South East Asia	+82 2 6924 3944	seasales@lgchem.com