Lewabrane® Seawater RO Membrane Elements

The Lewabrane® ROS types are reverse osmosis (RO) spiral-wound elements for seawater desalination. The special chemistry of this membrane leads to higher cross-linking of the polyamide layer. This higher degree of polymerization improves the mechanical and chemical stability of the thin barrier layer, offering greater durability and more stable rejection of mixed ion salt solutions and organic periods.

The Lewabrane® ROS type product family is designed to meet and exceed the nominal performance standards for desalination and is offered in both high-rejection (HR) and high-flow (HF) product types. Three different sizes of the series are available: ROS400, ROS440, and ROS085. The RO elements ROS400, and ROS440 have a standard length of 40 inches (1,016 mm) and a diameter of 8 inches (201 mm) suitable for use within standard RO membrane equipment. The product family also includes a 4-inch (101-mm) RO element suitable for smaller applications. All 8-inch diameter elements meet today's industry standards for RO membrane surface area at 400 and 440 square feet per 8-inch by 40-inch element.

Seawater (S) High rejection (HR)/high flow (HF)	Permeate flow	Salt rejection	Membrane area	Feed spacer thickness	Dimensions
S085 HR 4040	5.2 m^3/day	99.8%	7.9 m^2	0.8 mm	1,016 / 100 / 19 mm (OD)
	1,380 gpd	99.8%	85 ft^2	31 mil	40 / 3.9 / 0.75 inch
S400 HR	24.6 m^3/day	99.8%	37.2 m^2	0.86 mm	1,016 / 201 / 29 mm
	6,500 gpd	99.8%	400 ft^2	34 mil	40 / 7.9 / 1.125 inch
S440 HR	27.3 m^3/day	99.8%	40.9 m^2	0.7 mm	1,016 / 201 / 29 mm
	7,200 gpd	99.8%	440 ft^2	28 mil	40 / 7.9 / 1.125 inch
S085 HF 4040	7.2 m^3/day	99.8%	7.9 m^2	0.8 mm	1,016 / 100 / 19 mm (OD)
	1,910 gpd	99.8%	85 ft^2	31 mil	40 / 3.9 / 0.75 inch
S400 HF	34.1 m^3/day	99.8%	37.2 m^2	0.86 mm	1,016 / 201 / 29 mm
	9,000 gpd	99.8%	400 ft^2	34 mil	40 / 7.9 / 1.125 inch
S440 HF	37.5 m^3/day	99.8%	40.9 m^2	0.7 mm	1,016 / 201 / 29 mm
	9,900 gpd	99.8%	440 ft^2	28 mil	40 / 7.9 / 1.125 inch

Test conditions: applied pressure 55.2 bar (800 psi), NaCl concentration 32,000 mg/l, 25 °C (77 °F), pH 8, and recovery rate 8%.

Lewabrane®

Key attributes of the Lewabrane® RO SHR type

- Low salt passage
- More stable salt rejection during operating lifetime
- High rejection of critical ions

Key attributes of the Lewabrane® RO SHF type

- High flow productivity
- Low salt passage at high fluxes
- Low energy demand

Applications

The Lewabrane® RO SHR type was designed for single-pass seawater desalination plants where high rejection is necessary, while the Lewabrane® RO SHF type was developed for double-pass desalination plants where low energy consumption is demanded. Of course, both types can be installed in one pressure vessel as a hybrid system to improve rejection and energy demand.

Service and support

With the LewaPlus® design software, LANXESS offers a comprehensive software design tool for RO membrane and ion exchange resin (IX) systems, which is available in several languages. It combines the Lewabrane® RO membrane design with the existing Lewatit® ion exchange resin design, allowing the designer to move seamlessly from RO design to ion exchange design all within the same design software. For seawater applications, it offers different energy recovery devices, the design of a split partial system, and the calculation of a hybrid installation in the pressure vessel. LewaPlus® can design more than 5,000 possible configurations and offers a post-treatment and a cost-energy calculation tool.

Contact

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