



DOW FILMTEC™ Membranes

Quality assurance testing of low energy DOW FILMTEC™ Seawater Reverse Osmosis elements

Features

Dow Water and Process Solutions offers various premium seawater Reverse Osmosis (RO) elements designed to reduce capital and operation costs of seawater RO desalination systems. These products combine premium membrane performance with automated precision fabrication to maximize system output and delivery of unprecedented performance.

DOW FILMTEC™ SW30ULE and SW30XLE elements are available in a complete range of active area from 400 to 440 ft² in 8-inch diameter configuration as well as in 1725 ft² 16-inch elements, delivering the highest flow rate in the industry today, accompanied by high rejection of salt (NaCl) and boron (B). This enables significant capital and operation cost savings to a SWRO desalination system.

Various test methods are used to ensure FILMTEC™ elements comply with the nominal performance described above. The same performance is also built in to the FILMTEC™ Reverse Osmosis System Analysis (ROSA) program. The principles of the various tests are described below:

1. Proactive monitoring of flux and rejection of membrane sheet produced using plate and frame equipment in a condition of 32,000 ppm NaCl, 25°C, pH 8, 800 psi and low recovery (1% or lower, due to plate and frame equipment). This proactive quality check confirms membrane sheet performance before it is released to fabricate spiral wound membrane elements. Membrane sheet failing to meet quality standards is rejected and discarded. This avoids building "bad" elements from "bad" membrane and therefore increases element quality.
2. Twenty minute wet test with 32,000 ppm NaCl at 25°C and pH 8. Due to the high productivity of SW30XLE and SW30ULE elements, a test with 800 psi and 8% recovery requires excessive feed water (and salt) consumption. Dow developed a test with 700 psi and 8% recovery to reduce the water consumption and minimize the environmental impact of the test method.

Pulse Integrity Test (PIT). Uses a low pressure (15.5 bar), low conductivity water (nanofiltered tap water), which is dosed with a high concentration (12,700 ppm) of MgSO₄. Due to the high rejection of MgSO₄, this test is the most sensitive quality check available in the industry today and reliably identifies potential construction defects that can impact the salt and solute rejection of finished seawater elements. This test also requires less water and lowers the environmental impact of the test method.

Each DOW FILMTEC™ SW30XLE and SW30ULE element is tested using test 2 or test 3 described above. Potential defects in element construction are detected and elements which do not comply with the quality protocol are discarded. The results of the twenty minute wet test are reported in a Certificate of Analysis (COA), normalized to the condition of 700 psi and 8% recovery. Results of the more sensitive Pulse Integrity Test are used to create a Certificate of Conformance (COC). All DOW FILMTEC™ elements comply with the performance described in the Table 1 above and are backed by the FILMTEC Reverse Osmosis and Nanofiltration1 Element Three-Year Prorated Limited Warranty, Form No. 609-35010.

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For more information about DOW FILMTEC membranes, call the Dow Water & Process Solutions business:

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NOTICE: 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.

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