

Reverse Osmosis Membrane Treatments

**The right combination of chemicals and consultation
for your reverse osmosis system**



Solenis offers world-class support of reverse osmosis (RO) systems used to produce purified water for a number of applications and industries. In addition to a comprehensive portfolio of RO treatment chemicals, we provide expert onsite consultation, field and laboratory services and sophisticated monitoring and control solutions, all with the goal of increasing RO recovery rates, producing less waste and improving energy efficiency.

A Complete RO Solution

Reverse osmosis (RO) is the recognized technology for producing highly purified water for many applications, including municipal drinking water, industrial boilers, food and beverage processing, cosmetics manufacturing, pharmaceutical production and seawater desalination. While industrial RO systems have evolved over the years to produce filtration that is more efficient and effective, performance suffers when the membranes they utilize become compromised. Scale and biofouling are two of the biggest factors that affect membrane function, and these foulants can cause expensive downtime and costly repairs.

Addressing these issues can be difficult, but Solenis' decades of experience with reverse osmosis membrane treatments across a variety of industrial, municipal and desalination operations means we are up to the challenge. Our extended team of field professionals and laboratory scientists bring together the right combination of knowledge and practical experience to tackle even the most demanding RO challenges, including scale caused by barium and strontium sulfate, aluminum silica and calcium fluoride.

In addition to a comprehensive portfolio of scale inhibitors, Solenis offers a full range of pretreatment chemicals, microbiological control agents and cleaners, plus sophisticated calculation software that can determine the best product to use and the optimal treatment dose. With this comprehensive RO solution, Solenis can improve RO recovery rates within the limits of the system design, which means more permeate water produced, less concentrate sent to waste and better energy efficiency.



The Right Products and People

Solenis provides advanced solutions that mitigate two big RO challenges: scale and biofouling of RO membranes.

Treatment Chemicals

Our portfolio of reverse osmosis treatment chemicals is compatible with major available membranes.

Pretreatment Chemicals

Solenis offers a full range of coagulants, flocculants, filter aids and chlorine removal chemistries to remove colloidal matter and strong oxidants before water contacts the RO membranes.

Scale Inhibitors

Our scale inhibitors, which include polymer, phosphonate and polymer blend products, protect RO membranes from a wide range of inorganic foulants, ensuring longer periods of high efficiency water production. Phosphate-free and potable water-approved formulations are also available.

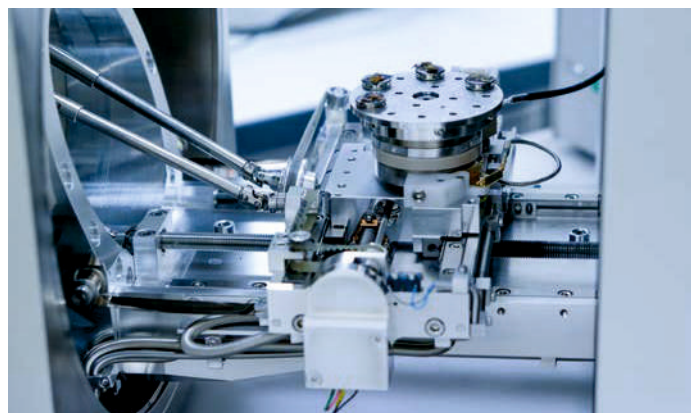
Microbiological Control Agents

Our collection of diverse microbiological control agents minimizes the buildup of organic matter, biological organisms and other foulants on the membrane surface, thereby ensuring optimal system performance and reducing internal shearing of RO membranes.

Cleaners

We also provide acidic and alkaline cleaners for routine RO membrane maintenance.

Together, this collection of chemical treatments ensures that membranes operate at peak efficiency and throughput while running longer between cleanings and maximizing useful life.



Monitoring and Control Solutions

We work with each customer to develop customized monitoring and control solutions for their reverse osmosis membrane treatment programs. Novel scale and biofilm analyzers that utilize patented ultrasonic technology provide accurate detection of scale and biofilm. Automated chemical feed and control systems provide proper chemical dosage as a function of feed rate, pH, oxygen-reduction potential and conductivity. Data management and inventory monitoring services are also available for a fully integrated solution.

Field and Laboratory Services

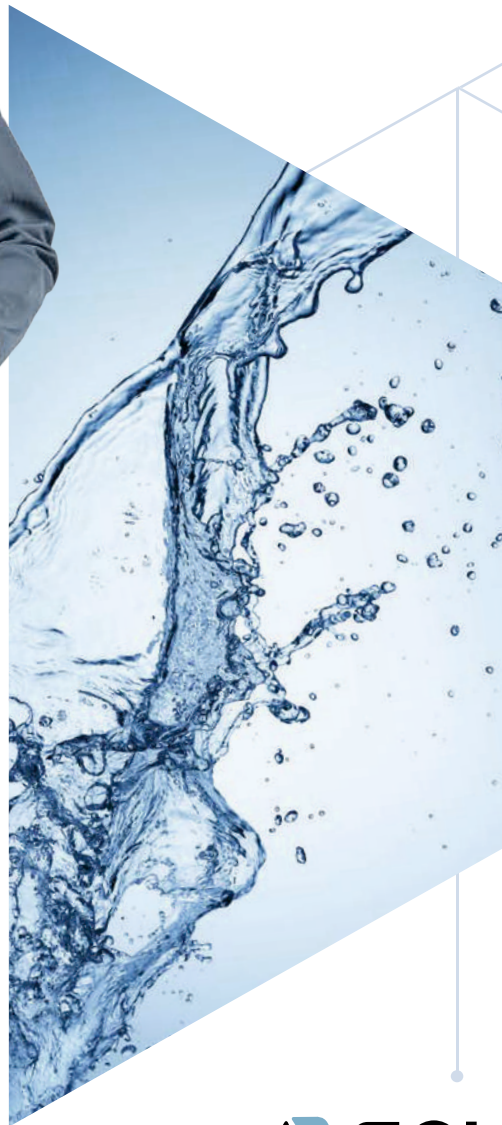
As a complement to our RO treatment chemicals and monitoring and control solutions, Solenis offers a variety of field and laboratory services. At the heart of these capabilities are field representatives who understand all aspects of industrial filtration and are supported by a dedicated team of applications specialists and laboratory scientists. These professionals work with your facility staff to evaluate both the unique needs of your RO application and the environmental situation, which is critical to developing a successful reverse osmosis membrane treatment program.

Another important capability is our membrane autopsy service to identify specific foulants on the membrane surface and to determine the presence of chemical or mechanical damage that has occurred during operation. After receiving a membrane from your plant, Solenis RO experts perform a variety of diagnostics that include mechanical and chemical tests, as well as inspections using optical and electron microscopy. Our autopsy report summarizes results and provides recommendations and solutions to help facility staff make decisions about changing cleaning protocols or other aspects of the existing pretreatment program.

Are you interested in improving the performance of your industrial RO system? If so, please contact us online at [solenis.com/AskAnExpert](https://www.solenis.com/AskAnExpert).

Advanced problem-solving for your toughest challenges.

Solenis is a global leader in specialty chemicals for water-intensive industries. With an average of 20 years expertise, our team is the industry's most knowledgeable. That's how we solve your toughest challenges—whether you're in the pulp, paper, oil and gas, petroleum refining, chemical processing, mining, biorefining, power and municipal market. Combining the right people, the right experience and the right technology, we're built to deliver value.



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