

PermaTreat[®] PC-191

Membrane Antiscalant



Product Bulletin

PRODUCT DESCRIPTION AND APPLICATION

PermaTreat PC-191 is a highly effective scale inhibitor developed for reverse osmosis (RO) systems. Scaling and iron fouling of the RO membranes will reduce system performance and lead to premature membrane replacement. Precipitation of scale and deposits build up on the RO membrane, which leads to poor permeate quality, low permeate production, unscheduled downtime, increased water consumption and increased energy costs.

For over 20 years **PermaTreat PC-191** has shown excellent performance against the following scalants: calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate, calcium fluoride, silica and iron.

For RO units with a feedwater flowrate of 545m³/day (100 GPM) or less, the recommended product would be **PermaTreat PC-391**.

PermaTreat PC-191 is used when the silica level in the brine is less than 185 mg/l at a brine pH of 7.5 and temperature 25°C (77°F). For higher silica levels, the recommended product is **PermaTreat PC-510**.

PHYSICAL & CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

These properties are typical. Refer to the Material Safety Data Sheet (MSDS), SECTION 9, for the most current data.

Color:	Clear, Yellow
Form:	Liquid
Odor:	Slight ammonia smell
Density:	11.33 lb/gal
Specific Gravity @ 25°C (77°F):	1.36
pH (Neat):	10.5
Freeze-Thaw Recovery:	Complete
Viscosity @ 25°C (77°F):	20 cp
Flash Point (PMCC):	None
Solubility in Water:	Complete
Freeze Point:	Not Available
Volatile Organic Compounds (VOC):	Not Available

ACTIVE CONSTITUENTS

Proprietary Sequestering Agent

REGULATORY APPROVALS

This product has received NSF/International certification under ANSI/NSF Standard 60 in the reverse osmosis antiscalant category. The official name is "Miscellaneous Water Supply Products." Maximum product application dosage is: 5 mg/l. This approval only applies to products whose container label bears the ANSI/NSF mark for use in potable water treatment applications.

The Canadian Food Inspection Agency (CFIA) has authorized the use of **PermaTreat PC-191** in food plants under the category C1. Refer to the Material Safety Data Sheet (MSDS), SECTION 15 for the most recent information on approvals.

MATERIALS OF COMPATIBILITY

All membrane elements based on **Polyamide** chemistries including Thin Film Composite (TFC) membranes when used as directed.

Compatible

Stainless Steel 304
CPVC Piping
Polyethylene
Polypropylene
Plasite 4300
Plasite 7122

Not Compatible

Brass
Neoprene*
Viton® synthetic rubber
Buna-N*
Polyurethane
EPDM*
Hypalon® elastomer*

* O-rings are acceptable for static applications. If fitting is opened, O-ring must be replaced.

DOSAGE AND FEEDING

PermaTreat PC-191 should be fed continuously to minimize precipitation of scale and fouling of RO and nano-filtration membranes. It is recommended to operate the dosing pump with the highest possible frequency and to adjust the dosage by adjusting the pump stroke to ensure membrane protection. The feedpoint location should be as close to the RO membrane as practical but one that ensures good mixing with the feedwater prior to entering the RO system. Typically, this is before the cartridge filters. It is preferred to feed **PermaTreat PC-191** neat via a closed feed system to prevent contamination from foreign material (a closed feed system being defined as a system in which fluid is moved from a closed storage vessel *into* a treated media without exposure to the atmosphere, except through normal venting or pressure relief devices).

PermaTreat PC-191 can be diluted using RO permeate (only) following these guidelines:

1. Use RO permeate for dilution.
1. Prepare a fresh antiscalant solution every 3-5 days.
1. Inspect the antiscalant day tank before adding the new solution. If needed, the antiscalant tank should be cleaned prior to filling.

1. Dilution rates up to a factor 10 are typically applied. Dilution factors higher than 10 will require more attention with respect to the condition of the antiscalant tank (cleaning) and preparation of a new solution (every 1-3 days).
1. NaOH can be added to the dilution to increase the pH to 10-11. This is especially recommended for warm environments to prevent bio-growth.

PermaTreat PC-191 dosage is dependent on feedwater chemistry, membrane type, and system operating parameters (e.g., recovery, temperature and pressure). These parameters determine the potential foulant that is likely to foul the membrane elements.

To determine the optimum product dosage for your system, it is recommended that you use the **PermaCare® RO12** chemical projection computer program. This program will select the appropriate scale inhibitor treatment program and calculate the recommended dosage based on the RO design and operation as well as feedwater or brine chemistry. This program will do all calculations for you easily and automatically.

CONSEQUENCES OF OVERFEED

Overfeed of **PermaTreat PC-191** will result in higher chemical cost.

CONSEQUENCES OF UNDERFEED

Underfeed of **PermaTreat PC-191** will result in poor scale inhibition. This will lead to fouled RO membranes, and reduced system performance and/or premature membrane replacement. In RO units, scaling is typically seen in the tail-end elements that have the highest reject concentration (4:1 for a 75% recovery system).

ENVIRONMENTAL AND TOXICITY DATA

Refer to the MSDS SECTIONS 11 and 12 for all mammalian and aquatic toxicity data.

	ppm/ppm product
Biological Oxygen Demand (5-day BOD₅)	Not available
Chemical Oxygen Demand (COD)	Not available
Total Organic Carbon (TOC)	Not available

SAFETY AND HANDLING

Before using **PermaTreat PC-191**, please refer to SECTION 8 of the MSDS for proper personal protective equipment (PPE) and SECTION 3 for health effects.

STORAGE

PermaTreat PC-191 has a suggested in-plant storage limit of one year. The suggested maximum storage temperature is 100°F (38°C).

Refer to the Material Safety Data Sheet (MSDS), SECTION 7, for the most current data.

REMARKS

If you need assistance or more information on this product, please call your nearest Nalco Representative.

For more news about Nalco Company, visit our website www.nalco.com

For **Medical and Transportation Emergencies** involving Nalco products, please see the Material Safety Data Sheet for the phone number.

ADDITIONAL INFORMATION

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