PermaTreat® PC-191T

Membrane Antiscalant

NALCO
An Ecolab Company

Product Bulletin

PRODUCT DESCRIPTION AND APPLICATION

PermaTreat PC-191T combines the product reliability of PermaTreat PC-191 with patented TRASAR® Technology for advanced monitoring and control. PermaTreat PC-191T is a highly effective scale inhibitor whose active components were developed to treat reverse osmosis (RO) systems. PermaTreat PC-191 has shown for over 20 years excellent performance against the following scalants: calcium carbonate, calcium sulfate, barium sulfate, strontium sulfate, calcium fluoride, silica and iron.

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 RO units with a feedwater flowrate of 545m^3/day (100 GPM) or less, the recommended product would be PermaTreat® PC-391T.

PermaTreat PC-191T 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. For higher silica levels, the recommended product is PermaTreat® PC-510T.

PHYSICAL & CHEMICAL PROPERTIES

Form	Liquid
Color	Clear, light yellow to amber greenish liquid
Odor	Slight ammonia smell
Density	11.33 lb/gal
Specific Gravity @ 25°C	1.36
pH (Neat)	10.5
Freeze-thaw Recovery	Complete
Viscosity @25°C	20 cps
Flash Point (PMCC)	None
Solubility in Water	Complete
Freezing Point	0°C
VOC Content	0%

NOTE: These physical properties are typical values for this product. Please refer to the Material Safety Data Sheet (MSDS) for the most current data and complete information.

ACTIVE CONSTITUENTS

Ingredients are considered proprietary. See the MSDS for information on regarding hazardous components.

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: 15 mg/l. This approval only applies to products whose container label bears the ANSI/NSF mark for use in potable water treatment applications.

Please refer to the MSDS, SECTION 15, for the most recent information on approvals.

MATERIALS OF COMPATIBILITY

Compatible	Not Compatible
CPVC Piping	Brass
Plasite 4300	Buna-N*
Plasite 7122	EPDM*
Polyethylene	Hypalon*
Polypropylene	Neoprene*

Stainless Steel 304	Polyurethane Viton

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

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

See your local Nalco representative for compatibility information.

DOSAGE AND FEEDING

PermaTreat PC-191T ***MUST*** be fed continuously to minimize precipitation of scale and fouling of RO and nanofiltration membranes. 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.

All new installations of PermaTreat PC-191T should begin with a 2-week monitoring phase during which current operating conditions should be maintained (i.e. setting pumps manually based on stroke length and frequency). After this evaluation period, TRASAR-based control of the system should be instituted using the recommended pump.

It is preferred to feed PermaTreat PC-191T 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-191T can be diluted using RO permeate (only) following these guidelines:

1. Use RO permeate for dilution.
2. Prepare a fresh antiscalant solution every 3-5 days.
3. Inspect the antiscalant day tank before adding the new solution. If needed, the antiscalant tank should be cleaned prior to filling.
4. 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).
5. 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-191T 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® RO12.5 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-191T will result in higher chemical cost.

CONSEQUENCES OF UNDERFEED

Underfeed of PermaTreat PC-191T 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).

For complete dosage, feeding points and feeding equipment, consult your Nalco representative.

ENVIRONMENTAL AND TOXICITY DATA

Please refer to the MSDS, SECTIONS 11 and 12, for the most current data.

SAFETY AND HANDLING

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

STORAGE

PermaTreat PC-191T has a suggested in-plant storage limit of one year.

The suggested maximum storage temperature is 38°C.

Please refer to the 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 at www.nalco.com.

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

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