



Product Bulletin

PermaClean[®] PC-33

Membrane Cleaner

PRODUCT DESCRIPTION AND APPLICATION

PermaClean[®] PC-33 is a membrane cleaner developed to support the cleaning of acid-insoluble sulfates of calcium, barium and strontium as well as calcium fluoride. PermaClean PC-33 is also effective in removing iron oxides and hydroxides as well as calcium carbonate, though PermaClean[®] PC-77 or PermaClean[®] PC-87 is preferred for these foulants. PermaClean PC-33 is highly effective when used in combination with high pH detergent cleaners such as PermaClean[®] PC-67 or PermaClean[®] PC-98 to help remove organic substances and microbial slimes.

During normal operation, RO membranes can become fouled, which greatly reduces the efficiency of the system. Deposits build up on the membrane until they cause a reduction in permeate flow and loss in salt rejection. The effects of fouling can lead to poor water quality, loss in production, unscheduled downtime and membrane replacement. A regular maintenance and cleaning program can provide return on investment (ROI) results ranging from 100 to 250% by maintaining low pump output pressures and extending the membrane's life.

Elements should be cleaned whenever the normalized permeate flow rate or salt rejection decreases by 10-15% or the differential pressure increases by 10-15% from the original baseline data.

PHYSICAL & CHEMICAL PROPERTIES

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

Appearance	Light yellow liquid
Odor	Slight
Flash Point	None
Density	1.3 kg/l [10.85 lb/gal]
Specific Gravity	1.3
pH (Neat)	12.0 - 13.0
Freezing point	-13 °C [9 °F]
Boiling point	107 °C [225 °F]
Vapour pressure	Same as water

ACTIVE CONSTITUENTS

Considered proprietary. Please consult the MSDS for further information.

REGULATORY APPROVALS

This product has received NSF/International certification under ANSI/NSF Standard 60 in the "Membrane Cleaner" category. The official name is "Miscellaneous Water Supply Products." This approval only applies to products whose container label bears the ANSI/NSF mark for use in potable water treatment applications.

This product is designed to be used off-line and must be flushed and drained before being placed into service. The pH of the influent and effluent water should be monitored to ensure that all traces of the product have been removed before placing into service.

Refer to the Material Safety Data Sheet (MSDS), SECTION 15 for the most recent information on approvals.

MATERIALS OF COMPATIBILITY

Compatible	Not Compatible
All membrane elements based on Polyamide chemistries including Thin Film Composite (TFC) membranes when used as directed	Brass
Mild Steel	Coated Steel Drum (phenolic)
Unwelded 304 Stainless Steel	
Unwelded 316 Stainless Steel	
Welded 304 Stainless Steel	
Welded 316 Stainless Steel	
Neoprene O-rings	
Viton O-ring	
Buna-N O-rings	
Hypalon O-rings	
EPDM O-rings	
Polyethylene piping (rigid)	
Polypropylene piping (rigid)	
CPVC piping (rigid)	
HDPE	
Vinyl ester resin	
Epoxy phenolic	

DOSAGE AND FEEDING

PermaClean PC-33 should be fed via a closed feed system. A closed feed system is 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.

Cleaning solutions should be made up with chlorine-free water to give a 2.0 - 2.5% solution of PermaClean PC-33. It is sometimes possible to monitor the progress of membrane cleaning by the "pick-up" of hardness salts in the cleaning solution.

Consult your Nalco sales engineer for detailed dosage and feeding information.

ENVIRONMENTAL AND TOXICITY DATA

Biological Oxygen Demand (5-day BOD ₅)	N/A
Chemical Oxygen Demand (COD)	N/A
Total Organic Carbon (TOC)	140,000 ppm

Refer to SECTIONS 11 and 12 of the material Safety Data Sheet (MSDS) for all available mammalian and aquatic toxicity information.

SAFETY AND HANDLING

Chemical resistant gloves and safety goggles should be worn when handling PermaClean PC-33. Read SECTION 8 of the material Safety Data Sheet (MSDS) for specific personal protective equipment (PPE) recommendations and SECTION 3 for health effects information.

STORAGE

Recommended in-plant storage limit is 12 months. 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 at www.nalco.com.

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

ADDITIONAL INFORMATION

PermaClean is a registered trademark of Nalco Limited.
NALCO, the Logo and Trademark are registered trademark of Nalco Company (4-26-2007)

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