



Product Facts

Kleen™ MCT411 Reverse Osmosis Membrane Cleaner

- Optimum results are obtained when used in conjunction with Kleen MCT882 and Kleen MCT103.
- Excellent results are achieved when used to eliminate biological slime.
- Buffered to maintain an effective pH over a range of dilutions.
- Enhanced performance at elevated temperatures
- No adverse effects with repeated use.
- Low foam formulation.

Kleen™ MCT411 is a high pH, powdered formulation designed to remove organics, silt, and other particulate deposits from polysulfone, fluorocarbon, and all polyamide thin film composite reverse osmosis (RO) and ultrafiltration (UF) membranes. This highly effective product provides superior cleanings resulting in longer system running time.

TYPICAL APPLICATIONS

During the operation of a reverse osmosis or ultrafiltration system, organic materials and suspended solids in the incoming water can accumulate on the membrane surface. Fouling from these species impedes the flow of water through the membrane. This can result in unacceptably low production, high operating pressure, or an excessive pressure drop in the system, which may lead to irreversible membrane damage. Additionally, the accumulation of scale next to the membrane surface can increase the amount of dissolved material passing through the membrane, resulting in product water of unacceptable quality. Before the scale accumulates to a level where product water declines or membrane damage can occur, it should be removed through a clean-in-place (CIP) off-line cleaning. Indications of the need for cleaning include a significant decrease in normalized permeate flow, a significant increase in pressure drop across the system (or individual stage), or an increase in the normalized salt passage such that product quality is unacceptable. Your BetzDearborn representative can assist you with monitoring your system and determining when cleaning is advised.

Kleen MCT411 contains a blend of solubilizing and complexing agents designed to specifically remove organic and particulate foulants from the surfaces of the membrane. Used in tandem with an acidic cleaner for scale removal, regular cleanings with Kleen MCT411 can help to preserve the life of RO membranes.

Depending on the nature of the fouling, a soak period may be necessary for optimum results. Consult your BetzDearborn representative for details.

APPLICATION

Do Not Use Kleen MCT411 on Cellulose Acetate Membrane. For optimum results, Kleen MCT411 should be used in combination with low pH cleaners such as Kleen MCT103 and/or Kleen MCT882.

FEED REQUIREMENTS

Feed System - This product should be used in conjunction with the membrane cleaning equipment supplied by the manufacturer of the membrane system. If such a system is not present, contact your BetzDearborn representative for information on fabricating or obtaining a cleaning system.

Dilution - The product must be diluted prior to introduction into the membrane system. The recommended dilution for this product is one pound (0.45 kg) of Kleen MCT411 per 5 gallons (19L) of water.

Materials Compatibility - Corrosion-resistant equipment, such as PVC, should be used for the storage and preparation of this product. Pumping materials coming in contact with the diluted products should also be corrosion resistant.

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PACKAGING INFORMATION

Kleen MCT411 is a solid material and is available in a wide variety of containers and delivery methods. Contact your BetzDearborn representative for details.

GENERAL CLEANING INSTRUCTIONS

The following general cleaning procedure can be followed. For the optimum cleaning procedure for your system, contact your BetzDearborn representative.

1. Inspect cleaning tank, hoses, and cartridge filters. Clean tank and flush hoses if necessary. Install new cartridge filters.
2. Fill cleaning tank with RO permeate or DI water. Turn on agitator or tank recirculation pump.
3. Slowly add Kleen MCT411 to cleaning tank (1 pound [0.45 kg] of product for every 5 gal [19L] of water) and allow to mix thoroughly.
4. Check solution temperature. If solution temperature is lower than recommended level, adjust heating control to provide optimum temperature. If manufacturer's recommendation is not available, contact your BetzDearborn representative.
5. Check solution pH. The solution pH should be 10 to 11 or as recommended by the membrane manufacturer. If pH is too low, adjust pH upward with NaOH, or other chemical as recommended by the membrane manufacturer. If pH is too high, adjust with hydrochloric acid.
6. Circulate solution through one stage at a time in the direction of feed flow for 30 minutes. Circulate at the flow rate recommended by the membrane or system manufacturer. If the manufacturer's recommendation is not available, contact your BetzDearborn representative. Pressure should be low enough so that no permeate is produced during cleaning, but always less than 60 psig (4.2 kg/cm²)

In cases of heavy fouling, the first return flow (up to 15% of the cleaning tank volume) should be diverted to drain to prevent redeposition of removed solids. For optimum results, each stage must be cleaned separately in a multistage system.

7. If the first stage cleaning solution becomes turbid or discolored, dump the tank and prepare a fresh cleaning solution before proceeding. If solution pH or temperature moves out of the recommended range, a new solution should be prepared. In any event, a new cleaning solution should be prepared for each stage.
8. Rinse with RO permeate before returning system to service.
9. When returning unit to service, divert product water to drain until any residual cleaning solution has been rinsed from system.

SAFETY PRECAUTIONS

A Material Safety Data Sheet containing detailed information about this product is available upon request.