

Water Technologies & Solutions
fact sheet**Kleen* MCT412****membrane cleaner**

- Specially formulated to clean severely fouled membranes.
- Excellent results are achieved when used to eliminate biological slime.
- Buffered to maintain an effective pH over a range of dilutions.
- Optimum results are obtained when used in conjunction with a low pH Kleen MCT product.
- Enhanced performance at elevated temperatures
- Low foam formulation.

Kleen MCT412 is a high pH, powdered formulation designed to remove organics, silt, and other particulate deposits from reverse osmosis (RO) and nanofiltration (NF) membranes. This highly effective product provides superior cleanings resulting in longer system running time.

typical applications

During the operation of a membrane separation 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 SUEZ representative can assist you with monitoring your system and determining when cleaning is advised.

Kleen MCT412 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, cleaning with Kleen MCT412 can help to restore acceptable performance to excessively fouled membranes.

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

applications

Do not use Kleen MCT412 with every cleaning cycle. Kleen MCT412 will produce a solution pH of approximately 11.5 to 12.0. While this exceeds many membrane manufacturers' recommendations for regularly scheduled cleanings, this product has been proven safe for occasional use when traditional cleaning products have not been completely effective. Your SUEZ representative can direct you in how frequently this product may be used.

Do Not Use Kleen MCT412 on Cellulose Acetate Membrane. Optimum results are typically achieved

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when used in conjunction with a low pH Kleen MCT product. Please refer to the Cleaner Recommendation feature within Argo Analyzer* to select the best combination of products for your specific combination of foulants and/or scale.

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 SUEZ 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 MCT412 per 5 gallons (19 L) 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.

general cleaning instructions

The following general cleaning procedure can be followed.

For the optimum cleaning procedure for your system, contact your SUEZ 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 MCT412 to cleaning tank (1 lb [0.45 kg] of product for every 5 gal [19 L] 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 SUEZ representative.
5. Check solution pH. The solution pH should be 11.5 to 12. 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 SUEZ representative. Pressure should be low enough so that no permeate is produced during cleaning, but always less than 60 psig (4.1 bar).

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 Safety Data Sheet containing detailed information about this product is available on request.

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