

Water Technologies & Solutions fact sheet

Kleen* MCT404

membrane cleaner

- Specifically designed for the removal of organic matter, colloidal foulants, and silt.
- Can be used as a stand-alone cleaner, or to supplement the performance of alkaline cleaners and/or microbiological control agents.
- Suitable for use with CA and PA membranes.
- Enhanced performance at elevated temperatures.
- Easy-to-use concentrated liquid product.

description and use

Kleen* MCT404 is a neutral pH, anionic surfactant-based liquid formulation. This product is designed specifically to remove organic foulants, silt, and other particulate deposits from RO, MF, UF, and NF membranes.

Kleen MCT404 can be used during an off-line clean-in-place (CIP) application as a stand-alone neutral pH cleaner, or it can be combined with other membrane cleaners to improve cleaning performance. Add to an alkaline cleaning solution to boost detergency and organic foulant removal. Add to a registered biocide cleaning solution to aid in biofilm removal.

When used as part of a well-designed cleaning program, this highly effective product provides superior cleanings, resulting in longer system running times and optimal membrane life expectancy.

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 deposit 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 deposit accumulates to a level where product water flow or quality declines, or membrane damage occurs, 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.

Regular cleanings with Kleen MCT404 will help to preserve the life of your membranes when used as part of a cleaning program that includes alkaline cleaners for organic and colloidal removal and acidic cleaners for scale and particulate removal.

treatment and feeding requirements

Feed System - This product should be used in conjunction with 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.

Product Dosage - The product must be diluted in an appropriate tank to achieve the proper dosage before circulating through the membrane system. The

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recommended dosage for stand-alone application is 0.5% to 1.0% of Kleen MCT404 in permeate or DI water. The recommended dosage when supplementing another cleaning product is 0.2% to 0.4% of Kleen MCT404 in permeate or DI water. Contact your SUEZ representative for recommended cleaning solution volumes based upon your individual system requirements.

Note: This product will generate moderate foaming during a CIP application. If necessary, knock down the foam with a water-hose. Never apply antifoam to a CIP solution.

general cleaning instructions

The following general cleaning procedure can be followed for stand-alone application of this cleaner. When using this product to supplement another cleaner, add the recommended dosage of Kleen MCT404 and follow the instructions set forth for the primary cleaner that is being supplemented. 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 permeate or DI water. Turn on agitator or tank recirculation pump.
3. Slowly add the recommended amount of Kleen MCT404 to the cleaning tank and allow thorough mixing.
4. Check the solution temperature. If solution temperature is lower than recommended level, adjust heating control to provide optimum temperature. Do not allow the temperature to exceed the limits set by the membrane manufacturer (the typical limit for PA membranes is 120°F/49°C). If manufacturer's recommendation is not available, contact your SUEZ representative.
5. Check solution pH. For stand-alone application, the solution pH should be 6.0 to 9.0, or as recommended by the membrane manufacturer. For improved cleaning performance in PA membrane systems, the cleaning solution pH can be increased by adding NaOH (do not exceed pH = 12.0). If pH is too high, adjust down with hydrochloric acid. Consult with your SUEZ representative regarding your system's pH tolerance.
6. Circulate solution through one stage at a time (if possible) in the direction of feed flow for 30 minutes. Circulate at the flow rate recommended by the membrane or system manufacturer. If manufacturer's recommendation is not available, contact your SUEZ representative. Pressure should be low enough so that minimal 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.
8. Rinse with permeate water before returning system to service.
9. When returning the unit to service, divert product water to drain until any residual cleaning solution has been rinsed from system.

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

storage and handling

Store Kleen MCT404 at moderate temperatures (20 to 38 °C) and protect from freezing. Product should be protected from cold temperatures (<20 °C) as low temperatures impact the fluid flow characteristics and can lead product to solidify. Bulk containers should be insulated and heat traced (where necessary).

If product solidifies, the process is reversible by applying enough heat to raise product temperature to >28 °C and applying gentle mixing.

safety precautions

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