

Water Technologies & Solutions fact sheet

Kleen* ENV903

membrane cleaner

- Environmentally friendly formulation. Contains no EDTA, NPE/APE, or phosphates
- Suitable for use with all types of membranes
- Liquid product, buffered to maintain an effective pH over a range of dilutions
- Enhanced performance at elevated temperatures
- No adverse effects with repeated use
- Optimum results are obtained when used in conjunction with Kleen ENV911

description

Kleen ENV903 is a low pH liquid formulation, containing a blend of environmentally friendly solubilizing and complexing agents, designed specifically to remove metal hydroxides, calcium carbonate, and other similar scales from reverse osmosis (RO), nanofiltration (NF), ultrafiltration (UF), and microfiltration (MF) membranes. This highly effective product provides superior cleanings, resulting in longer system running times.

typical application

During the operation of a membrane separation system, dissolved solids in the incoming water can concentrate up to a level where they begin to precipitate on the membrane surface. Scaling from hardness and metal salts, found in most unsoftened water, 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 flow or quality declines, or membrane damage is imminent, 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.

feed requirements

Feed System- This product should be used in conjunction with membrane cleaning equipment supplied by the manufacturer of the membrane /RO 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 (0.45kg) of Kleen ENV903 per 5 gallons (19 L) of water [approximately one gallon (3.8 L) of Kleen ENV903 for each 50 gallons (189 L) of water].

The target conductivity range for this dilution of Kleen ENV903 is 3,800 to 4,100 micromhos. Contact your SUEZ representative for recommended cleaning solution volumes based upon your individual system requirements.

The Lenntech logo, featuring the word "LENNTECH" in a blue, italicized sans-serif font.

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safety precautions

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

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 the recommended amount of Kleen ENV903 to the cleaning tank and 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. Do not allow the temperature to exceed 95F (34C).
5. Check solution pH. The solution pH should be 2.5 to 3.5, 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. Consult with your SUEZ representative regarding your system's ability to tolerate this pH range.
6. Circulate solution 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. 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 can be cleaned separately in a multistage system.
7. This product is a moderate foamer. Minimize foaming in the CIP tank by placing the permeate and concentrate return lines under the liquid level in the CIP tank. A spray-hose may be used for periodic knocking-down of the foam. DO NOT apply

antifoam; most antifoams are not compatible with PA membranes.

8. 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.
9. Rinse with RO permeate water before returning system to service.
10. 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.

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