



## Technical Brief

# Cleaning and Sanitizing Procedure For Graver Membrane Products

## Cleaning Filter Cartridges

Use the following cleaning agents for cleaning filter cartridges. Immerse with cartridge open end up and soak in a container that has the prescribed concentration of the agent for at least 30 minutes.

- **Triton X-100:** Add 15 drops of Triton X to one gallon (3.79 liters) of warm water and then mix well. Triton X is made by Roche Diagnostics.
- **LiquiNox/Alconox:** Follow instructions provided by manufacturer on product packaging.
- **Minnclean TF:** Add 30 grams of Minnclean to one gallon (3.79 liters) of warm water and mix well.

## Sanitizing Filter Cartridges

Use the following sanitizing agents to properly sanitize cartridges prior to use in critical applications. Immerse with cartridge open end up and soak in the prescribed concentration of the agent for 30-60 minutes. For proper and effective sanitization, raise the mixture's temperature to 80° F (27°C).

- **Sodium Hypochlorite (Bleach):** Prepare a 5-10 ppm solution in lukewarm water.
- **70% Ethanol:** Immerse the cartridges (Buna N O-Rings not compatible).
- **70% IPA:** Immerse the cartridges.
- **Chlorine Dioxide, ClO<sub>2</sub>:** Add 2 oz. (59 ml) of Chlorine Dioxide to one gallon (3.79 liters) of lukewarm water (200 ppm).
- **10% Hydrogen Peroxide:** Immerse the cartridges in 10% H<sub>2</sub>O<sub>2</sub>.
- **Quaternary Ammonium "quats":** Add 2 oz. (59 ml) of Ammonium to one gallon (3.79 liters) of water (200 ppm).
- **Acid:** Immerse the cartridges in 1% solution of citric, acetic, nitric, phosphoric or hydrochloric acid.
- **Peracetic Acid:** Immerse cartridges in 100-200 ppm solution.
- **Caustic:** Rinse cartridges or soak overnight in 0.5-5% NaOH solution. Hot caustic at 122° F (50°C) is even more effective. (NOT COMPATIBLE with VTEC and QTEC).

## Sterilizing Filter Cartridges

- Hot Water:** Raise clean water temperature to 185° F (85°C) and immerse the cartridges with open end up for 30 minutes. For inline hot water flow, do not exceed 3 psid (.21 bar) pressure drop across the cartridge.
- Steam\*:** Raise the steam temperature to 250° F (121°C) and expose the cartridge to steam for 30 minutes. For inline hot steam, do not exceed more than 5.0 psid (.34 bar) pressure drop across the cartridge.
- Autoclave\*:** Install the cartridges in the autoclave chamber. Raise steam temperature to 250° F (121°C) and expose the cartridge for 30 minutes.

## Final Rinse

Rinse all cleaned and sanitized cartridges with plenty of clean water to remove any cleaning and sanitizing agents.

*\*Cartridge must be equipped with special end cap insert to withstand autoclaving or steaming (standard on Graver membrane filters except WaterTEC).*