



FILMTEC Membranes

Cleaning and Sanitization: Sanitizing RO & NF Membrane Systems

Hydrogen Peroxide and Peracetic Acid

Hydrogen peroxide or a mixture of hydrogen peroxide and peracetic acid has been used successfully for treating biologically contaminated reverse osmosis and nanofiltration systems that use FILMTEC™ membranes. Commercially available hydrogen peroxide/peracetic acid solutions come in a concentrated form and are diluted with RO/NF permeate to obtain a 0.2% (by weight) peroxide solution.

There are two factors that greatly influence the rate of hydrogen peroxide attack on the membrane: temperature and iron. The disinfecting solution should not exceed 77°F (25°C). FT30 membrane samples tested with 0.5% hydrogen peroxide at 34°C showed a very high salt passage after several hours. At 24°C, however, membrane samples demonstrated compatibility with 0.5% hydrogen peroxide after 96 hours.

The presence of iron or other transition metals in conjunction with hydrogen peroxide solutions can also cause membrane degradation. FT30 membrane samples were tested using a 0.15% solution of hydrogen peroxide and tap water containing iron. After 150 hours, the salt passage of the membrane began to increase dramatically. Continuous exposure at this concentration may eventually damage the membrane. Instead, periodic use is recommended.

For biologically contaminated RO systems using the FILMTEC membrane, the following procedure for applying hydrogen peroxide solutions is recommended:

1. Any type of deposit on the membrane or other parts of the system should be removed with an alkaline cleaner before sanitizing. Removal of these deposits, which harbor microorganisms, will maximize the degree of sanitization. After alkaline cleaning, flush the system with RO permeate.
2. Clean the RO system with acid as described in [Iron Fouling \(Section 6.9.4\)](#) to remove any iron from the membrane surface. Flush the system with RO permeate.
3. Circulate a solution of 0.2% (by weight) hydrogen peroxide diluted with RO permeate at a temperature below 77°F (25°C) for 20 min. A pH of 3–4 gives optimal biocidal results and longer membrane lifetime.

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For more information about FILMTEC membranes, call the Dow Liquid Separations business:

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