



International Products

C O R P O R A T I O N

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CIP GUIDELINES

FOR MEMBRANE CLEANING WITH

MICRO-90[®] CONCENTRATED CLEANING SOLUTION

MICRO[®] GREEN CLEAN BIODEGRADABLE CLEANER

MICRO[®] A07 CONCENTRATED CITRIC ACID CLEANER

ZYMIT[®] PRO ENZYME CLEANER

1. When one of the following conditions occur, the membranes should be cleaned:
 - a. Flux rate decreases by 10%
 - b. Trans-membrane pressure (TMP) increases by 10%
 - c. Permeate water quality decreases by 10%

Based on the membrane foulants, MICRO-90^{®*}, MICRO[®] A07, MICRO[®] GREEN CLEAN, ZYMIT[®] PRO or a combination may be needed to clean and return the membranes to their original specifications. See the list of foulants below to determine the optimal cleaner(s).

2. Review the manufacturer's membrane specifications for operating conditions.
3. For extremely fouled membranes, an initial soak may be required. This soak time could vary anywhere between one to eight hours.
4. Initial Cleaning: Prepare a ½ to 1% cleaner solution in permeate-quality water. The volume of cleaning solution should be sufficient to fill all pipes, hoses, and pumps, as well as fill the membrane elements up to 50% of their total volume. This will provide low pressure and high flux for optimal cleaning. An additional 10% volume of cleaning solution should be prepared that will immediately be discarded after the pre-soak, if needed, or the first pass through the system. This initial 10% volume will remove the gross contaminants and allow the subsequent steps to clean more effectively.

5. To clean the system, allow a slow flow rate (20% to 30% of the membrane manufacturer's maximum design rating) across the membranes. A slow rate impedes the suspended foulants from re-fouling the membrane. After several minutes, increase the flow rate incrementally until the maximum rate is achieved.
6. Continue recirculating. One hour of recirculation is normally sufficient to effectively clean the membranes. Heating the cleaning solution will significantly improve its detergency. Check the membrane specifications to determine the maximum operating temperature.
7. Rinse membranes with permeate-quality water until no foam is detected.
8. Throughout the cleaning process, continue monitoring all process variables for any abnormalities (pressure change, temperature change, pH drift, etc.).
9. Multiple Cleaners: If two cleaners are necessary, MICRO® A07 should be used last. MICRO-90®, MICRO® GREEN CLEAN and ZYMIT® Pro's mild alkalinity swells the membrane fibers, which allows MICRO® A07 to penetrate deep within the fibers to remove the remaining foulants. For example, complete steps 2 – 8 using either a MICRO-90®, MICRO® GREEN CLEAN or ZYMIT® Pro solution. Rinse completely, and follow steps 2-9 with Micro® A07.
10. By establishing a cleaning regimen, the membranes should last indefinitely under normal circumstances.

Pre-Soak and CLEANER CHOICE Depend on Foulant Type

FOULANT	MICRO-90® / MICRO® GREEN CLEAN	MICRO® A07	ZYMIT® PRO
Oil	√		
Grease	√		
Natural Organic Matter	√		
Hard Water Soaps	√		
Scale		√	
Mineral Deposits		√	
Metal Oxides		√	
Proteins			√

*MICRO-90® and MICRO® Green Clean may be used interchangeably.

For more information or free samples for testing, please contact us at 609-386-8770, send an email to membrane@ipcol.com or visit us online at www.ipcol.com.