KOCH MEMBRANE SYSTEMS

Filtration for a Better Future®...

PRE-STARTUP CLEANING PROCEDURE FOR SelRO® SPIRAL ELEMENTS

The following cleaning procedure must be performed for new SelRO® spiral wound elements to ensure proper membrane operation before any pressure tests. Failure to follow this recommendation may lead to poor performance and will void element warranty. Please refer to the KMS Water Quality Guidelines on the reverse side of this document.

1. **Rinse the membrane element with soft or DI water to remove storage solution.**

2. **Circulate 0.2% w/w nitric or phosphoric acid solution through the element in closed loop operation. Operating conditions should be as follows:**

Inlet Pressure (MPS-34, MPS-36):	**150-200 psi (10-14 bar)**
Operating Temperature:	**77-113°F (25-45°C)**
Duration:	**15 minutes**

3. **Rinse the acid solution from the element. Drain feed tank, fill with water, and flush the system until the permeate and retentate reach pH 5 or higher.**

4. **Measure element water flux at 86°F (30°C). Note water flux is a function of inlet operating pressure. After normalizing to 440 psi (30 bar), the flux values should meet the following specifications:**

MPS-34	**minimum 28 gfd (48 lmh)**
MPS-36	**minimum 90 gfd (150 lmh)**

In the event that a second wash is necessary, repeat Steps 2-3 using fresh acid solution.

5. **For short-term shutdowns store the elements in a solution of 0.25% w/w $Na_2S_2O_5$ (sodium metabisulfite) or $NaHSO_3$ (sodium bisulfite). For long term storage use 0.7% w/w benzalkonium chloride in water.**

6. **Repeat Steps 1-4 after each time the element has been stored with benzalkonium chloride.**

For technical assistance, please contact a Cleaning Specialist at (978) 694-7050.
To place an order, please call our Customer Service Department at (978) 694-7005.

KMS WATER QUALITY GUIDELINES FOR CLEANING & DIAFILTRATION

For All Polymeric Membrane and Ion Exchange/Adsorbent Resin Applications

Parameter	MF/UF	NF/RO & IE/Ads. Resin
Turbidity	**< 1.0 NTU**	**< 1.0 NTU**
Suspended Solids (see Note 1)	**< 5 mg/l**	**< 1 mg/l**
Calcium (Ca)	**< 10 mg/l**	**< 5 mg/l**
Total Hardness (as $CaCO_3$)	**< 60 mg/l**	**< 30 mg/l**
Iron (Fe)	**< 0.05 mg/l**	**< 0.05 mg/l**
Zinc (Zn)	**< 0.3 mg/l**	**< 0.05 mg/l**
Copper (Cu)	**< 0.1 mg/l**	**< 0.05 mg/l**
Manganese (Mn)	**< 0.05 mg/l**	**< 0.02 mg/l**
Aluminum (Al)	**< 0.05 mg/l**	**< 0.05 mg/l**
Silica, Reactive (as SiO_2)	**< 10 mg/l**	**< 10 mg/l**
Silica, Colloidal (as SiO_2)	**< 1 mg/l**	**< 0.1 mg/l**
Silicone	**0 mg/l**	**0 mg/l**
Total Bacteria Count (TBC)	**< 1000 per ml**	**< 1000 per ml**
E-Coli Count	**0 per 100 ml**	**0 per 100 ml**
Chlorine (as NaOCl)	**< 1 mg/l**	**0 mg/l**
D-Limonene (citrus applications only)	**< 5 mg/l**	**0 mg/l**
Fats, Oils and Grease	**0 mg/l**	**0 mg/l**
Total Organic Carbon (TOC)	**< 1 mg/l**	**< 1 mg/l**
pH (standard units)	**6.5 – 7.5**	**6.5 – 7.5**

1. The water supply must be free from particulate matter such as rust, scale, flakes, sandy and granular material, slurries, scum, algae and any chemical constituents that could foul or damage the membranes.
2. The water pH may need to be adjusted with acid or alkali depending on application and local conditions.
3. KMS membranes are available in many configurations and materials that may be affected differently by various water constituents. Softened water or evaporator condensate is generally acceptable for cleaning and flushing of polymeric membranes. Please consult with the KMS Process Group for the particular membrane in question.

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