



Filtration for a Better Future...

### PRE-STARTUP CLEANING PROCEDURE FOR HOLLOW FIBER CARTRIDGES

The following cleaning procedure must be performed prior to initial use of cartridges and whenever system has been inoperative for more than four (4) hours. This procedure will remove storage solution and condition the membrane for production. Failure to follow this recommendation may lead to poor performance and will void cartridge warranty. Please refer to the KMS Water Quality Guidelines on the reverse side of this document.

**Step 1. Alkaline Cycle    pH 10.0-10.5    122°F (50°C)    15 min.**

Fill system with clean, soft water (122°F/50°C). Add to circulating water:

**KOCHKLEEN® 222 Cleaner (or KOCHKLEEN® WA Cleaner in Europe) to adjust pH to 10.0-10.5**

Circulate solution at standard pressure and flow conditions for 15 minutes.

**Step 2. Drain/Flush Cycle    Neutral pH    122°F (50°C)    10 min.**

Drain, then flush system with clean, soft water (122°F/50°C) using minimum three times system hold-up volume.

**Step 3. Alkaline/Chlorine Cycle    pH 10.0-10.5    122°F (50°C)    15 min.**

Fill system with clean, soft water (122°F/50°C). Add to circulating water:

**KOCHKLEEN® 222 Cleaner (or KOCHKLEEN® WA Cleaner in Europe) to adjust pH to 10.0-10.5**

**KOCHKLEEN® 410 Cleaner to maintain 180-200 ppm total chlorine**

Circulate solution at standard pressure and flow conditions for 15 minutes.

**Step 4. Drain/Flush Cycle    Neutral pH    122°F (50°C)    10 min.**

Drain, then flush system with clean, soft water (122°F/50°C) using minimum three times system hold-up volume.

**Step 5. Water Flux    Neutral pH    122°F (50°C)    10 min.**

Record water flux value. If new membrane does not achieve minimum water flux specified for that product when corrected to 25/15 psi and 122°F (50°C), repeat Steps 1 & 2 with 0.2% (v/v) KOCHKLEEN® KLD III Cleaner added to Alkaline Cycle.

*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.*

**Note: If KOCHKLEEN® cleaners are not readily available, please contact KMS.**

## 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
<b>Turbidity</b>	<b>&lt; 1.0 NTU</b>	<b>&lt; 1.0 NTU</b>
<b>Suspended Solids (see Note 1)</b>	<b>&lt; 5 mg/l</b>	<b>&lt; 1 mg/l</b>
<b>Calcium (Ca)</b>	<b>&lt; 10 mg/l</b>	<b>&lt; 5 mg/l</b>
<b>Total Hardness (as CaCO<sub>3</sub>)</b>	<b>&lt; 60 mg/l</b>	<b>&lt; 30 mg/l</b>
<b>Iron (Fe)</b>	<b>&lt; 0.05 mg/l</b>	<b>&lt; 0.05 mg/l</b>
<b>Zinc (Zn)</b>	<b>&lt; 0.3 mg/l</b>	<b>&lt; 0.05 mg/l</b>
<b>Copper (Cu)</b>	<b>&lt; 0.1 mg/l</b>	<b>&lt; 0.05 mg/l</b>
<b>Manganese (Mn)</b>	<b>&lt; 0.05 mg/l</b>	<b>&lt; 0.02 mg/l</b>
<b>Aluminum (Al)</b>	<b>&lt; 0.05 mg/l</b>	<b>&lt; 0.05 mg/l</b>
<b>Silica, Reactive (as SiO<sub>2</sub>)</b>	<b>&lt; 10 mg/l</b>	<b>&lt; 10 mg/l</b>
<b>Silica, Colloidal (as SiO<sub>2</sub>)</b>	<b>&lt; 1 mg/l</b>	<b>&lt; 0.1 mg/l</b>
<b>Silicone</b>	<b>0 mg/l</b>	<b>0 mg/l</b>
<b>Total Bacteria Count (TBC)</b>	<b>&lt; 1000 per ml</b>	<b>&lt; 1000 per ml</b>
<b>E-Coli Count</b>	<b>0 per 100 ml</b>	<b>0 per 100 ml</b>
<b>Chlorine (as NaOCl)</b>	<b>&lt; 1 mg/l</b>	<b>0 mg/l</b>
<b>D-Limonene (citrus applications only)</b>	<b>&lt; 5 mg/l</b>	<b>0 mg/l</b>
<b>Fats, Oils and Grease</b>	<b>0 mg/l</b>	<b>0 mg/l</b>
<b>Total Organic Carbon (TOC)</b>	<b>&lt; 1 mg/l</b>	<b>&lt; 1 mg/l</b>
<b>pH (standard units)</b>	<b>6.5 – 7.5</b>	<b>6.5 – 7.5</b>

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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Koch Membrane Systems, Inc., [www.kochmembrane.com](http://www.kochmembrane.com)

Corporate Headquarters: 850 Main Street, Wilmington, Massachusetts 01887-3388 USA. Tel.: 1-888-677-KOCH.

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