SelRO® MPS-34 pH Stable Elements
Nanofiltration Spiral Element Series - 8040

**PRODUCT DESCRIPTION**

**Membrane Chemistry:** Proprietary composite nanofiltration membrane

**Membrane Type:** pH stable nanofiltration membrane

**Molecular Weight Cut-Off (MWCO):** 200 Daltons

**Construction:** Spiral wound element with hard overwrap and polysulfone permeate tube

**Major Applications:** Acid and caustic recovery, product concentration

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Model</th>
<th>Rejection [%]</th>
<th>Permeate Flow gpd (m³/day)</th>
<th>Feed Spacer mil (mm)</th>
<th>Membrane Area ft² (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0770255</td>
<td>8040 MPS-34-NYHN</td>
<td>95 / 98 35</td>
<td>10,900 (41.2)</td>
<td>31 (0.8)</td>
<td>308 (28.6)</td>
</tr>
<tr>
<td>0770256</td>
<td>8040 MPS-34-ZYHN</td>
<td>95 / 98 35</td>
<td>7,450 (28.1)</td>
<td>57 (1.4)</td>
<td>210 (19.5)</td>
</tr>
</tbody>
</table>

*Test Conditions: RO water at 440 psi (30 bar), 86°F (30°C). Feed solution for rejection tests is 3% glucose / 3% sucrose or 5% NaCl.

**OPERATING AND DESIGN INFORMATION**

**Typical Operating Pressure:** 220-510 psi (15-35 bar)

**Maximum Temperature:** 158°F (70°C)**

**Allowable pH - Continuous Operation:** 0-14

**Allowable pH - Clean-In-Place (CIP):** 0-14

**Maximum Pressure Drop Per Element:** 10 psi (0.7 bar)

**Maximum Pressure Drop Per Vessel:** 50 psi (3.5 bar)

*Consult KSS Process Technology Group for specific applications.

**NOMINAL DIMENSIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>A (inches)</th>
<th>B (inches)</th>
<th>C (inches)</th>
<th>Interconnector</th>
<th>O-Rings</th>
</tr>
</thead>
<tbody>
<tr>
<td>8040 MPS-34-NYHN</td>
<td>40.0</td>
<td>7.93</td>
<td>1.125</td>
<td>0030585</td>
<td>0035464</td>
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**TYPICAL PROCESS STREAMS**

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>5% Hydrochloric acid</td>
<td>15% Acetic acid</td>
<td>3% Sodium Hydroxide</td>
</tr>
<tr>
<td>37% Hydrochloric acid</td>
<td>5% Nitric acid</td>
<td>20% Sodium Hydroxide</td>
</tr>
<tr>
<td>15% Sulfuric acid</td>
<td>15% Phosphoric acid</td>
<td>10% Potassium hydroxide</td>
</tr>
</tbody>
</table>
Membrane Characteristics and Performance:
SelRO® composite nanofiltration membrane in a spiral wound configuration, with superior pH and temperature stability. Performance specifications shown on the front side of this document are nominal values.

Options:
- Feed channel spacers: 31 mil (N) and 57 mil (Z)

Operating Limits:
- **Operating Pressure:** Maximum operating pressure for SelRO® MPS-34 is 510 psi (35 bar). Actual operating pressure is dependent upon system flux rate, as well as feed, recovery and temperature conditions.
- **Permeate Pressure:** Maximum allowed permeate pressure is 3 psi (0.2 bar).
- **Differential Pressure:** Maximum differential pressure limit is 10 psi (0.7 bar) per element. Maximum differential pressure for any length vessel is 50 psi (3.5 bar).
- **Temperature:** Maximum operating temperature is 158°F (70°C). For guidelines of recommended temperature and pressure please refer to the “Operating Envelope for SelRO® Elements” in this document.
- **pH:** Allowable range for continuous operation is 0-14.

Water Quality for Cleaning and Diafiltration:
- **Turbidity:** For best performance maximum feed turbidity is 1 NTU.

Chlorine and Chemical Exposure:
- It is not recommended to expose the MPS-34 membrane to chlorine or other oxidants, as it may affect the membrane performance.
- Sodium metabisulfite (without catalysts such as cobalt) is the preferred chemical to eliminate free chlorine or other oxidizers in the feed.
- It is not recommended to expose the MPS-34 membrane to organic solvents, such as alcohol, acetone, etc.

Feed Flow Rate:
Maximum and minimum flow rate for the MPS-34 spiral element are as follows:
- Min. 25 gpm (95 liter/min)
- Max. 75 gpm (285 liter/min)
Actual feed flow rate is dependent upon system flux rate, feed characteristics, fouling tendency and system design.

Operating Envelope for SelRO® MPS-34 Elements:
It is important to follow the pressure - temperature relationship guidelines in order to prevent irreversible performance deterioration. Use this diagram as a guideline to the operating parameters for the MPS-34 product:

Element Handling:
- **Recommended Cleaning Materials:** Depending on the nature of the feed, the following cleaning agents can be chosen:
  - 0.1-5% w/w sodium hydroxide at 122°F (50°C)
  - 0.2-1% w/w nitric or phosphoric acid at 122°F (50°C)
  - 0.1-0.5% w/w detergent mix KOCHKLEEN® KLD-III at 122°F (50°C)
  - 0.5% anionic surfactant (such as SDS) at 122°F (50°C)
Consult KSS for other cleaning materials.
- **Lubricants:** For element installation, use only water or glycerin to lubricate seals. The use of petroleum or vegetable-based oils or solvents may damage the element and will void any warranty.
- **Storage Conditions:**
  - Refer to KSS “Element Handling and Storage” bulletin.

Service and Ongoing Technical Support:
Koch Separation Solutions (KSS) has an experienced staff of professionals available to assist end-users and OEM’s for optimization of existing systems and support with the development of new applications. KSS also offers a complete line of KOCHKLEEN® membrane pretreatment, cleaning, and maintenance chemicals.