SelRO® MPS-36 - pH Stable Membrane

*Nanofiltration Spiral Module Series – 2540, 4040*

**PRODUCT DESCRIPTION**

- **Membrane Chemistry:** Proprietary composite nanofiltration membrane
- **Membrane Type:** pH stable nanofiltration membrane
- **Molecular Weight Cut-Off (MWCO):** 1000 Dalton
- **Construction:** Spiral wound element
- **Permeate Tube Material:** CPVC

**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>0770036</td>
<td>MPS-36 2540 A2X</td>
<td>30 / 50</td>
<td>2,535 (9.6)</td>
<td>30 (0.8)</td>
<td>17.2 (1.6)</td>
</tr>
<tr>
<td>0770194</td>
<td>MPS-36 4040 A2X</td>
<td>30 / 50</td>
<td>9,350 (35.4)</td>
<td>30 (0.8)</td>
<td>60.3 (5.6)</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:** 122°F (50°C)
- **Allowable pH - Continuous Operation:** 1-13
- **Allowable pH - Clean-In-Place (CIP):** 1-13
- **Maximum Pressure Drop Per Element:** 10 psi (0.7 bar)
- **Maximum Pressure Drop Per Vessel (5 in Series):** 50 psi (3.5 bar)

*Consult KSS Process Technology Group for specific applications.

**NOMINAL DIMENSIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>inches</td>
<td>(mm)</td>
<td>inches</td>
<td>(mm)</td>
</tr>
<tr>
<td>MPS-36 2540</td>
<td>40.0</td>
<td>(1016)</td>
<td>2.4</td>
<td>(61)</td>
</tr>
<tr>
<td>MPS-36 4040</td>
<td>40.0</td>
<td>(1016)</td>
<td>3.9</td>
<td>(99)</td>
</tr>
</tbody>
</table>
Membrane Characteristics:
SelRO® Composite nanofiltration membrane in a spiral wound configuration, with superior pH and temperature stability.

Operating Limits:
- **Operating Pressure**: Maximum operating pressure for SelRO® MPS-36 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).
- **Operating and Cleaning Temperature**: The operating and cleaning temperature is limited to 122°F (50°C) for A2 elements (CPVC permeate tube).
- **pH**: Allowable range for continuous operation is 1-13. When a stainless steel permeate tube is used, corrosive acids should be avoided.

Water Quality for Cleaning and Diafiltration:
- **Turbidity**: Maximum feed turbidity is 1 NTU.
- **Guidelines**: For more details please consult with KSS Process Technology Group.

Chlorine and Chemical Exposure:
- It is not recommended to expose the MPS-36 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-36 membrane to organic solvents, such as alcohol, acetone, etc.

Feed Flow Rate:
Maximum and minimum flow rate for the MPS-36 spiral module are as follows:
- **2540 Minimum 2 gpm (7.5 liter/min)**
- **2540 Maximum 5 gpm (19 liter/min)**
- **4040 Minimum 6 gpm (22 liter/min)**
- **4040 Maximum 17 gpm (65 liter/min)**
Actual feed flow rate is dependent upon system flux rate, feed characteristics, fouling tendency and system design.

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
  - 0.5% anionic surfactant (such as SDS) at 122°F (50°C)
Consult KSS regarding the use of 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**: Refer to KSS “Element Handling and Storage” bulletin.

Service and Ongoing Technical Support:
Koch Separation Solutions, Inc (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.