



SeIRO[®] MPS-34 - 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): | 200 Dalton |
| Construction: | Spiral wound element |
| Major Applications: | Acid and caustic recovery, product concentration |
| Permeate Tube Material: | CPVC |
| Options: | Feed channel spacers: 30 mil (X) and 57 mil (Z) |

SPECIFICATIONS*

| Model | Part Number | Rejection [%] | | Permeate Flow gpd (m ³ /day) | Membrane Area ft ² (m ²) | Feed Spacer mil (mm) |
|-----------------|-------------|----------------------|------|--|--|-------------------------|
| | | Glucose / Sucrose | NaCl | | | |
| MPS-34 2540 A2X | 0770061 | 95 / 97 | 35 | 610 (2.3) | 17.2 (1.6) | 30 (0.8) |
| MPS-34 2540 A2Z | 0770090 | 95 / 97 | 35 | 455 (1.7) | 12.9 (1.2) | 57 (1.4) |
| MPS-34 4040 A2X | 0770166 | 95 / 97 | 35 | 2,240 (8.5) | 60.3 (5.6) | 30 (0.8) |
| MPS-34 4040 A2Z | 0770092 | 95 / 97 | 35 | 1,520 (5.8) | 43.0 (4.0) | 57 (1.4) |

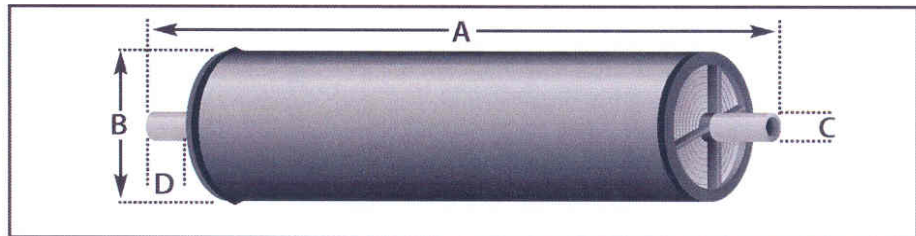
*Test Conditions: RO water at 440 psi (30 bar), 86°F (30°C). Feed solution for rejection tests is 3% glucose / 3% sucrose or 5% NaCl.

OPERATING AND DESIGN INFORMATION*

| | |
|---|-------------------------|
| Typical Operating Pressure: | 220-510 psi (15-35 bar) |
| Maximum Temperature: | 122°F (50°C) |
| Allowable pH - Continuous Operation: | 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 (5 in Series): | 50 psi (3.5 bar) |

* Consult Process Technology group for specific applications.

NOMINAL DIMENSIONS



| Model | A | | B | | C | | D | |
|-------------|--------|--------|--------|------|--------|--------|--------|--------|
| | inches | (mm) | inches | (mm) | inches | (mm) | inches | (mm) |
| MPS-34 2540 | 40.0 | (1016) | 2.4 | (61) | 0.75 | (19.0) | 1.0 | (25.4) |
| MPS-34 4040 | 40.0 | (1016) | 3.9 | (99) | 0.75 | (19.0) | 1.0 | (25.4) |

TYPICAL PROCESS STREAMS

| | | |
|------------------------------------|------------------------------------|----------|
| 5% HCl | 15% Acetic acid | 3% NaOH |
| 37% HCl | 5% HNO ₃ | 20% NaOH |
| 15% H ₂ SO ₄ | 20% H ₃ PO ₄ | 10% KOH |

SelRO® MPS-34 - pH Stable Membrane

Membrane Characteristics:

SelRO® Composite nanofiltration membrane in a spiral wound configuration, with superior pH and temperature stability.

Operating Limits:

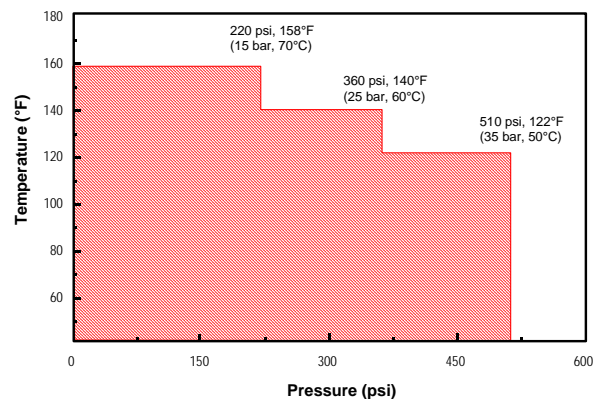
- **Operating Pressure:** Maximum operating pressure for SelRO® MPS-34 is 510 psi (35 bar). Actual operating pressure is dependent upon system flux rate, as well as feed, recovery and temperature conditions.
- **Permeate Pressure:** Maximum allowed permeate pressure is 3 psi (0.2 bar).
- **Differential 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).
- **Operating and Cleaning Temperature:** Maximum temperature is 158°F (70°C) for B2 elements (stainless steel permeate tube). The operating and cleaning temperature is limited to 122°F (50°C) for A2 elements (CPVC permeate tube). For guidelines of recommended temperature and pressure please refer to the "Recommended Envelope for Code 30 Membranes" in this document.
- **pH:** Allowable range for continuous operation is 0-14. 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 KMS Process Technology Group.
- **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 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.

Operating Envelope For Code 30 Membranes:

It is important to follow the pressure - temperature relationship guidelines, in order to prevent irreversible compaction and performance deterioration. The following diagram should be used as a guideline to operating the MPS-34 spiral module:



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 KMS 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 Solution:** Should be made with:
 - Short Term (up to two weeks): 0.25 w/w sodium metabisulfite.
 - Long Term: 0.7% w/w benzalkonium chloride.Glycerin should not be used for storage of the MPS-34 membrane. The membrane module should not get dry. It should be stored in a sealed bag, in a temperature ranging from 36°F - 86°F (2°C - 30°C).

Service and Ongoing Technical Support:

Koch Membrane Systems (KMS) 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. KMS also offers a complete line of KOCHKLEEN® membrane pretreatment, cleaning, and maintenance chemicals.

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