



# SeIRO™ MPS-34 pH STABLE ELEMENTS

Nanofiltration Spiral Element Series - 8040

## PRODUCT DESCRIPTION

|                                        |                                                                       |
|----------------------------------------|-----------------------------------------------------------------------|
| <b>Membrane Chemistry:</b>             | Proprietary composite nanofiltration membrane                         |
| <b>Membrane Type:</b>                  | pH stable nanofiltration membrane                                     |
| <b>Molecular Weight Cut-Off (MWCO)</b> | 200 Daltons                                                           |
| <b>Construction:</b>                   | Spiral wound element with hard overwrap and polysulfone permeate tube |
| <b>Major Applications:</b>             | Acid and caustic recovery, product concentration                      |
| <b>Options:</b>                        | Feed channel spacers: 31 mil (N) and 57 mil (Z)                       |

## SPECIFICATIONS\*

| Model            | Part Number | Rejection [%] |      | Permeate Flow | Membrane Area | Feed Spacer |
|------------------|-------------|---------------|------|---------------|---------------|-------------|
|                  |             | Glucose       | NaCl | gpd (m³/day)  | ft² (m²)      | mil (mm)    |
|                  |             | / Sucrose     |      |               |               |             |
| 8040 MPS-34-NYHN | 0770255     | 95 / 97       | 35   | 10,900 (41.2) | 308 (28.6)    | 31 (0.8)    |
| 8040 MPS-34-ZYHN | 0770256     | 95 / 97       | 35   | 7,450 (28.1)  | 210 (19.5)    | 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.

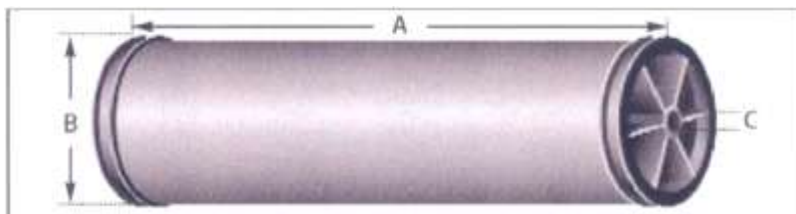
## OPERATING AND DESIGN INFORMATION\*

|                                             |                         |
|---------------------------------------------|-------------------------|
| <b>Typical Operating Pressure:</b>          | 220-510 psi (15-35 bar) |
| <b>Maximum Temperature:</b>                 | 158°F (70°C)**          |
| <b>Allowable pH - Continuous Operation:</b> | 0-14                    |
| <b>Allowable pH - Clean-In-Place (CIP):</b> | 0-14                    |
| <b>Maximum Pressure Drop Per Element:</b>   | 10 psi (0.7 bar)        |
| <b>Maximum Pressure Drop Per Vessel:</b>    | 50 psi (3.5 bar)        |

\* Consult Process Technology group for specific applications.

\*\* Refer to the Operating Envelope of the SeIRO Elements when temperature is higher than 122°F (50°C).

## NOMINAL DIMENSIONS



| Model            | A      |        | B      |       | C      |        | Interconnector | O-Rings |
|------------------|--------|--------|--------|-------|--------|--------|----------------|---------|
|                  | inches | (mm)   | inches | (mm)  | inches | (mm)   |                |         |
| 8040 MPS-34-NYHN | 40.0   | (1016) | 7.93   | (202) | 1.125  | (28.6) | 0030585        | 0035464 |
| 8040 MPS-34-ZYHN | 40.0   | (1016) | 7.93   | (202) | 1.125  | (28.6) | 0030585        | 0035464 |

## TYPICAL PROCESS STREAMS

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

## SeIRO™ MPS-34 pH STABLE ELEMENTS

### Membrane Characteristics and Performance:

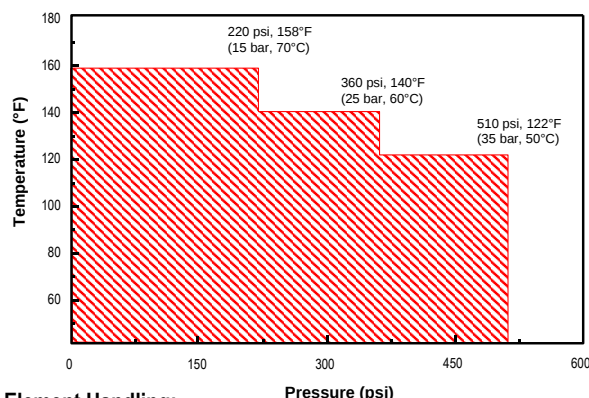
SeIRO™ composite nanofiltration membrane in a spiral wound configuration, with superior pH and temperature stability. Performance specifications shown on the front side of this document are nominal values.

### Operating Limits:

- **Operating Pressure:** Maximum operating pressure for SeIRO 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 SeIRO 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 SeIRO Elements:

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 element:



### 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 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 SeIRO membranes.
  - The membrane element should not get dry. It should be stored in a sealed bag, at 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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