



# Dairy-Pro<sup>®</sup> MF-0.1 Elements

## Microfiltration Sanitary Spiral Element Series

### PRODUCT DESCRIPTION

<b>Membrane Chemistry:</b>	Proprietary semi-permeable polyethersulfone (PES)
<b>Membrane Type:</b>	Microfiltration membrane with observed separation range of 0.1 micron
<b>Construction:</b>	Sanitary spiral wound element with controlled OD net outer wrap
<b>Regulatory Status:</b>	Compliant with US FDA CFR Title 21, EC Reg. No. 1935/2004, and EU Reg. No. 10/2011. Halal-certified by the Islamic Food and Nutrition Council of America (IFANCA).
<b>Applications:</b>	Whey de-fating, casein concentration, cheese brine clarification

### NOMINAL SPECIFICATIONS

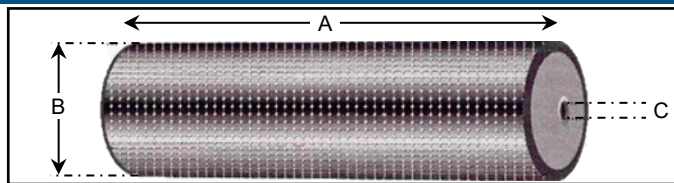
Part Number	Model	Feed Spacer mil (mm)	Active Membrane Area ft <sup>2</sup> (m <sup>2</sup> )
0754081	3838 MF-0.1 - 45	45 (1.1)	49 (4.6)
0754582	6438 MF-0.1 - 30	30 (0.8)	200 (18.6)
0754581	6438 MF-0.1 - 45	45 (1.1)	169 (15.7)
0754787	7838 MF-0.1 - 30	30 (0.8)	309 (28.7)
0754786	7838 MF-0.1 - 45	45 (1.1)	252 (23.4)
0754788	7838 MF-0.1 - 62	62 (1.6)	210 (19.5)
0754782	8038 MF-0.1 - 30	30 (0.8)	317 (29.4)
0754781	8038 MF-0.1 - 45	45 (1.1)	260 (24.2)

### OPERATING AND DESIGN INFORMATION\*

<b>Typical Operating Pressure:</b>	15 - 30 psi (1.0 - 2.1bar)
<b>Maximum Operating Pressure:</b>	140 psi (9.7 bar)
<b>Maximum Operating Temperature:</b>	122°F (50°C)
<b>Cleaning (CIP) Temperature Range:</b>	104 - 122°F (40 - 50°C) for cleaning with chlorine 104 - 176°F (40 - 80°C) for cleaning without chlorine
<b>Allowable pH - Continuous Operation:</b>	2.0 - 10.0
<b>Allowable pH - Clean-In-Place (CIP):</b>	1.8 - 11.0
<b>Design Pressure Drop Per Element:</b>	5 - 20 psi (0.4 - 1.4 bar) up to 122°F (50°C)
<b>Maximum Pressure Drop above 122°F (50°C):</b>	15 psi (1.0 bar) between 60-69°C (140-157°F) 13 psi (0.9 bar) between 70-80°C (158-176°F)
<b>Maximum Pressure Drop Per Vessel:</b>	60 psi (4.2 bar)

\*Consult KSS Process Technology Group for specific applications

### NOMINAL DIMENSIONS



Model	A		B		C	
	inches	(mm)	inches	(mm)	inches	(mm)
3838	38.0	(965)	3.8	(96)	0.831	(21.1)
6438	38.0	(965)	6.4	(162)	1.138	(28.9)
7838	38.0	(965)	7.7	(197)	1.138	(28.9)
8038	38.0	(965)	7.9	(201)	1.138	(28.9)



## OPERATING GUIDELINES

### Membrane Characteristics:

- The membrane used in the Dairy-Pro® MF-0.1 elements consists of a semipermeable polyethersulfone (PES) layer on a polyolefin backing material.

### Options:

- Diameter: 3.8", 6.4", 7.8" or 8.0"
- Feed Spacer: 30, 45 or 62 mil

### Operating Limits:

- **Operating Pressure:** Maximum operating pressure is listed on the first page of this document. Actual operating pressure is dependent upon system flux rate (application specific) as well as feed, concentration and temperature conditions.
- **Permeate Pressure:** Permeate pressure should not exceed baseline (concentrate) pressure at any time (including online, off-line, and during transition). Reverse pressure will damage the membrane.
- **Differential Pressure:** The maximum differential pressures per element are listed on the front of this document, including design values for multi-element housings.
- **Temperature:** Maximum operating temperature is 122°F (50°C) during process or chlorine CIP. Cleaning without chlorine can be done at higher temperatures, up to 176°F (80°C).
- **pH:** Allowable range for continuous operation is 2.0 to 10.0. Allowable pH range for cleaning is 1.8 to 11.0.

### Water Quality for Cleaning & Diafiltration:

- **Guidelines:** Refer to KSS "Water Quality Guidelines for CIP and Diafiltration" for more detailed information.

### Chlorine and Chemical Exposure:

- Adherence to cleaning and sanitizing procedures including chemical concentrations, pH, temperature, and exposure time is necessary to achieve maximum useful element life. Accurate records must be maintained.
- KSS standard cleaning procedures should be followed. Recommended chlorine exposure time at the defined conditions is 30 minutes per day.
- Residual chlorine concentration during cleaning cycle (CIP) should be 150 ppm @ pH 10.5-11.0. Chlorine concentration should never exceed 200 ppm.

- Chlorine should only be added to the cleaning solution after the pH has been adjusted to 10.5-11.0.
- Maximum cleaning temperature is 122°F (50°C) when chlorine is used. Maximum cleaning temperature is 176°F (80°C) for cleaning cycles not involving chlorine.
- Iron or other catalyzing metals in the presence of free chlorine or hydrogen peroxide will accelerate membrane degradation
- Sanitizing should be done only after a complete cleaning cycle and with water of acceptable quality. Refer to cleaning instructions and feedwater quality technical bulletins.

### Cationic Polymers and Surfactants:

Dairy-Pro® MF-0.1 membranes may be irreversibly fouled if exposed to cationic (positively charged) polymers or surfactants. Exposure to these chemicals during operation or cleaning is not recommended and will void the warranty.

### Lubricants:

For module 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 the warranty.

### Supplemental Technical Bulletins:

- Water Quality Guidelines for CIP and Diafiltration

### Dairy-Assist® Service and Ongoing Technical Support:

KSS has an experienced staff of professionals available to assist end-users and OEM's for optimization of existing systems and support for the development of new applications. KSS also offers a complete line of KOCHKLEEN® membrane pretreatment, cleaning, and maintenance chemicals.

### KSS Capability:

KSS is the leader in crossflow membrane technology, manufacturing reverse osmosis, nanofiltration, microfiltration, and ultrafiltration membranes and membrane systems. The industries we serve include food, dairy and beverage, semiconductors, automotive, water and wastewater, chemical and general manufacturing. KSS adds value by providing top quality membrane products and by sharing our experience in the design and supply of thousands of crossflow membrane systems worldwide.

*The information contained in this publication is believed to be accurate and reliable, but is not to be construed as implying any warranty or guarantee of performance. We assume no responsibility, obligation or liability for results obtained or damages incurred through the application of the information contained herein. Refer to Standard Terms and Conditions of Sale and Performance Warranty documentation for additional information*

**Koch Separation Solutions, Inc.** 850 Main Street, Wilmington, MA 01887  
Main: +1-978-694-7000 • Fax: +1-978-657-5208 • Toll Free: +1-888-677-5624

For complete contact information and listing of our global locations, visit [www.kochseparation.com](http://www.kochseparation.com)

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