KOCH MEMBRANE SYSTEMS

LENNTECH
info@lenntech.com Tel. +31-152-610-900
www.lenntech.com Fax. +31-152-616-289

KMS MFK™ FOOD & DAIRY MF ELEMENTS

Microfiltration 4", 6" and 8" Spiral Element Series

PRODUCT DESCRIPTION

Membrane Chemistry: Proprietary semi-permeable polyethersulfone (PES)
Membrane Type: MFK™-618 with observed separation range of 0.1 micron
MFK™-601 with observed separation range of 0.4 micron
Construction: Sanitary spiral wound with net outer wrap
Regulatory Status: Conform to USDA 3-A standards and FDA regulations (CFR Title 21)
Options: Diameter: 3.8", 6.3", or 8.3"
Feed Spacer: N (31 mil), V (46 mil), H (62 mil), F (80 mil), D (100 mil), or E (135 mil)
Outer wrap: Controlled (e.g. NYV) or trimmable (e.g. NYT)

SPECIFICATIONS

	Model Active Membrane Area											
	NYV/T (31 mil)		VYV/T (46 mil)		HYV/T (62 mil)		FYV/T (80 mil)		DYV/T (100 mil)		EYV/T (135 mil)	
	ft^2	(m^2)	ft^2	(m^2)	ft^2	(m^2)	ft^2	(m^2)	ft^2	(m^2)	ft^2	(m^2)
3838 MFK-618	60	(5.6)	49	(4.6)	41	(3.8)	33	(3.1)	-	-	-	-
3838 MFK-601	-	-	-	-	-	-	33	(3.1)	-	-	-	-
6338 MFK-618	-	-	169	(15.7)	-	-	-	-	-	-	-	-
8338 MFK-618	-	-	290	(27.0)	229	(21.3)	185	(17.2)	159	(14.8)	128	(11.9)
8338 MFK-601	-	-	-	-	-	-	185	(17.2)	-	-	-	-

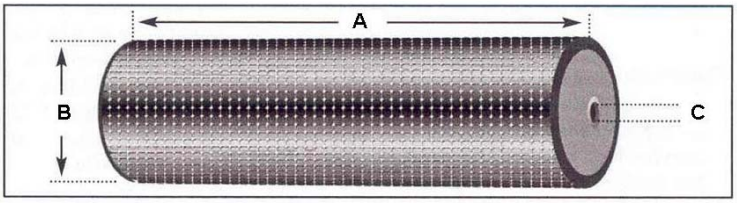
Note: not all combinations available

OPERATING AND DESIGN INFORMATION*

Typical Operating Pressure: 30 - 120 psi (2.1 - 8.3 bar)
Maximum Operating Pressure: 140 psi (9.7 bar)
Typical Operating Temperature Range: 41 - 131°F (5 - 55°C)
Maximum Operating Temperature: At pH 6.0 - 7.5: 150°F (65.5°C)
At pH 3.5 - 6.0: 140°F (60°C)
At pH 2.0 - 3.5 and 7.5 – 10.0: 131°F (55°C)
Cleaning (CIP) Temperature Range: 104 - 122°F (40 - 50°C)
Allowable pH - Continuous Operation: 2.0 - 10.0
Allowable pH - Clean-In-Place (CIP): 1.8 - 11.0
Design Pressure Drop Per Element: N spacer: 5-15 psi (0.3-1.0 bar)
V spacer: 5-20 psi (0.3-1.4 bar)
H, F, D or E spacer: 10-20 psi (0.7-1.4 bar)
Design Pressure Drop Per Vessel (3 In Series): N spacer: 15-45 psi (1.0-3.1 bar)
V spacer: 15-60 psi (1.0-4.1 bar)
H, F, D or E spacer: 30-60 psi (2.1-4.2 bar)

* Consult KMS Process Technology Group for specific applications.

NOMINAL DIMENSIONS



Model	A inches (mm)	B inches (mm)	C inches (mm)
3838 MFK-601/618	38.0 (965)	3.8 (96)	0.831 (21.1)
6338 MFK-618	38.0 (965)	6.3 (160)	1.138 (28.9)
8338 MFK-601/618	38.0 (965)	8.3 (211)	1.138 (28.9)

Membrane Characteristics:

- The membrane used in these elements consists of a semipermeable polyethersulfone (PES) layer on a polyester backing material.
- Pure water flux of both MFK-601 and MFK-618 membranes is 2.0-4.4 gfd/psi at 77°F (25°C).

Operating Limits:

- **Operating Pressure:** Maximum operating pressure is 140 psi (9.7 bar).
- **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 pressure per module is listed on the reverse side of this sheet for the different feed spacer elements. The maximum differential pressure for 3-in-series housings is also listed.
- **Temperature:** Maximum operating temperature is 150°F (65.5°C), at pH 6.0-7.5. Maximum cleaning temperature is 122°F (50°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:

- **Turbidity and SDI:** Maximum feed turbidity is 1 NTU. Maximum feed SDI is 5.0 (15-minute test).
- **Guidelines:** Refer to KMS "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 should be maintained.
- KMS Standard cleaning procedures for dairy applications 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 or higher. 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 or higher.
- 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 (Positively Charged) Polymers and Surfactants:

MFK 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:

- MF Element Cleaning Procedures
- Water Quality Guidelines for CIP and Diafiltration

Service and Ongoing Technical Support:

KMS 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. KMS also offers a complete line of KOCHKLEEN® membrane pretreatment, cleaning, and maintenance chemicals.

KMS Capability

KMS 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. KMS 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.