

Sani-Pro[®] MFK-603 Microfiltration Elements

Sanitary Microfiltration Spiral Element for High Temperature Applications

PRODUCT DESCRIPTION

Membrane Chemistry:	Proprietary semi-permeable polyethersulfone (PES)
Membrane Type:	MFK-603: Microfiltration membrane with nominal pore size of 0.1 micron
Construction:	Sanitary spiral wound element with net outer wrap, with BAND-TITE [®] Reinforcement straps
Regulatory Status:	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).
Applications:	Broth clarification, sugar and sweetener clarification, product purification

NOMINAL SPECIFICATIONS

Model	Membrane Area			
	30-mil Spacer ft ² (m ²)	45-mil Spacer ft ² (m ²)	62-mil Spacer ft ² (m ²)	80-mil Spacer ft ² (m ²)
3838 K603	--	49 (4.6)	43 (4.0)	35 (3.2)
4333 K603	--	--	--	43 (4.0)
6438 K603	200 (18.6)	169 (15.7)	136 (12.6)	111 (10.3)
7838 K603	309 (28.7)	252 (23.4)	210 (19.5)	--
8038 K603	317 (29.4)	260 (24.2)	219 (20.3)	175 (16.2)
8338 K603	373 (34.7)	303 (28.1)	237 (22.0)	181 (16.8)

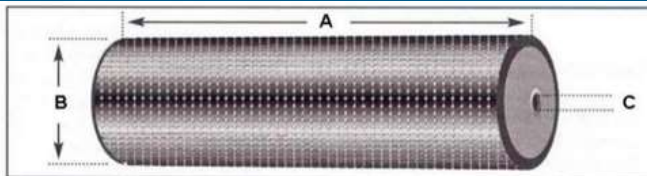
Not all options are available. Please check with KSS about spacer and outer wrap availability.

OPERATING AND DESIGN INFORMATION*

Typical Operating Pressure:	30 - 120 psi (2.1 - 8.3 bar)
Maximum Operating Pressure:	140 psi (9.7 bar)
Maximum Operating Temperature:	176°F (80°C)
Cleaning (CIP) Temperature Range:	104 - 122°F (40 - 50°C) for cleaning with chlorine 104 - 176°F (40 - 80°C) for cleaning without chlorine
Allowable pH - Continuous Operation:	2.0 - 10.0
Allowable pH - Clean-In-Place (CIP):	1.8 - 11.0
Design Pressure Drop Per Element:	5 - 20 psi (0.4 - 1.4 bar) up to 122°F (50°C)
Maximum Pressure Drop above 122°F (50°C):	17 psi (1.2 bar) between 50-59°C (122-139°F) for 30 and 45 mil spacer spirals 20 psi (1.4 bar) between 50-59°C (122-139°F) for 62 and 80 mil spacer spirals 15 psi (1.0 bar) between 60-69°C (140-157°F) for all spacers 13 psi (0.9 bar) between 70-80°C (158-176°F) for all spacers
Maximum Pressure Drop Per Vessel:	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
4333	33.0	838	4.3	109	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
8338	38.0	965	8.3	211	1.138	28.9

OPERATING GUIDELINES

Membrane Characteristics:

- The membrane used in the Sani-Pro® K603 elements consists of a semipermeable polyethersulfone (PES) layer on a polyolefin backing material.

Options:

- Diameter: 3.8", 4.3", 6.4", 7.8", 8.0" or 8.3"
- Outer wrap: Controlled or trimmable (-T)
- Feed Spacer: 30, 45, 62 or 80-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). Above 60°C (140°F) temperature change should not exceed 5°C (9°F) per minute.
- **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:

Sani-Pro® K603 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

KSS 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 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

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