



# KMS HpHT™ HFK™ 131 FOOD & DAIRY UF ELEMENTS

## High pH and Temperature Cleanable Ultrafiltration Spiral Element Series

### PRODUCT DESCRIPTION

|                            |                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Membrane Chemistry:</b> | Proprietary semi-permeable polyethersulfone (PES)                                                                                                                                               |
| <b>Membrane Type:</b>      | HpHT™ HFK™-131 with observed separation range of 10,000 Daltons                                                                                                                                 |
| <b>Construction:</b>       | Sanitary spiral wound with net outer wrap                                                                                                                                                       |
| <b>Regulatory Status:</b>  | Conform to USDA 3-A standards and FDA regulations (CFR Title 21)                                                                                                                                |
| <b>Options:</b>            | Diameter: 3.8, 4.3, 6.4 and 8.0 inches<br>Length: 36 or 38 inches<br>Feed Spacer: N (31 mil), V (46 mil), H (62 mil) or F (80 mil)<br>Outer wrap: Controlled (e.g. NYV) or trimmable (e.g. NYT) |

### SPECIFICATIONS

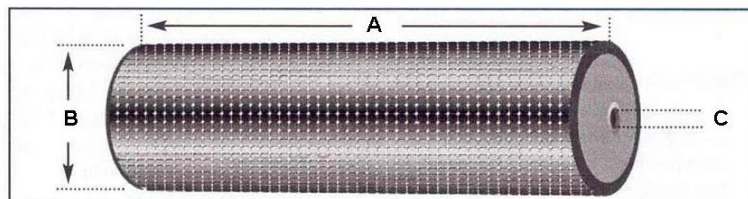
| Part Number       | Model                    | Feed Spacer | Active Membrane Area |        |
|-------------------|--------------------------|-------------|----------------------|--------|
|                   |                          |             | ft²                  | (m²)   |
| 0757632           | HpHT 3838-K131-NYV       | 31 mil      | 66                   | (6.1)  |
| 0757631           | HpHT 3838-K131-VYV       | 46 mil      | 54                   | (5.0)  |
| 0740611           | HpHT 4336-K131-VYV       | 46 mil      | 79                   | (7.3)  |
| 0757626 / 0750626 | HpHT 6438-K131-NYV / NYT | 31 mil      | 206                  | (19.1) |
| 0757606 / 0750606 | HpHT 6438-K131-VYV / VYT | 46 mil      | 167                  | (15.5) |
| 0757602 / 0750602 | HpHT 6438-K131-HYV / HYT | 62 mil      | 137                  | (12.7) |
| 0757608 / 0750608 | HpHT 6438-K131-FYV / FYT | 80 mil      | 112                  | (10.4) |
| 0750672           | HpHT 8038-K131-NYT       | 31 mil      | 330                  | (30.7) |
| 0750671           | HpHT 8038-K131-VYT       | 46 mil      | 265                  | (24.6) |

### OPERATING & DESIGN INFORMATION\*

|                                                  |                                                                                                                  |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Typical Operating Pressure:</b>               | 30 - 120 psi (2.1 - 8.3 bar)                                                                                     |
| <b>Operating Temperature Range:</b>              | 41 - 140°F (5 - 60°C)                                                                                            |
| <b>Cleaning Temperature Range:</b>               | 105 - 185°F (40 - 85°C)                                                                                          |
| <b>Allowable pH - Continuous Operation:</b>      | 2.0 - 10.0                                                                                                       |
| <b>Allowable pH - Clean-In-Place (CIP):</b>      | 1.8 - 12.5                                                                                                       |
| <b>Design Pressure Drop below 140°F (60°C):</b>  |                                                                                                                  |
| Pressure Drop Per Element:                       | N spacer: 12-15 psi (0.8-1.0 bar)<br>V spacer: 15-20 psi (1.0-1.4 bar)<br>H or F spacer: 15-25 psi (1.0-1.7 bar) |
| Pressure Drop Per Vessel (3 in series):          | N spacer: 36-45 psi (2.5-3.1 bar)<br>V spacer: 45-60 psi (3.1-4.1 bar)<br>H or F spacer: 45-75 psi (3.1-5.2 bar) |
| Pressure Drop Per Vessel (4 in series):          | N spacer: 48-60 psi (3.3-4.1 bar)<br>V spacer: 60-68 psi (4.1-4.7 bar)                                           |
| <b>Maximum Pressure Drop above 140°F (60°C):</b> | 10 psi (0.7 bar) per element for N and V spacers<br>15 psi (1.0 bar) per element for H and F spacers             |

\* Consult KMS Process Technology Group for specific applications.

### NOMINAL DIMENSIONS



| Model          | A<br>inches (mm) | B<br>inches (mm) | C<br>inches (mm) |
|----------------|------------------|------------------|------------------|
| HpHT 3838-K131 | 38.0 (965)       | 3.8 (96)         | 0.831 (21.1)     |
| HpHT 4336-K131 | 35.5 (902)       | 4.3 (109)        | 0.831 (21.1)     |
| HpHT 6438-K131 | 38.0 (965)       | 6.37 (162)       | 1.138 (28.9)     |
| HpHT 8038-K131 | 38.0 (965)       | 7.9 (201)        | 1.138 (28.9)     |

### Membrane Characteristics:

- The membrane used in these modules consists of a semipermeable polyethersulfone (PES) layer on a polyolefin backing material.
- Pure water flux of these HpHT HFK131 membranes is 1.0-2.2 gfd/psi (24-53 l/m<sup>2</sup>/h/bar) 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 element is listed in the front of this document, including design values for multi-element housings. Maximum differential pressure per element at temperature higher than 140°F (60°C) is 10 psi (0.7 bar) for all feed spacers.
- **Temperature:** Maximum operating temperature is 140°F (60°C); maximum cleaning temperature is 185°F (85°C).
- **pH:** Allowable range for continuous operation is 2.0 to 10.0. Allowable pH range for cleaning is 1.8 to 12.5.

### Water Quality for Cleaning & Diafiltration:

- **Turbidity and SDI:** Maximum feed turbidity is 1 NTU. Maximum feed SDI is 5.0 (15-minute test).
- **Guidelines:** Please refer to the KMS "Water Quality Guidelines for CIP and Diafiltration" for more detailed information.

### Chemical Exposure:

- **Chlorine:** Exposure of HpHT membrane to free chlorine or other oxidizing agents such as permanganate, ozone, bromine and iodine is not recommended.
- **Cleaning and sanitizing limits for chemical concentrations, pH, temperature and exposure time must be observed in order to achieve maximum useful module life and to maintain the warranty.**
- **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:

PES 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 module and will void the warranty.

### Supplemental Technical Bulletins:

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

### 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. Along with the availability of supplemental technical bulletins, 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.

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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