Membrane SPECIALISTS

Ceramic Membrane Systems

For applications involving aggressive materials

Hostile environments, high levels of solvents, wide pH ranges, and other process considerations may dictate the use of ceramic membranes. This technology is normally adopted for ultrafiltration and microfiltration liquid separation applications in the process industries. Ceramic membranes are capable of operating in a wide variety of conditions, offering robustness and high reliability.

The membranes consist of asymmetric ceramic structures onto which are layered very thin and precisely defined fine-pored ceramic membranes – typically involving alumina or zirconia coatings. Membranes are housed in either single-element or multi-element 316-stainless steel modules providing a high packing density. Housings are available for both industrial and sanitary applications.

Membrane Specialists provides fully engineered membrane plants using a variety of geometries and can select the most appropriate for each application. Pilot plants, fitted with ceramic membranes, are available for both in-house and on-site trials. Membrane Specialists works closely with its customers to develop applications, optimize the process, and then design, build and guarantee the plant.

TYPICAL APPLICATIONS

- Food and beverage
  - Clarification of glucose, beer recovery, gelatin production, protein concentration
- Pharmaceutical and chemical
  - Product separation and product recovery for antibiotic broths and enzymes
- Waste Water
  - Oily wastes, compressor condensates, cooling lubricants

KEY FEATURES AND BENEFITS OF CERAMICS

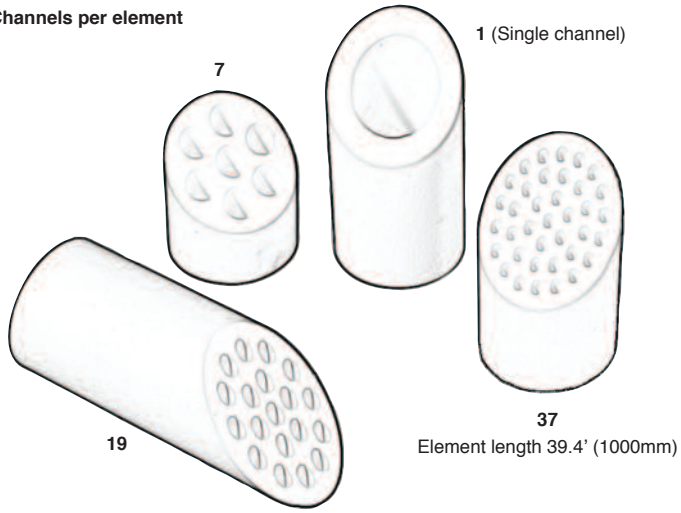
- Wide range of pore sizes; multiple applications across the UF and MF filtration range
- Excellent thermal stability and good resistance to fluctuating temperatures
- Excellent chemical stability – high tolerance to oxidants, solvents and hydrocarbons
- Easy to clean; can be sterilized
- Long lifetime
- Broad pH range
- Abrasion resistant
- High pressure resistance and strength

Ceramic membrane systems

ELEMENT CONSTRUCTION

(other geometries available)

Channels per element



SPECIFICATIONS:

Material	MF	a-$A1_2O_3$
	UF	ZrO_2 or TiO_2
Pore size (µm)		0.005, 0.01, 0.1, 0.2, 0.3, 0.4, 0.6, 0.8, 0.9, 1, 1.2, 3 & 6-8
Operating parameters		
pH range		1 – 14 at 140 - 160°F (60 - 70°C)
Temperature		Max 250°F (120°C) (steam sterilization)

ELEMENT CONSTRUCTION

Number of channels per element	Channel diameter (mm)	Area approximate (ft²/m²)	Element diameter (in/mm)
1	16	0.5/0.05	1.0/25.4
7	6	1.3/0.12	
19	3.3	2.2/0.2	
37	2	2.3/0.21	
19	6	3.9/0.36	1.6/4.1
37	3.6	4.4/0.41	

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