

Technology

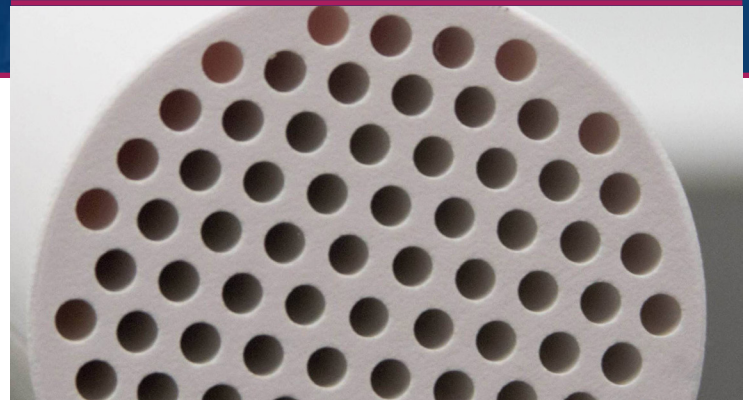
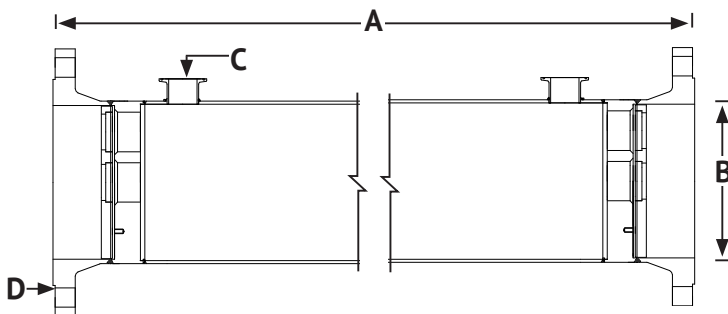
CeraHelix[®] ceramic nanofiltration membranes represent a new class of ceramic filtration and separation technology. We manufacture these pressure-driven tubular ceramic nanofiltration membranes for use across various market sectors and applications. Our NanoHelix[®] and PicoHelix[®] membranes can retain solutes with molecular weights down to 400 Da at high flux rates in harsh chemical and thermal conditions.

CeraHelix ceramic nanofiltration membranes are manufactured using our patented thin-film and DNA templating technology and are available in 19 and 85 channel configurations:

NanoHelix[®] is a colloidal sol-gel ceramic nanofiltration membrane that retains solutes down to a molecular weight cutoff (MWCO) of 700 Da.

PicoHelix[®] is a DNA-templated ceramic nanofiltration membrane that retains solutes down to a MWCO of 400 Da.

Housings Offered



Membrane

Ceramic multichannel

MWCO: 400 or 700 Daltons

Channel diameter: 0.13 inches (3.3 mm)

Operating Conditions

Operating pressure: 290 psi (20 Bar)

Maximum pressure: 319 psi (22 Bar)

Operating temp: up to 158°F (70°C)

Maximum temp: 230°F (110°C)

Housing

Housing: 316L SS

Seals: Viton O-Rings

Description	Number of Channels	Number of Membranes	A Length inch (mm)	B OD inch (mm)	C Permeate Connection	D Feed Connection	Area ft ² (m ²)	Cross flow range gpm (m ³ /hr)
CNF 19 18 M	19	18	53.3(1356)	8.6 (219)	Note 1	Note 2	46.5 (4.32)	90-185 (21-42)
CNF 85 19 M	85	19	54.2(1378)	14.0 (355)	Note 1	Note 1	216.8 (20.14)	435-875 (100-200)

Note 1: Permeate connection DIN 32676-B Long; Feed connection DIN EN 1092-1 Type 11 PN25

Note 2: Feed connection DIN EN 1092-2 Type 11 PN 25

Cerahelix® Ceramic Nanofiltration

Cerahelix's breakthrough ceramic nanofiltration products open the door to new applications of nanofiltration to solve difficult filtration and separation challenges.

Nanofiltration provides molecular level separation resulting in the removal of a wide range of organic and inorganic constituents with a high degree of efficiency. Traditionally, nanofiltration has been achieved by using legacy polymeric membranes. But now, Cerahelix's ceramic nanofiltration products are changing the game, simplifying the process and redefining the possibilities for nanofiltration with a robust,

durable and cost-effective solution that eliminates many of the challenges associated with polymeric membranes.

Cerahelix ceramic nanofiltration does not require pre-treatment. Our membranes are resistant to fouling, and they can be cleaned rapidly and efficiently. By eliminating the need for pre-treatment stages, our ceramic nanofiltration products help simplify system design and reduce the physical footprint, resulting in lower CapEx and OpEx. Due to these advantages, Cerahelix ceramic nanofiltration membrane filtration and separation solutions are becoming more important than ever across multiple market sectors.

Markets

Our products offer an advanced solution for applications ranging from treating industrial wastewater to purifying food products. They are also ideal for separation processes such as selectively concentrating, clarifying and purifying liquids, and are increasingly being used to recover high value products and reagents from waste streams. Key markets include:

Industrial Wastewater

- High efficiency, high purity wastewater treatment/reuse
- Pre-treatment/polishing
- Reagent recovery
- Waste to value recovery
- Demineralization

Food and Beverage

- High efficiency, high purity wastewater treatment/reuse
- Fermented beverage clarification
- Cold-sterilization pre-treatment
- Separation, concentration and purification
- Botanical extracts, compound fractionation and color removal

Biopharma/Nutraceutical

- Solvent recovery/purification
- Protein removal
- Botanical extracts

Features

No Pre-treatment

- Lower capital and operating costs
- Simplified operation can be automated
- Smaller footprint; less intrusive on operations

Minimal Fouling

- Increased efficiency and lower electrical costs
- Less frequent and faster cleaning
- Minimal loss of permeability; longer more efficient life

Unmatched Durability

- Chemically inert; can operate in harsh conditions
- Mechanically stable; does not degrade over time
- Longest operational life; lower sustaining capital costs

Value Proposition

- Simplify traditional multi-stage treatment processes
- Approach RO level purity
- Ability to integrate into existing systems
- Deliver superior performance + reduced energy consumption + lower CapEx and OpEx
- Achieve greater ROI than competing technologies

V01252021