

## Pall® Membralox® IC Ceramic membranes and modules

The highest capacity membrane\*  
for crossflow filtration of process  
fluids and effluents

### Description

**Pall Membralox** IC ceramic elements are asymmetric multi-channel membranes composed of a porous alumina support and a filtering layer (alumina, zirconia, titania).

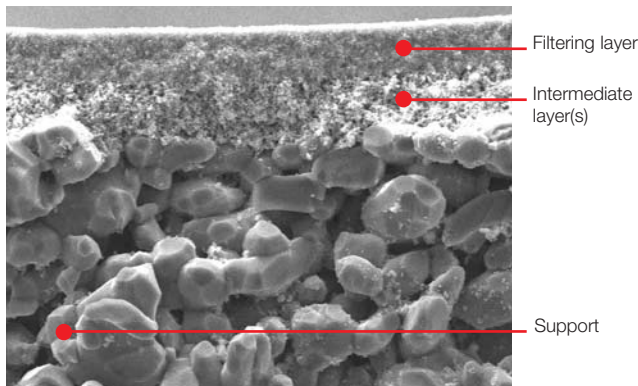
The revolutionary patented design provides a higher surface area per membrane than an equivalent channel diameter.

### Key Features

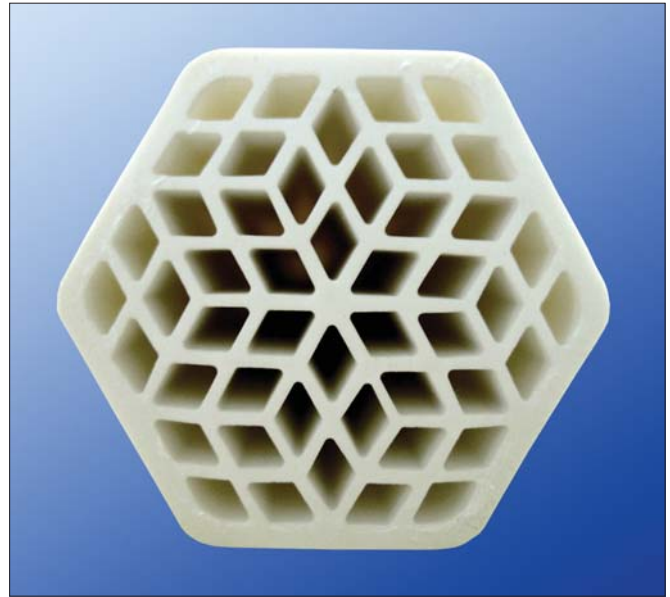
- High module flow rate
- Wide chemical and pH (0-14) compatibility
- Excellent thermal stability
- Long term and reliable performance
- Sanitizable and sterilizable
- Ability to withstand high frequency backpulsing cycles
- 100% bubble point integrity tested during manufacturing
- Suited for high fouling fluids, viscous products, high concentration factors, fine filtration, diafiltration, automatic and easy cleaning in place (CIP).
- Meets the requirements for food usage\*\*.

### Pall Membralox Membranes Quality

- Unique ceramic support of the 12 µm pore size allows the highest flux.
- Patented alumina end-sealing provides superior resistance to corrosion and cleaning cycles.
- High homogeneity and quality of the filtration layers for optimum filtration performances and selectivity.
- Exceptional mechanical resistance for long service life.



Cross section view of **Membralox** ceramic membrane (x 1010)



### Cost Effective Separations

The superior characteristics of **Pall Membralox** IC ceramic membranes provide a highly cost effective solution on the market:

- Less filtration modules and smaller system footprint
- Lower investment cost
- Shorter return on investment

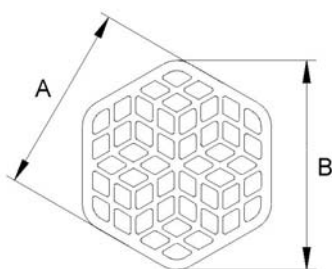
### Main Applications

- Fermentation broth clarification, molecules extraction, purification and concentration.
- Clarification of glucose syrups and fruit juice, beer recovery.
- Degreasing bath regeneration, oily waste water treatment, hydrocarbons/water separation, solvent recovery.
- Waste water treatment with ceramic membrane bioreactor (MBR)

### Pall Expertize in Ceramic Technology

- 60 years of ceramic expertize
- Specialists in crossflow filtration
- Technical support and assistance worldwide
- In-house feasibility studies and on-site pilot tests
- Customized design and engineering
- Turn key and automatic systems
- R&D offering continuous innovation
- Training courses

## Technical Information



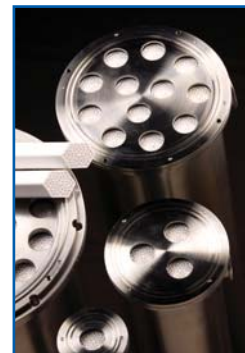
A = 38 mm  
B = 43 mm



HCB Module



HCS module



SD Modules

### Pall Membralox IC ceramic membrane

Element Type	EP4840
Channel diameter	4 mm
Number of channels	48
Filtration surface area	0.69 m <sup>2</sup>
Length	1020 mm

The 12 µm pore size **Membralox** ceramic membranes support is made up of ultrapure α-alumina.

### Pall Membralox IC membrane pore sizes

Microfiltration	0.8, 0.2 µm	α-alumina
Ultrafiltration	100, 50, 20 nm	zirconia

Other pore sizes available on request.

The limits of use of **Pall Membralox** modules are determined mainly by the type of housing or gasket materials. Based on valuable pilot test data, our Scientific and Laboratory Services can provide advice in selecting the best membrane and module configuration to match your process requirements.

\* ≥ 4 mm Channel diameter

\*\* The membranes based on high purity alumina are certified for use in contact with food fluids by Commission Directive 2005/31/EC.

All membrane components are made from materials that our suppliers state meet the requirements for food contact use:

Alumina and titania are GRAS. Zirconia layers on alumina support are listed in 21 CFR Sect.177.2910.

\*\*\* 1 bar = 100 kPa

### Pall Membralox HCB industrial and HCS 3-A sanitary modules

Module Type	M-19P	M-36P
Number of membranes	19	36
Filtration surface area	13.11 m <sup>2</sup>	24.8 m <sup>2</sup>
Construction of wetted materials	<b>HCB:</b> 316L SS, ceramic, PTFE <b>HCS:</b> 316L SS, ceramic, PTFE, FPM	

### Pall Membralox SD 3-A sanitary modules

Module Type	M-1P	M-3P	M-12P	M-22P
Number of membranes	1	3	12	22
Filtration surface area m <sup>2</sup>	0.69	2.07	8.28	15.18
Construction of wetted materials	316L SS, ceramic, EPDM or FPM			

### Operating limits of Pall Membralox modules in aqueous liquids<sup>1</sup>

Temperature	95°C (203°F)
Pressure	10 bar (145.1 psi) ***

<sup>1</sup> Any liquids belonging to group II from PED 97/23/EC art 9 - §



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