

## Datasheet: PDMS Membranes

PDMS (polydimethylsiloxane) membranes have hydrophobic/organophilic characteristics, in which the organic constituent of the feed passes preferentially through the membrane.

### Membranes:

Dimensions: 1-channel tube 250 x 10 x 7 mm, effective area 0,005 m<sup>2</sup>  
1-channel tube 500 x 10 x 7 mm, effective area 0,010 m<sup>2</sup>

**Substrate material:**  $\alpha$ -Al<sub>2</sub>O<sub>3</sub>  
**Top layer:** PDMS  
**Coating position:** Inside of the tube

### Limits of operation

Temperature: 70 °C (short-term 80 °C)  
Pressure: max. 10 bar  
pH: 1-12  
pre-filtration: 10  $\mu$  cartridge filter

### Handling, storage and cleaning

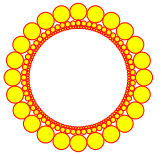
**Handling:** Wear clean gloves in order to prevent contamination with fungi.  
**Warning:** The membranes are brittle and cannot withstand shock, excessive vibration nor mechanical bending forces.  
**Storage before use:** Out of direct sunlight, room temperature, < 70% RH  
**Storage after use (short) :** In a solution of water and 10-15% IPA or water with 2500 ppm sodium metabisulfite  
**Storage after use (long):** In a solution of water with 0.7% benzalkonium  
**Cleaning:** The element can be cleaned by flushing with water to which a non-ionic detergent (10 ppm KOH) is added. Also enzymatic solutions dependent on the feed composition may be used. In case of food & additives processing contact us for alternatives.

### Sterilization options

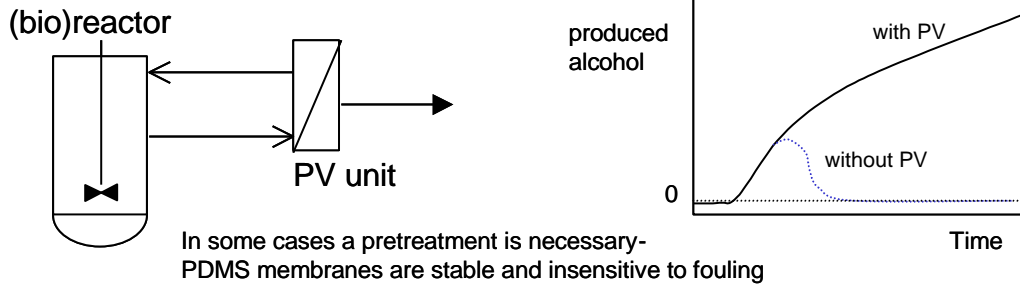
Steam: 106-108 °C  
Flushing: With ethylene oxide or 100% ethanol

### Possible applications with hydrophobic/organophilic membranes

- Recovery or extraction of organics from natural feed like fruit juices, wine, beer, coco-nut oil, essential oils (carvon, limonene) and in combination with fermentation.
- Recovery of organics in biotech or biotech related food applications such as in natural feed like fruit juices, wine, beer, coco-nut oil, essential oils (carvon, limonene) and in combination with fermentation.
- Removal of ethyl alcohol (and other alcohols) from wine and beer.
- Upgrading reverse osmosis permeate in juice production.
- Combination with bioreactors in production of alcohols (ethanol, IPA, butanol), ABE (acetone, butanol, ethanol), aldehydes, flavor production as well as acid production.
- Removal of VOCs.



Typical example of PV process in combination with bioreactors:



*Principle of membrane reactor for continuous recovery of product (alcohols, aromas)*

*The system with PV continues to produce alcohol while other systems stop when inhibiting amounts of alcohol (or other inhibitor) have been reached.*