

## Properties of PDMS membranes

Poly Di Methyl Siloxane (PDMS) membranes have hydrophobic/organophilic characteristics, in which the organic constituent of the feed passes preferentially through the membrane. For testing purposes we charge only for administrative costs. Please request for a quotation.

Membrane construction:

Support: PET. Intermediate UF membrane: type of PI.

Top layer: PDMS,  $T_g$  -130°C.

There is only limited information available for the many potential applications, however, the following indicative values can be used for first indication:

	Selectivity	Flux, kg/m <sup>2</sup> /h
ethanol:	7	0,5 – 4,0 at 80 degree C.
benzene:	500	depending on input concentration
hexane:	10000	and type of organic
toluene:	500	
trichloroethylene:	1000	

Throughput depend strongly on concentration, temperature and the nature of the compound to be permeated through the membrane.

Maximum allowable pressure: 20 bar, under strict conditions 40 bar.

### Possible applications with hydrophobic/organofilic 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 VOC from water and from air

Typical example of PV process in combination with bioreactors:

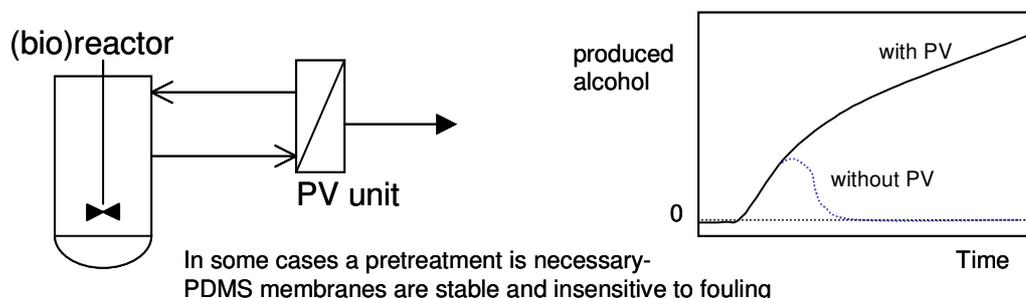


Figure 1. Principle of membrane reactor for continuous recovery of product (alcohols, aromas) The system with PV continues to produce alcohol while the other discontinues when inhibiting amounts of alcohols (or other inhibitor) has been reached.