



PERVATECH[®]

Datasheet

TUBULAR PDMS MEMBRANE

Tubular PDMS (polydimethyl siloxane) membranes have organophilic (hydrophobic) characteristics, which means that the organic constituent of the feed passes preferentially through the membrane.

MEMBRANE ELEMENT

Geometry	Tubular
Dimensions:	1-channel tube 250 x 10 x 7 mm, effective membrane surface area 0.005 m ² 1-channel tube 500 x 10 x 7 mm, effective membrane surface area 0.010 m ²
Substrate material:	α -Al ₂ O ₃
Top layer:	PDMS
Coating position:	Inside of the tube

OPERATIONAL WINDOW

Temperature	Maximum 70 °C (short-term 80 °C)
Pressure	Maximum 10 bar
pH	1-12
Pre-filtration	10 µm cartridge filter

HANDLING, CLEANING AND STORAGE

Please note: the membranes are brittle and cannot withstand shock, excessive vibration nor mechanical bending forces.

Handling

- Wear clean gloves to prevent contamination with fungi.

Cleaning

- Clean the element by flushing with water to which a non-ionic detergent (10 ppm KOH) has been added. Alternatively, enzymatic solutions may be used, depending on the feed composition.
- In case of food & additives processing, please contact us for alternatives.

Sterilization options

Steam

106-108 °C

Flushing

With ethylene oxide or 100 % ethanol

Storage

Storage before use

Out of direct sunlight, at room temperature, < 70 % relative humidity

Storage after use (short-term)

In a mixture of water and 10-15 % IPA or in a solution of water with 2500 ppm sodium metabisulfite

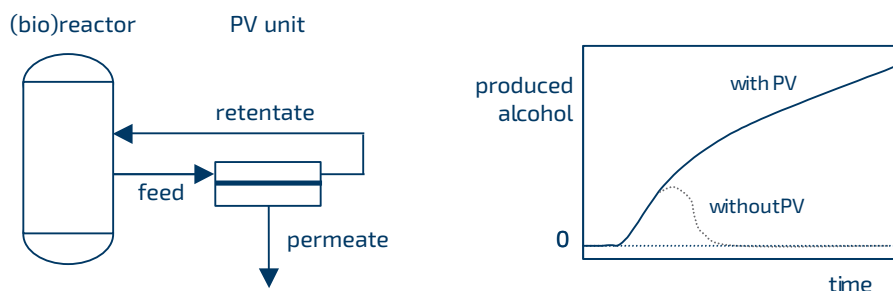
Storage after use (long-term)

In a solution of water with 0.7 % benzalkonium

EXAMPLES OF APPLICATIONS WITH TUBULAR ORGANOPHILIC (HYDROPHOBIC) PDMS MEMBRANES

- Recovery or extraction of organics (in biotech or biotech-related food applications) from natural feed streams like fruit juices, wine, beer, coconut oil, essential oils (carvone, limonene) and in combination with fermentation
- Removal of ethyl alcohol (and other alcohols) from wine and beer
- Upgrading of reverse osmosis permeate in juice production
- Combination with bioreactor in production of alcohols (ethanol, IPA, butanol), ABE (acetone, butanol, ethanol), aldehydes, flavor production as well as acid production
- Removal of volatile organic compounds (VOC)

Typical example of pervaporation (PV) process in combination with bioreactor:



The image shows the principle of a membrane reactor for continuous product recovery (alcohols, aromas). The system with pervaporation continuously produces alcohol while other systems stop when inhibiting amounts of alcohol (or another inhibitor) have been reached. In some cases, a pretreatment is necessary. PDMS membranes are stable and insensitive to fouling.

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