

Warranty

Pervatech BV (hereinafter called "Pervatech") provides a limited warranty on the materials, workmanship, and performance of its modules and membranes for pervaporation and vapour permeation, when installed and operated in accordance with Pervatech 's recommended design and operating specifications, according to the following provisions:

Materials and Workmanship Limited Warranty

Pervatech warrants that its modules are free from defects in materials and workmanship. Pervatech 's obligation under this limited warranty covers a period not to exceed 24 months from date of receipt by Buyer. Pervatech 's obligation under this warranty is limited to the repair or, at Pervatech 's discretion, replacement of faulty parts.

Performance Limited Warranty

Pervatech warrants the performance of its membranes for two (2) years from whichever of the following events occurs first:

- a. After commissioning and approval;
- b. Three (3) months after delivery;

The modules with membranes should be stored in an appropriate room at desired temperature (15-20 °C) and humidity (max. 90%).

Initial Performance

Pervatech warrants that the membranes herein offered have the initial minimum performance for the feed composition and conditions as presented in Appendix 1.

Should any membrane or module not meet the initial minimum performance specifications and Buyer notifies Pervatech of such deficiency, Pervatech will, upon confirmation of faulty performance, repair, replace or issue credit for the defective membrane(s).

Performance During Two-Year Limited Warranty Period

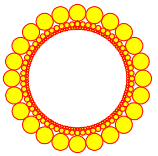
During the first two years of operation of the modules and membranes, Pervatech warrants that the performance when operated under the conditions as referred at in Appendix 1, shall be at least 60 per cent of the initial minimum performance. Pervatech will, on confirmation of loss of performance during the warranty period, credit 1/24 of the original purchase price of the membranes for each unused month of the warranty period toward the purchase of a replacement membrane at the current prevailing price.

Conditions of Performance Limited Warranty

The performance limited warranty described in the previous section, Performance During Two-Year Limited Warranty Period, shall be null and void if any of the following conditions are not met: a. The design parameters (array, recovery, etc.) plus instrumentation and other components of the system in which the membrane(s) are employed shall be consistent with sound engineering practice.

Pervatech reserves the right to review system design. b. Feed temperature shall be less than 150°C.

c. Feed shall contain no ozone, permanganate, chlorine or other strong oxidizing agents; feed shall not contain sec-ethanol-amine; feed shall not contain MSA; feed shall be in the pH window from 2 to 8 at all times; d. The membrane(s) shall not be exposed to pressure greater than 14 barg, unless otherwise stated in the product specification. e. Difference in in-(feed) and outgoing(retentate)



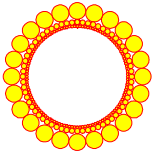
pressure should be lower than stated in the manual and on average be lower than 2,1 bar per module; f. The membrane(s) shall be operationally protected against hydraulic transients (“solvent hammer”). g. The membrane(s) shall be maintained in a clean condition and not fouled by particulate matter or precipitates or biological growth; if fouling by ad(b)sorption or scaling should occur, or normalized module flow decline is outside of the expected range in normal processing, cleaning procedures might be employed in accordance with the procedures as developed by Pervatech. h. In case there is not a cleaning procedure developed Pervatech and client will develop an appropriate procedure. Expenses related to this will be shared at a reasonable base. i. During continuous operation the pH shall be no less than 2.0 nor greater than 8. j. There shall be no membrane fouling by colloidal or precipitated solids, only pure solvents, fully dissolved without phase separation, should be present in the feed. k. In case microbiological contamination is expected in any feed composition, adequate provisions against this microbiological contamination shall be incorporated into the system design, as well as into all operating and maintenance procedures. l. The modules with membranes shall not be exposed during cleaning, or in shutdown periods, to a pH less than 2 nor greater than 8. m. Neither non-ionic nor cationic surfactants should be used for membrane cleaning or come in contact with Pervatech membranes. The buyer is fully responsible for the effects of non-compatibility of chemicals on Pervatech membranes; their use will void the warranty. n. Buyer is responsible for providing the operator with adequate system operating and maintenance manuals, operator and supervisor training; ensuring user's ability to perform cleaning and other performance restoration and diagnostic procedures. o. Buyer – client shall ensure that frequent, day-to-day, retraceable, adequate system and subsystem normalized performance data are routinely recorded in a systematic format and reviewed. Such information has to be (made) available to Pervatech on a reasonable basis in the event a claim is made against Pervatech pursuant to this performance warranty.

Repair or Replacement

Buyer's sole remedy for any breach of warranty is limited to and shall be fully discharged by Pervatech repairing any defective membrane or, at Pervatech 's discretion, replacing same at the then selling price f.o.b. Pervatech 's plant. Pervatech reserves the right to test the alleged defective membranes and the pervaporation system on user's or Buyer's premises or to request Buyer to perform such inspections or tests and forward the results thereof to Pervatech. If the membrane failure is determined to be from cause other than breach of warranty as set forth above, Buyer shall pay to Pervatech a fee of €500,- per day, plus direct travel expenses incurred by Pervatech's employees, in connection with any inspection and testing of such membranes and system on Buyer's premises. In all cases replacement, examination, inspection or removal of modules and/or membranes (from the plant or module housing) should be done by a by Pervatech authorized person. Modules and/or membranes shipped to Pervatech for warranty examination must be shipped freight prepaid. Modules and/or membranes examined as part of a warranty claim which are found to be performing as warranted will be returned to the Buyer freight collect.

Reminders. 1. Permeate obtained from first hour of operation should be discharged. 2. Membranes must be in use for at least 3 hours before full performance can be reached. 3. Before returning any membrane(s) to Pervatech for warranty examination, contact Pervatech.

Warranty Notice. Failure or refusal to fully disclose to Pervatech the use and operating parameters of Pervatech modules and membranes shall render all warranties null and void. The solvent system that has been tested upon request of Buyer and executed by Pervatech is presented in Appendix 1.



Warranty is only valid for this particular solvent system. It is assumed that data supplied and found for any other solvent as referred at in Appendix 1 are real, correct and reliable.

LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL, EXEMPLARY, AND PUNITIVE DAMAGES ARE EXCLUDED. Notice: No freedom from any patent owned by Seller or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document. EXCEPT AS EXPRESSLY PROVIDED IN THIS DOCUMENT, NO WARRANTIES ARE GIVEN: ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.