

POLYMEM ULTRAFILTRATION MODULE Warnings and Cautions

CONDITIONS OF PERFORMANCE ARE DESCRIBED HEREIN, Seller's warranties shall be null and void if any of the following conditions, unless otherwise specified, are not met:

1. The design parameters (fluxes, recovery rate, cleaning procedures, etc.) plus instrumentation and other components of the system in which the module(s) are employed shall be consistent with sound engineering practice. Seller reserves the right to review system design.
2. Feedwater temperature shall be less than 35°C (95°F)
3. Feedwater TSS shall not exceed 300 mg/L.
4. Feedwater Turbidity shall not exceed 300 NTU.
5. Feed water shall not contain particles larger than 130 microns.
6. Feed water shall not contain free oil, grease, or any other organic or inorganic matter or solutions harmful to the module(s).
7. Normalized operating flux shall not exceed 100 LMH.
8. Feedwater shall contain no more than 200 mg/L chlorine for Neophil™ membranes and no more than 0.5 mg/l for Polysulfone membranes (oxidizing agent).
9. The module(s) shall not be exposed to pressure greater than 3 bar (45 psi) at 35°C for Ultramem modules and greater than 4 bar (58 psi) at 35°C for Gigamem modules.
10. Backwash pressure shall not exceed 2.5 bar (36 psi) at any time and transmembrane pressure (TMP) shall not exceed 2.5 bar (30 psi).
11. Air scour shall be performed at less than 20 ± 5% N.l/h per m² of filtration surface offered in the module at 1 bar (14 psi), and a frequency of 60 minutes or greater.
12. Air for scouring and module integrity test shall be oil-free and filtered at 5 µm.
13. The membrane element(s) or modules(s) shall be operationally protected against hydraulic transients (water hammer) and abrupt pressure fluctuations.
14. The module(s) flow performance shall be maintained using backwash, maintenance cleanings (chemically enhanced backwash), and clean in place procedures.
15. During continuous operation or shut down the pH shall be no less than 2.0 or greater than 11.0.
16. There shall be no membrane fouling by colloidal or precipitated solids from the backwash supply water.
17. Adequate provisions against microbiological fouling shall be incorporated into the system design, as well as into all operating and maintenance procedures.
18. The membrane element(s) or modules(s) shall not be exposed during cleaning, to a pH less than 2 nor greater than 11.0 for Neophil™ membranes and greater than 12 for Polysulfone membranes.
19. The chlorine exposure to the membranes should not exceed 200,000 ppmh, whatever the pH for Neophil™ membranes and at a pH between 10 and 12 for Polysulfone membranes.
20. Cleaning chemicals/solutions shall be shown to be compatible by the supplier or user with Seller's module if they are not standard.
21. Polymers should not be used directly on the membrane element(s) or modules(s). The buyer is fully responsible for the effects of non-compatible chemicals on the module(s); their use will void the warranty.
22. Buyer is responsible for providing the user 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.

CONDITIONS OF PERFORMANCE (CONT.)

23. Buyer shall ensure that frequent, adequate system and subsystem normalized performance data are routinely recorded in a systematic format and reviewed. Such information to be available to Seller on a reasonable basis in the event a claim is made against Seller pursuant to this performance warranty.
24. Membrane element(s) or modules(s) must be stored in accordance with Seller's published guidelines.
25. Customer must keep membrane element(s) or modules(s) moist at all times.
26. All streams obtained from first hour of operation should be discharged.
27. Membrane element(s) and modules(s) shall not be exposed to freezing conditions.
28. Membrane element(s) and modules(s) shall be stored and maintained properly prior to installation/start-up. Temperature should be greater than 1 degree Celsius and module(s) should not be exposed to sunlight.

ADDITIONAL CONDITIONS OF PERFORMANCE

In addition to the foregoing, the warranty does not cover and shall be null and void if any of the following conditions are not met:

1. Accidental and/or external caused damages and damages caused by improper use are excluded from this warranty. Accidental and/or external caused damages and damages caused by improper use are damages caused by but not limited to operation and/or exposure of the module(s) to conditions, outside the instructions and conditions listed in the Seller's product datasheets. If there is any dispute with respect to the above, the buyer must provide evidence to Seller.
2. Damaged expendable parts and components (e.g., o-rings, gaskets, mechanical fasteners).
3. Damage or malfunction arising from repairs, replacement(s) or substitution(s) not specifically authorized by Seller.
4. Any defects or faults caused by, or resulting from, inaccurate or incomplete operating process information / process operating parameters, or work performed by the buyer or its authorized representative, are specifically excluded from this warranty.
5. In the case where the buyer and user are separate parties, the buyer has sole and exclusive responsibility for making the user aware of its responsibility under the conditions of this warranty. Failure of the buyer to meet its respective obligations under this agreement may invalidate the warranty.