



DOW™ Ultrafiltration Modules

DOW Ultrafiltration (UF) Module Three-Year Prorated Limited Warranty

The Dow Chemical Company ("hereinafter Seller") provides a limited warranty on the materials, workmanship, and fiber breakage of its Ultrafiltration (UF) modules, when installed and operated in accordance with Seller's recommended design and operating specifications, according to the following provisions:

Materials and Workmanship Limited Warranty

Seller warrants that DOW™ Ultrafiltration modules are free from defects in materials and workmanship. Seller's obligation under this limited warranty covers a period not to exceed twelve (12) months from date of delivery of the module(s) to carrier at shipping point, provided that such modules are operated and maintained in accordance with Seller's published specifications, the Conditions set below, and good engineering practices. If Seller determines that the claims are valid, Seller's obligation under this warranty is limited to the repair or, at Seller's discretion, replacement of any module.

Prorated Performance Limited Warranty Period

Seller warrants the performance of its modules, when operated under Seller's published specifications, the Conditions set forth below and good engineering practices, for thirty-six (36) months from Start Up (Start Up, as used herein, means the first day a process stream is introduced to the module) or forty-two (42) months after date of delivery of any module(s) to carrier at shipping point, whichever occurs first.

Warranted Performance During Limited Warranty Period

During the warranty period, Seller warrants that, when the modules are operated under Seller's published specifications, the Conditions set forth below and good engineering practices, fiber breakage rate shall not be more than 0.25% of the total number of membrane fibers in the module having required repair during any consecutive period of twelve (12) months.

Conditions of Prorated Performance Limited Warranty

Seller's warranties as described herein shall be null and void if any of the following conditions, unless otherwise specified, are not met:

- a. The design parameters (array, recovery, 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.
- b. Feedwater temperature shall be less than 104°F (40°C).
- c. Feedwater TSS shall not exceed 100 mg/L.
- d. Feedwater Turbidity shall not exceed 300 NTU.
- e. Feed water shall not contain particles larger than 300 microns.
- f. Feed water shall not contain free oil, grease, or any other organic or inorganic matter or solutions harmful to the module(s).
- g. Normalized operating flux shall not exceed 120 LMH.
- h. Feedwater shall contain no more than 200 mg/L chlorine (oxidizing agent).

Conditions of
Prorated
Performance
Limited Warranty
(cont.)

- i. The modules must not be exposed to specified pressure, maximum operating as a function of temperature:

Temperature (° C)	Max. Pressure (bar)
< 20.0	6.25
< 25.0	6.00
< 30.0	5.75
< 35.0	5.25
< 40.0	4.75

- j. Backwash pressure shall not exceed 2.5 bar (36 psi) at any time and transmembrane pressure (TMP) shall not exceed 2.1 bar (30 psi).
- k. Air scour shall be performed at 5 - 12 Nm³/hr/module, 1 bar (14 psi), and a frequency of 20 minutes or greater.
- l. Air for scouring and module integrity test shall be oil-free.
- m. The module(s) shall be operationally protected against hydraulic transients (water hammer) and abrupt pressure fluctuations.
- n. The module(s) flow performance shall be maintained using backwash, chemically enhanced backwash, and clean in place procedures.
- o. During continuous operation or shut down the pH shall be no less than 2.0 or greater than 11.0.
- p. There shall be no membrane fouling by colloidal or precipitated solids from the backwash supply water.
- q. Adequate provisions against microbiological fouling shall be incorporated into the system design, as well as into all operating and maintenance procedures.
- r. The module(s) shall not be exposed during cleaning, to a pH less than 2 nor greater than 12. The chlorine concentration used during cleaning should not exceed 2,000 mg/L. Cleaning chemicals/solutions shall be shown to be compatible by the supplier or user with Seller's module if they are not standard.
- s. Polymers should not be used directly on the module(s). The buyer is fully responsible for the effects of non-compatible chemicals on the module(s); their use will void the warranty.
- t. 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.
- u. 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.
- v. Module(s) must be stored in accordance with Seller's published guidelines.
- w. Customer must keep module(s) moist at all times.
- x. All streams obtained from first hour of operation should be discharged.
- y. Module(s) shall not be exposed to freezing conditions.
- z. Module(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.

Conditions of
Prorated
Performance
Limited Warranty
(cont.)

In addition to the foregoing, this 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. Expendable parts and components (e.g., o-rings, spacers, 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.

Exclusive Remedy

Buyer's sole remedy for any breach of warranty is limited to and shall be fully discharged by Seller repairing any defective module or, at Seller's discretion, replacing same f.o.b. Seller's plant. Seller reserves the right to test the alleged defective modules and the ultrafiltration system on user's or buyer's premises or to request buyer to perform such inspections or tests and forward the results thereof to Seller.

If the module failure is determined to be from cause other than breach of warranty as set forth above, buyer shall pay to Seller a fee of \$1000 per day, plus direct travel expenses incurred by Seller's employees, in connection with any inspection and testing of such modules and system on user's or buyer's premises. Modules shipped to Seller for warranty examination must be shipped freight prepaid. Modules examined as part of a warranty claim which are found to be performing as warranted will be returned to the buyer freight collect.

Seller will, on confirmation of module failure during the warranty period, credit 1/36 of the original purchase price of the module for each unused month of the warranty period toward the purchase of a replacement module at the current prevailing price.

Warranty Claim Procedure

Before returning any module(s) to Seller for warranty examination, Seller must be contacted to obtain return authorization. Any module(s) shipped to Seller's facility without return documentation will be returned to shipper unopened, freight collected.

The following procedure shall be followed to determine warranty protection:

1. The buyer shall send a written notice to Seller within fourteen (14) days of problem occurrence or the claim is waived.
2. The buyer shall submit all relevant operating data requested by the Seller.
3. The Seller will be provided a reasonable time to review the data and make initial recommendations in writing for further evaluation of the claim.
4. The buyer will make all reasonable efforts to execute and implement the Seller's recommendations and collect, record and submit all relevant data resulting from these recommendations.
5. In the event Seller's initial recommendations do not address and solve the issues of the performance, the buyer will grant Seller access to the ultrafiltration system and a reasonable time to perform testing and evaluation of module conditions and performance.
6. In the event Seller's recommendations address and solve the issues of the performance, the claim shall immediately be withdrawn and disposed.
7. In the case that buyer decides not to follow Seller's recommendations then the performance claim will be withdrawn and disposed.
8. Any defective module(s) shall be returned to Seller at buyer's expense if so requested by the Seller in accordance to Seller's Return Authorization policy.

Warranty Notice

Failure or refusal to fully disclose to Seller the use and operating parameters of Seller modules shall render all warranties other than that covering materials and workmanship null and void.

Exclusion of Consequential Damages

LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL, EXEMPLARY, AND PUNITIVE DAMAGES ARE EXCLUDED.

DOW™ Ultrafiltration

For more information about DOW Ultrafiltration, call the Dow Water & Process Solutions business:

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<http://www.dowwaterandprocess.com/uf>

NOTICE: The use of this product does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

NOTICE: No freedom from any patent owned by Dow 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 government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

