

MEMBRANE WARRANTY*

Important Note:

If a membrane performs as per specifications when first tested in the system [allowing for water temperature effect], then the membrane is good. Any performance decline after this has nothing to do with the membrane. The performance decline is due to one or more of the following:

1. Chlorine leakage
2. Colloidal particles or suspended solids
3. Hardness, iron or other fouling
4. Microbiological fouling
5. Physical abuse
6. O-ring leak

The water quality and the way the system is operated may lead to premature failure. It sometimes takes only a few hours to damage the membrane. The membrane does not lose its performance unless it is subjected to poor operating conditions or improper pretreatment. Performance problems at startup should be reported immediately.

1. Terms of Pro-rated Performance Warranty - Subject to the conditions set forth in Sections 3 and 4 below, AMI warrants the performance of its elements for one year from whichever of the following events occurs first:

- a. First use in system;
- b. Three (3) months following date of shipment from Vista, CA.

2. Initial Performance - AMI warrants the elements herein offered have the initial minimum permeate flow and initial minimum salt rejection as specified in the Technical Bulletin(s) when such elements are tested under standard conditions specified by AMI.

- a. Buyer is responsible for testing of each element to ensure element meets performance specified in the Technical Bulletin(s).
- b. Should any element not meet performance specifications, and Buyer notifies AMI of such deficiency within 10 days from date of testing of element(s) by Buyer, AMI will, upon confirmation of faulty performance, repair or replace the defective element(s) at no charge. Shipping costs, in such case, will be paid by AMI.

3. Performance During Three Year Warranty Period - During the first year of operation on the element(s), AMI warrants that minimum permeate flow, when operated under standard conditions published by AMI, shall be at least 70 percent of the specified initial average flow. AMI further warrants that maximum salt passage, when element is operated under standard conditions published by AMI and pressure required to give the initial rated flow, will not exceed 1.35x the specified maximum value. AMI will, on confirmation of loss of performance during the warranty period, credit 1/12 of the original purchase price of the element for each unused month of the warranty period toward the purchase of a replacement element and the current prevailing price.

4. Conditions of Warranty

The performance warranty described in section 3 above shall be null and void if any of the following conditions are not met:

- a. The feedwater to the element(s) shall have less than one (1) NTU turbidity and a silt density index at 15 mins. (SDI₁₅) of less than 5.0;
- b. The feedwater to the element(s) shall contain no oil, grease, or other organic or inorganic matter harmful to the membrane;
- c. The feedwater temperature shall not exceed 113°F (45°C). The element(s) shall not be exposed during operation, cleaning, or in shutdown periods, to pH outside the range given in specification sheet and adequate provisions against microbiological contamination shall be incorporated into the system and design, as well as into all operating and maintenance procedures. The element(s) shall not be exposed to pressure outside the limit in the specification sheet;
- d. Backpressure (where permeate static pressure exceeds reject static pressure) shall not exceed 5 psi at any time;
- e. The element(s) shall be operationally protected against hydraulic shock loading (water hammer);
- f. The element(s) shall be maintained in a clean condition, unfouled by particulate matter or precipitates or biological growth; *If scaling or fouling should occur, or normalized element flow decline 10%, cleaning procedures should be initialized;*
- g. The system array, recovery, and instrumentation, and the design parameters and components of the system in which the element(s) are employed, shall be consistent with sound engineering practice;
- h. Buyer is responsible for providing the user with the adequate system operating and maintenance manuals, operator and supervisor

training, and ensuring user's ability to perform cleaning and other performance restoration and diagnostic procedures;

i. Buyer shall ensure that frequent, adequate system and subsystem performance data are routinely logged, reviewed, and filed in a systematic format, such information to be available to AMI on a reasonable basis in the event a claim is made against AMI pursuant to this performance warranty.

5. Repair or Replacement

AMI's obligation under this warranty and Buyer's sole remedy for any breach of warranty is limited to and shall be fully discharged by AMI repairing any defective element or, at AMI's discretion, replacing same at the then selling price f.o.b. AMI's plant, plus a service and handling charge of thirty dollars (\$30.00) per element, less a prorated rebate on the unrealized life of the warranty period. AMI reserves the right to test the alleged defective elements and the reverse osmosis systems on user's or Buyer's premises or to request Buyer to perform such inspections or tests and forward the results thereof to AMI. If the element failure is determined to be from cause other than breach of warranty as set forth above, Buyer shall pay to AMI a fee of \$800 per day, plus direct travel expenses incurred by AMI's employees, in connection with any inspection and testing of such elements and systems on Buyer's premises. Elements shipped to AMI for warranty examination must be shipped freight prepaid. Elements examined as part of a warranty claim which are found to be performing as warranted will be returned to the Buyer freight collect and a handling charge will be levied against the Buyer, as described in the published Element Return Procedures.

Reminders

1. Permeate obtained from first hour of operation should be discharged.
2. Elements must be in use for at least 6 hours before formaldehyde is used as a biocide. If the elements are exposed to formaldehyde before this period, a severe loss in flux may result.
3. Neither nonionic nor cationic surfactants, nor any other chemical not approved by AMI, should be used for membrane cleaning or come in contact with AMI elements. The customer is fully responsible for the effects of unapproved chemicals on AMI elements; their use will void the warranty.
4. Before returning any element(s) to AMI for warranty examination, see the Element Return Procedures technical bulletin.

Warranty Notice

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

***This warranty applies only to membrane elements manufactured by Applied Membranes, Inc. For others, refer to the product warranty.**