



## FILMTEC™ Membranes

### FILMTEC Reverse Osmosis and Nanofiltration<sup>1</sup> Element Three-Year Prorated Limited Warranty

FilmTec Corporation ("hereinafter FilmTec") provides a limited warranty on the materials, workmanship, and performance of its spiral-wound reverse osmosis and nanofiltration elements<sup>1</sup>, when installed and operated in accordance with FilmTec's recommended design and operating specifications, according to the following provisions:

#### Materials and Workmanship Limited Warranty

FilmTec warrants that its new reverse osmosis and nanofiltration elements are free from defects in materials and workmanship. FilmTec's obligation under this limited warranty covers a period not to exceed 12 months from date of receipt by Buyer, provided that such elements are operated and maintained in accordance with FilmTec's published specifications and good engineering practices. FilmTec's obligation under this limited warranty is limited to the repair or, at FilmTec's discretion, replacement of any element which, when examined by FilmTec, appears to be defective under this provision of the limited warranty.

#### Prorated Performance Limited Warranty

FilmTec warrants the performance of its elements for three years from whichever of the following events occurs first:

##### ELEMENT SHIPPED WET

- a. First use in system;
- b. Three (3) months following date of shipment from Minneapolis to a location in the United States, Puerto Rico, Canada, and Mexico; or
- c. Six (6) months following date of shipment to any other destination.

##### ELEMENTS SHIPPED DRY

- a. First use in system;
- b. Twelve (12) months following date of shipment.

#### Initial Performance

FilmTec warrants that the elements herein offered have the initial minimum permeate flow and initial minimum salt rejection as specified in the Technical Bulletin(s). These parameters are established under standard test conditions specified by FilmTec.

Should any element(s) not meet performance specifications, and Buyer notifies FilmTec of such deficiency, FilmTec will, upon confirmation of faulty performance, repair or issue credit for the defective element(s). Shipping costs, in such case, will be paid by FilmTec.

#### Performance During Three-Year Limited Warranty Period

During the first three years of operation of the element(s), FilmTec warrants that minimum permeate flow, when operated under standard conditions published by FilmTec, shall be at least 70 percent of the specified initial average flow. FilmTec further warrants that maximum salt passage<sup>2</sup>, when an element is operated under standard test conditions published by FilmTec and pressure required to give the initial rated flow, will not exceed 1.35x the specified maximum value. FilmTec will, on confirmation of loss of performance during the warranty period, credit 1/36 of the original purchase price of the element for each unused month of the warranty period toward the purchase of a replacement element at the current prevailing price.

<sup>1</sup> Elements used in food, dairy, and sulfate removal are not covered by this warranty.

<sup>2</sup> Nanofiltration elements shall be tested on magnesium sulfate when determining salt passage.

Conditions of  
Prorated  
Performance  
Limited Warranty

The performance limited warranty described in the previous section, *Performance During Three-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 element(s) are employed shall be consistent with sound engineering practice. FilmTec reserves the right to review system design.
- b. Feedwater temperature shall be less than 113°F (45°C).
- c. Feedwater SDI (15 min., 30 psi) shall be less than 5.0.
- d. Feedwater shall contain no ozone, permanganate, or other strong oxidizing agents.
- e. The element(s) shall not be exposed to pressure greater than 1200 psi for seawater elements, 600 psi for brackish water, tap water, and nanofiltration elements, unless otherwise stated in the product specification.
- f. Backpressure (where permeate static pressure exceeds reject static pressure) shall not exceed 5 psi at any time.
- g. The element(s) shall be operationally protected against hydraulic transients (water hammer).
- h. 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 percent, cleaning procedures must be employed in accordance with the procedures as published in the literature pieces entitled "[Cleaning Procedures for FILMTEC™ FT30 Elements](#)" (Form No. 609-23010), and "[Cleaning and Disinfection Procedures for FILMTEC NF200 and NF270 Elements](#)" (Form No. 609-00388).*
- i. During continuous operation the pH shall be no less than 2.0 nor greater than 11.0 for reverse osmosis elements and no less than 3.0 nor greater than 10.0 for nanofiltration elements.
- j. There shall be no membrane fouling by colloidal or precipitated solids.
- k. Adequate provisions against microbiological contamination shall be incorporated into the system design, as well as into all operating and maintenance procedures.
- l. The reverse osmosis or NF90 element(s) shall not be exposed during cleaning, or in shutdown periods, to a pH less than 1 nor greater than 13. All other nanofiltration element(s) shall not be exposed during cleaning, or in shutdown periods, to a pH less than 1 nor greater than 12.
- m. Neither nonionic nor cationic surfactants should be used for membrane cleaning or come in contact with FILMTEC elements. The buyer is fully responsible for the effects of non-compatible chemicals on FILMTEC elements; their use will void the warranty.
- n. 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.
- o. 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 FilmTec on a reasonable basis in the event a claim is made against FilmTec pursuant to this performance warranty.
- p. Element(s) must be stored in accordance with FilmTec's published guidelines as published in the literature piece "[Handling, Preservation, and Storage](#)" (Form No. 609-02103).
- q. Customer must keep Element(s) moist at all times after initial wetting.
- r. Permeate and concentrate obtained from first hour of operation should be discharged.

## Repair or Replacement

Buyer's sole remedy for any breach of warranty is limited to and shall be fully discharged by FilmTec repairing any defective element or, at FilmTec's discretion, replacing same at the then selling price f.o.b. FilmTec's plant. FilmTec 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 FilmTec. If the element failure is determined to be from cause other than breach of warranty as set forth above, Buyer shall pay to FilmTec a fee of \$1000 per day, plus direct travel expenses incurred by FilmTec's employees, in connection with any inspection and testing of such elements and system on Buyer's premises. Elements shipped to FilmTec 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.

## Reminders

1. 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.
2. Before returning any element(s) to FilmTec for warranty examination, see the Element Return Procedures technical bulletin.

## Warranty Notice

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

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

### FILMTEC Membranes

For more information about FILMTEC membranes, call the Dow Liquid Separations business:

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Notice: The use of this product in and of itself 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 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. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

