

## Toray RO Element Three-Year Prorated Limited Warranty

Toray Industries, Inc. (hereinafter "Toray") provides a limited warranty to a buyer ("Buyer") on the materials, workmanship, and performance of its RO elements under the following terms and conditions:

### 1. Materials and Workmanship Warranty

Toray warrants that its new elements are free from defects in materials and workmanship. Subject to the applicable mandatory legal regulations, this Materials and Workmanship Warranty is effective for one (1) year from the date of receipt by Buyer. Buyer's exclusive remedy and Toray's (including those entities involved in the distribution and sale of elements) total liability to Buyer under this Materials and Workmanship Warranty for all claims is limited, at Toray's option, to repair or supply of new elements under the same delivery terms as in the original sales contract for replacement of any element which is determined by Toray to be defective under this Materials and Workmanship Warranty. The replacement of the elements shall be made by Buyer at its costs and expense. To avoid any doubt, this Materials and Workmanship Warranty does not warrant against element defects caused by failure to follow Toray's Operating and Handling Manual and good engineering practices.

### 2. Initial Performance Warranty

Toray warrants that the elements herein offered have the initial Minimum Product Flow Rate and initial Minimum Salt Rejection as specified in the specification sheets for the corresponding models attached hereto ("Specification Sheets"). These parameters are established under Test Conditions as specified in the Specification Sheets.

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

### 3. Performance Warranty

During the Warranty Period (defined in Section 4 below) when operated under standard conditions as specified in the Specification Sheets, Toray warrants

performance of its element(s) as follows ("Performance Warranty"):

- a. Salt passage will not exceed three (3) times the maximum salt passage<sup>1</sup>.
- b. Permeate flow rate shall remain at or above 70 % of Minimum Product Flow Rate as specified in the Specification Sheets.

### 4. Warranty Period

Toray's Performance Warranty applies for three (3) years from whichever of the following events occurs first ("Warranty Period");

- a. Pretreated water is fed into the RO unit for the first time.
- b. Three (3) months following shipment from a manufacturing facility in the U.S. to a destination in the U.S., Canada, or Mexico, or six (6) months following date of shipment in other cases.

### 5. Prerequisite Conditions of Performance Warranty

The Performance Warranty set forth in Section 4 above shall be void if any of the following conditions are not respected or met:

- a. The element(s) shall be operated within the operating conditions and recommendations described in Toray's Operating and Handling Manuals. Operating conditions of the element(s) must not exceed the Operating Limits as specified in the Specification Sheets.
- b. The design parameters including system array and recovery, instrumentation and components of the system in which the element(s) are employed shall be consistent with sound engineering practice. Toray reserves the right to review the system design; provided Toray shall not guarantee the system design, whether or not Toray exercises such right of design review.
- c. The element(s) must not be fouled by any kinds of precipitates, suspended solids, organic matters, inorganic scale, chemicals, or biological growth influencing the element performance negatively. The feed water entering the element(s) must not contain oil, grease, or other foreign organic or inorganic materials detrimental to the elements. The feed water to the element(s) must not contain strong oxidizing agents such as active chlorine and

<sup>1</sup> Maximum Salt Passage is calculated by the following formula with Minimum Salt Rejection as specified in the Specification Sheets;  
[Maximum Salt Passage (%)] = 100 - [Minimum Salt Rejection (%)]

ozone proven to be harmful to the element(s)' s performance and operating lifetime.

- d. Neither nonionic nor cationic surfactants, as well as coagulant, should be used for the membrane cleaning or come into contact with the element(s).
- e. The element(s) shall be protected against any shocks such as load shocks, vibrations, pulsation, air or water hammers at all times during start-up, normal operation, and cleaning. Back pressure, where permeate side pressure exceeds feed and brine side pressure, shall not exceed 0.7 kg/cm<sup>2</sup> (10 psi) at all times.
- f. In case of a system performance decline (permeate flow, salt rejection or pressure drop), appropriate countermeasures must be performed in a reasonable time.
- g. Buyer is responsible for providing the end-user with adequate manuals for system operation and maintenance, as well as training of the operators and supervisors, ensuring user's ability to perform cleaning, performance restoration, diagnostic and troubleshooting procedures.
- h. Buyer shall ensure that frequent and adequate system normalized performance data are routinely recorded, reviewed, filed and documented in a systematic form from initial plant start-up. Operation data such as troubleshooting, maintenance, operation time and chemical dosage shall also be recorded. These data must be made available to Toray upon request in case of a warranty claim.
- i. Prior to installation and use, the elements shall be stored in their original shipping bag and containers, shall not be exposed to direct sunlight, and shall not be exposed to an ambient air temperature greater than 35°C (95°F) or below 0°C (32°F).

## **6. Remedy for Breach of Performance Warranty**

- a. Buyer's exclusive remedy and Toray's (including those entities involved in the distribution and sale of elements) total liability to Buyer for all claims under this Performance Warranty is limited, at Toray's option, to repair, regenerate or supply new elements for replacement at the then ex-works price less a prorated rebate on the unrealized life of the Warranty Period, excluding customs, taxes, levies, fees, installation work etc.
- b. Toray's liability shall be limited to the extent that the total number of element(s) supplied for replacement will be less than or equal to the number of initial element(s) purchased. The installation of the replacement elements shall be made by Buyer at its cost and expense.

- c. Toray may, at its discretion, (i) dispatch its expert and/or outside expert for on-site examination, or (ii) request Buyer return of the alleged defective elements to Toray freight prepaid for examination. In case the result of such examination shows that (1) the failure of the element(s) performance is due to a cause other than breach of the Performance Warranty, or (2) the performance of the alleged defective elements meets the Performance Warranty, Buyer shall pay to Toray a fee of USD1,000 per day per person, plus all direct expenses incurred by Toray's personnel in connection with any inspection and testing of such elements and Toray may return such alleged defective elements to Buyer freight collect.

## **7. Reminder**

- a. When antiscalant is used, its compatibility with Toray elements must be confirmed by the antiscalant manufacturer.
- b. Permeate obtained from the first hour of operation should be discharged.
- c. Elements must be under normal operation for at least twenty-four (24) hours before formaldehyde is used as a biocide. If the elements are exposed to formaldehyde before the lapse of this period, an irreversible severe loss in flux may result.
- d. Before returning any element(s) to Toray for warranty examination, please contact your Toray account representative for instructions.

## **8. Disclaimer**

NO WARRANTIES, EXPRESSED OR IMPLIED, ARE GIVEN EXCEPT AS EXPRESSLY PROVIDED ABOVE. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE NOT PROVIDED AND ARE EXPRESSLY DISCLAIMED AND EXCLUDED. TORAY IS NOT LIABLE FOR CONSEQUENTIAL, INCIDENTAL, SPECIAL EXEMPLARY AND PUNITIVE DAMAGES, LOSS OF PROFITS, PLANT SHUT DOWN TIME OR SUITS BY THIRD PARTIES AGAINST BUYER, DUE TO A PERFORMANCE FAILURE OR DEFECT OF THE ELEMENT(S). ALL LIMITATIONS ON LIABILITY SHALL SURVIVE THE EXPIRATION, TERMINATION OR CANCELLATION OF THIS LIMITED WARRANTY.

FAILURE OR REFUSAL TO FULLY DISCLOSE THE USE AND OPERATING PARAMETERS OF TORAY MEMBRANE ELEMENTS TO TORAY SHALL RENDER ALL WARRANTIES, OTHER THAN MATERIALS AND WORKMANSHIP, NULL AND VOID.