

**Nafion™****Ion Exchange Materials**

## Membrane TX Products

### Description

NAFION™ perfluorinated membrane TX products are ready-to-use, dry membranes that can be installed into chloralkali electrolyzers without any pretreatment requirements.

The product was developed by Chemours to provide a membrane that is easy to handle and at the same time offers improved resistance to damage from handling. An additional advantage of TX membrane products is that they are expanded to a level that gives adequate tenting during cell operation and, consequently, wrinkle-free performance. The agent used to pre-expand NAFION™ to the TX form is diethyleneglycol (DEG). This is a glycolethyl ether that must be removed before operation by soaking with water or dilute caustic/brine after installing the membranes in the electrolyzer. DEG/water solutions can be biodegraded before disposal.

### Properties

#### Tensile and Tear Properties

After being installed and rinsed to remove the DEG, the NAFION™ membrane TX products have the same properties as the wet, expanded form of NAFION™ membranes with the same code number. For example, N2030 and N2030TX have the same physical properties during electrolyzer operation.

### Expected Performance

All NAFION™ membrane TX products will perform the same as properly expanded non-TX products.

### Safety and Handling Installation

**Note:** To prevent gradual evaporation of the DEG and subsequent membrane shrinkage, do not open the shipping container until membranes are ready for installation.

- When ready to install, open the container and remove the polyethylene (PE) cover from the roll of membranes.
- Unroll one sheet at a time onto a flat, clean surface. Carefully transfer each sheet into the clean, dry electrolyzer.  
**Note: Electrodes must be clean and dry.**
- After the membranes have been installed, tighten the assembly using normal closing pressure.
- Unused membrane pieces should be left rolled on the original shipping core and resealed with polyethylene wrap for storage.

## DEG Removal

The TX membranes contain about 80 g/m<sup>2</sup> DEG, which is removed after assembly tightening and before start-up to prevent foaming during initial operation. For specific procedures, contact your hardware supplier. The DuPont supplemental procedure is:

- Fill the electrolyzer with 2 wt% NaCl solution in the anode side and 2 wt% NaOH solution in the cathode side-ambient temperature. Soak for about 30 minutes and drain. Depending on specific recommendations from the electrolyzer manufacturer, alkaline (0.1 to 2.0 wt% NaOH) deionized water can also be used for soaking in place of the NaCl/NaOH solutions.

- This procedure may have to be repeated once or twice in order to bring the DEG concentration to an acceptably low level.

The number of required soaks can also be calculated as follows:

$$N = \frac{-4.9}{\ln [1/(1 + 0.235V)]}$$

Where:

N = number of soaks required.

V = volume, in liters, of electrolyte (both anode side + cathode side).

## Notes

### Start-up and Operation

After DEG removal, follow normal membrane chloralkali start-up and operating procedures provided by DuPont and your hardware supplier. If membranes have to be removed after operation, they should be handled and stored wet as described in the "NAFION™ User's Guide." (Bulletin T-10). Reinstallation must also follow User's Guide procedures.

The data listed here fall within the normal range of product properties, but they should not be used to establish specification limits nor used alone as the basis of design. This information is based on technical data that Chemours believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. This information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards. Because conditions of product use are outside our control, Chemours makes no warranties, express or implied, and assumes no obligation or liability in connection with any use of this information or for results obtained in reliance thereon. The disclosure of the information is not a license to operate under or a recommendation to infringe any patent of Chemours or others.

Medical Statement: Please contact your Chemours representative to discuss limitations regarding medical applications.