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Nafion™

perfluorinated membranes

Handling and Storage of Chemours Nafion™ Perfluorinated Membranes

Before You Start

Follow standard safety practices. Refer to the "NAFION™ Safety and Handling in Use Bulletin" and the Material Safety Data Sheet. Chloralkali customers should refer to the "NAFION™ User's Guide."

Handle membranes carefully! Any punctures, creases or scratches may lead to leaks. ALL surfaces in contact with membranes should be smooth and free of sharp projections, however small. This applies to the receiving, inspection, storage, pretreatment, cutting and mounting areas, as well as electrolyzer components.

Membranes will expand and contract based on moisture content. To eliminate wrinkling and subsequent operating problems, it is necessary to:

- Expand membranes BEFORE mounting, by pretreatment.
- Maintain 100% humidity in the cell once the membrane is mounted.

Storage and Handling

- When possible, store membranes in their original package, stacked horizontally. Otherwise, store flat, such as those used for shipment of larger pieces.
- Avoid exposure to high temperatures (in excess of 122°F) for extended periods.
- Before unpacking, allow membranes to reach room temperature at relative humidity above 50%.
- Unwrap membranes carefully. Use caution when removing packing tape from packing materials and membrane.
- Unwrap foam cushioning from both ends of the roll.
- Remove clear polyethylene overwrap that is taped to both ends of the cardboard core.

- Prior to use, membranes must not be scratched, punctured, torn, folded, crimped or creased.
- All surfaces in contact with membranes during handling, inspection, pretreatment or in service should be smooth and free of sharp projections, however small.

Identification

- Membranes sheets are identified by membrane type, ionic form (H^+ , Na^+), 10-digit manufacturing identification number, cathode side (CATH) where applicable, and machine direction (MD). This identifying information is located on the glossy film side (cathode side) of the membrane.
- When membranes are trimmed before mounting, ensure proper mounting in the cell by marking the cathode side with permanent ink, using a soft-tipped felt pen.
- If the entire membrane sheet will not be used, be sure to transfer the identifying information to the remaining portion for future reference.

Cutting

- Membranes can be readily cut out size with a knife, razor or scissors.
- Cutting before pretreatment generally may be preferred because dry membranes are easier to handle than wet ones in the cutting operation.
- However, prior to cutting, membrane dimensions may change as a result of changes in relative humidity. Also, membranes will expand when exposed to pretreatment and electrolyte conditions. If consideration is not given to dimensional changes, holes for bolts or liquid ports may not be positioned properly.

Pretreatment

NOTE: If you have any concerns about pretreatment, before proceeding contact your DuPont technical representative.

- The membrane changes dimensions based on its moisture content. This is affected by changes in humidity, as well as other exposure to moisture. Consequently, it is necessary to perform a pretreatment procedure to ensure that the proper fit is attained in the electrolyzer.
- Chloralkali membranes sold in the sodium form must be expanded in alkaline water as specified in the "NAFION® User's Guide."
- Chloralkali membranes pre-expanded with diethylene glycol (PX or TX type) or 0.1% NaHCO₃ (WX type) require no pretreatment unless specified by the technology seller.
- For most other applications, membranes in the acid form (100, 300 and 400 series) should be expanded by soaking in very hot water for at least 30 minutes. Allow to cool while immersed in water and install wet.

- Handle wet, slippery membranes carefully to prevent damage.
- Avoid folding or wrinkling membranes during pretreatment.

Mounting in the Electrolyzer

- Mount membranes immediately after pretreatment to prevent drying. Keep the membrane wet during the mounting procedure by spraying with water as needed.
- For those membranes with a cathode side, be sure that the membrane surface marked "CATH" faces the cathode.
- Use care when gasketing and sealing electrolyzer components to avoid tearing membrane.
- Maintain 100% humidity in the electrolyzer after installation of the membrane to prevent excessive membrane shrinkage.
- Membranes pretreated with diethylene glycol (PX or TX type) must be rinsed prior to energizing the electrolyzer to prevent foaming.

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 DuPont believes to be reliable. It is intended for use by persons having technical skill, 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, DuPont makes no warranties, express or implied, and assumes no obligation or liability in connection with any use of this information or for results obtained with respect to these products. This information is provided gratis, and buyer assumes the sole responsibility 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 DuPont or others.

CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement", H-50102.