

## **PRODUCT**

# **SUSTAINION<sup>®</sup> PTFE Reinforced X37-50 Anion Membrane Grade-T**

## **Handling and Storage of Dioxide Materials Sustainion<sup>®</sup> Anion Membranes**

### **Before You Start**

Follow standard safety practices. Refer to the **SD** information that was shipped with the membrane.

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:

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

### **Storage and Handling**

- The membranes are shipped in dry, chloride form. They should be stable like this in their sealed bag (for around a month) if they are not exposed to excessive humidity or moisture.
- If it is routinely exposed to changes in humidity and temperature or any moisture, DM recommends activating and storing the membranes in 1 M KOH bath even for a long-term duration.
- Avoid membrane exposure to high temperatures in excess of 40 °C.

### **Activation**

- Tear the seal and carefully withdraw the membrane from the bag.
- Instead of cutting to the exact device active area (to avoid cracking in its initial dry brittle form), **please immediately soak the entire membrane piece in 1M KOH** as advised below:
- Immerse the membrane piece into a 'large' petri dish or suitable plastic pan (with cover) containing 1 MKOH(potassium hydroxide) solution. Tilt the pan or move the membrane to dislodge any trapped air bubbles.
- Initially, the membrane will may curl in the solution. It can be kept flat by placing weights such as glass stoppers or small filled bottles on the edges/corners of the membrane.
- Be aware that the KOH activation will cause the membrane to swell. It is recommended to soak the membrane in KOH overnight. The membrane should be fully activated after about 5-10 hours of soaking.
- Once activated, the membrane is less prone to cracking, but it can still tear if mishandled. Users are urged to lay the membrane piece flat on a large clean glass slide or flat polypropylene plastic plate sheet before carefully using a sharp razor blade or scissor to cut it to their required dimensions. The membrane should be thoroughly washed with deionized water prior to mounting in a cell to wash off the excess surface KOH. The remaining membrane should be placed back in a sealed plastic container

containing the 1M KOH where it can be stored for at least a couple of months. (DO NOT LET THE MEMBRANE DRY OUT).

- All surfaces in contact with the membranes during handling, inspection, pretreatment or in service should be smooth and free of sharp projections, however small.

#### **Identification**

- Membrane sheets are identified by membrane type and Lot#.
- The membranes can be positioned in the cell using either side of the membrane.

#### **Cutting**

- Membranes can be readily cut out with a knife, razor or scissors.
- However, membrane dimensions may change because of changes in relative humidity. Also, membranes will expand when exposed to different pretreatment and electrolyte conditions. If consideration is not given to dimensional changes, holes for bolts or liquid ports may not be positioned properly.



PTFE Reinforced Dioxide Materials  
Sustainion® Membrane Product.

#### **Pretreatment**

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

#### **Mounting in the Electrolyzer Cell**

- Mount membranes immediately after any required further pretreatments to prevent drying.
- Maintain 100% humidity in the electrolyzer after installation of the membrane to prevent excessive membrane shrinkage

The manufacture and Dioxide Materials Sustainion™ membranes are covered under one or more U.S. Patents:

U.S. Patent 9,370,773

U.S. Patent 9,481,939  
Other U.S. and foreign patents pending.

**For further information on the Sustainion™ membrane products, please contact:**



**Tel: +86 13003038751**  
**Fax: +86 553-7458-388**  
**Email: [contact@scimaterials.cn](mailto:contact@scimaterials.cn)**  
**[www.scimaterials.cn](http://www.scimaterials.cn)**

---

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 Dioxide Materials 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, Dioxide Materials 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 Dioxide Materials or others.