

## **PRODUCT**

# **SUSTAINION® X37 Anion Membrane Grade-60**

### **Handling and Storage of Dioxide Materials Sustainion® Anion Membranes**

#### **Before You Start**

Follow standard safety practices. Refer to the **SDS** 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:

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

#### **Storage and Handling**

- The membranes are shipped in dry form on a liner. They should be stable like this, when kept in a 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 unnecessary exposure to high temperatures (in excess of 40 °C).

#### **Release from liner and activation**

- Please consult our 'general' video demonstration for a guide of the release and activation process:  
<https://youtu.be/vPDtBNQ14eg>
- The sequence of steps are detailed here for your reference as well:
- Tear the seal and carefully withdraw the membrane on its liner from the bag.
- Instead of cutting to the exact device active area (to avoid cracking in its initial dry brittle form), **please immediately soak a slightly larger membrane piece in KOH** as advised below (and shown in the first part of the video link):
- Place the membrane in a 'large' bath or container containing 1 molar potassium hydroxide solution.
- The membrane side should be facing down (towards the KOH solution) and the liner should be facing up.
- Initially, the membrane with the liner 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 liner.
- **This Sustainion® membrane has additional special heated activation process and it is recommended to follow this for effective hydroxide activation:**
- **The above-mentioned KOH bath with the membrane therein must be heated to 55 °C for ~ 1.5-3.5 hrs.**
- The KOH activation will slowly cause the membrane to swell and separate from the liner in around 2-3 hours after which the weights on the edges can be removed and liner discarded. (there might be slight quantities of brown residue visible from the release agent on the liner if it is left in solution for too long. It can be easily washed away from the membrane or ideally discarded when shifting to a fresh KOH bath as described later)
- If the membrane has not automatically dislodged from the liner after the 3-hours heated activation, the user may have to carefully separate it from the liner themselves. A sharp knife or razor can be used at the corner of the membrane to create a small crevice between the liner and membrane. The membrane can then be carefully and slowly pulled off the liner starting with that end by the help of some blunt tweezers.

- After the 3-hours heated activation, the membrane must be continued to be activated for a total of at least 24 hours (but preferably 48 hrs) in a **'fresh'** 1 M KOH bath at room temperature this time. (Old 1M KOH solution must be properly disposed and replenished with fresh KOH **two 'further' times** in approximately equal spaced intervals during this total 24-hour activation period)
- 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 slab 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 can be placed back in the 1M KOH bath where it can be stored for atleast a couple of months. (DO NOT LET THE MEMBRANE DRY OUT).
- The membrane should be thoroughly washed with deionized water prior to mounting in a cell to wash off the excess surface KOH.
- All surfaces in contact with membranes during handling, inspection, pretreatment or in service should be smooth and free of sharp projections, however small.
- Do not place the membranes outside of solution for extended periods or they will become brittle.

#### 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.



#### Pretreatment

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

Dioxide Sustainion® membrane product.

#### Mounting in the Electrolyzer

- 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.



科学材料站  
SCI Materials Hub

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

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.