

## Technical Information

**DURAION®** Membrane 201**Reinforced anion exchange membrane for alkaline water electrolysis.**

Associated documents:

- User manual DURAION® Membrane

**GENERAL INFORMATION**

**DURAION®** anion exchange membranes and ionomers are specifically engineered for water electrolyzers operating under alkaline conditions. They exhibit exceptionally high ionic conductivity, superior mechanical strength, and outstanding chemical stability throughout the lifetime of the electrolyzer. Evonik's polymer expertise has been key to achieving the well-balanced properties of **DURAION®** membranes, fulfilling the quality triangle required for membrane-based water electrolysis.

**SPECIFICATIONS**

Note that workplace environmental conditions and membrane conditioning can have a substantial impact on the dimensions and mechanical properties of the membranes.

| PROPERTY                                                    | UNIT                                             | DURAION®<br>REINFORCED |
|-------------------------------------------------------------|--------------------------------------------------|------------------------|
| Typical thickness <sup>a</sup>                              | μm                                               | 75 <sup>g</sup>        |
| Ionic conductivity <sup>b</sup>                             | mS/cm                                            | > 95                   |
| Swelling degree <sup>c</sup> (linear)                       | %                                                | < 3                    |
| Mechanical strength (dry) <sup>d</sup><br>(Young's modulus) | MPa                                              | > 900                  |
| Mechanical strength (wet) <sup>e</sup><br>(Young's modulus) | MPa                                              | > 700                  |
| Hydrogen permeation <sup>f</sup>                            | mol/<br>(s cm <sup>2</sup> bar) 10 <sup>-9</sup> | < 1.7                  |

a) Dry membrane after conditioning at 25 °C and 40 % relative humidity (RH).

b) Intrinsic ion conductivity of DURAION® polymer in OH<sup>-</sup> form at 60 °C.

c) Swelling of dry<sup>a</sup> membrane equilibrate in deionized (DI) water.

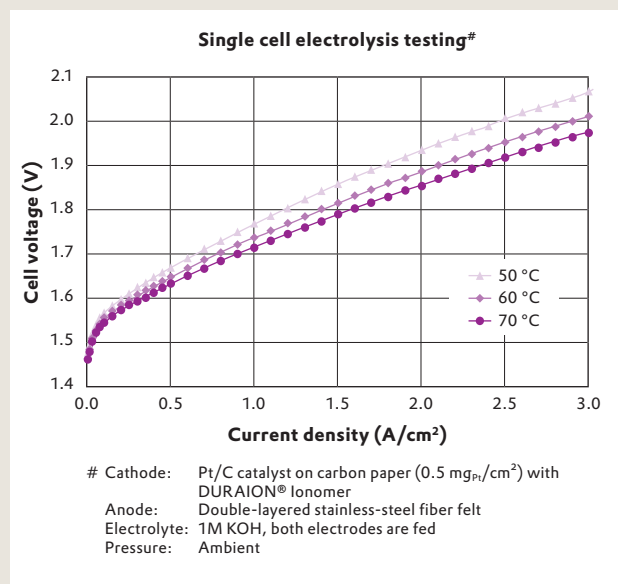
d) Dry<sup>a</sup> membrane (according to DIN EN ISO 527-3).

e) Wetted membrane (DI water, according to DIN EN ISO 527-3).

f) Ex-situ electrochemical measurement at 60 °C  
(internal testing conditions; results intended for reference purposes only).

g) Tolerances: -5 μm (lower limit), +10 μm (upper limit).

## CHARACTERISTIC PERFORMANCE DATA



## APPLICATION RECOMMENDATION

| PROPERTY                               | UNIT              | RECOMMENDATION <sup>a</sup> |
|----------------------------------------|-------------------|-----------------------------|
| Temperature                            | °C                | 50–70                       |
| Current density                        | A/cm <sup>2</sup> | 0.5–1.5                     |
| Electrolyte concentration <sup>a</sup> | Molar             | 0.5–1.0                     |
| Differential pressure                  | bar               | 0–35                        |

a) In case of KOH. When using a different electrolyte, membrane performance may vary.  
b) All parameters are interdependent and should be selected carefully.

## ORDER AND PACKAGING INFORMATION

**DURAION®** anion exchange membranes (amber-colored) are laminated onto a transparent PET carrier foil. Supplied membranes are delivered in chloride form and contain residual DMSO. Each membrane roll is wound around a paper core.

## STANDARD DIMENSIONS

### Nominal membrane widths:

- 24, 36, 50, and 75 cm.
- Widths of up to 100 cm are available upon request.

### Minimum order volume:

- 5 m<sup>2</sup>

Please note that nominal and active membrane widths differ for the 50 cm and 75 cm membranes.

| NOMINAL WIDTH | ACTIVE WIDTH |
|---------------|--------------|
| 50            | 48           |
| 75            | 73           |

Non-standard roll widths and lengths are available upon request. Sample membrane sheets (25×30 cm) can also be provided upon request.

## SAFETY, HANDLING AND STORAGE

We recommend handling the **DURAION®** membranes wearing gloves to prevent contamination.

Please note that the membrane's water content and conditioning protocols can influence membrane dimensions. After opening the packaging, the membrane will equilibrate to ambient workplace conditions. Therefore, **DURAION®** membranes should be pre-conditioned to the local environment before further processing.

Store the membrane in a sealed bag, out of direct sunlight, in a climate-controlled environment.

For detailed instructions on the proper use of **DURAION®** membranes, please refer to the accompanying user manual.

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