Technical Information

DURAION® Membrane 103

Free-standing anion exchange membrane for alkaline water electrolysis.

Associated documents:

- User manual DURAION® Membrane

GENERAL INFORMATION

DURAION® anion exchange membranes and ionomer are specifically engineered for use in water electrolyzers operating under alkaline conditions. They exhibit exceptionally high ionic conductivity, superior mechanical integrity 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.

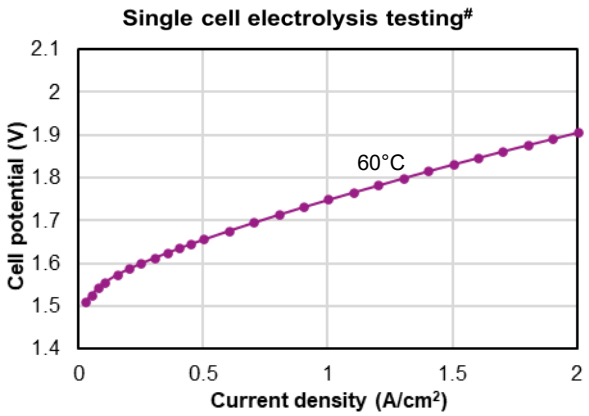
SPECIFICATIONS

Please note that workplace environmental conditions and membrane conditioning can affect the dimensions and mechanical properties of the membranes.

Property (Unit)	DURAION® free standing
Typical Thickness[a] (µm)	100[g]
Ionic conductivity[b] (mS/cm)	> 95
Swelling degree[c] (linear) (%)	< 6
Mechanical strength (dry)[d] (Young's-Modulus) (MPa)	> 900
Mechanical strength (wet)[e] (Young's-Modulus) (MPa)	> 500
Hydrogen permeation[f] (mol/(s cm² bar)*10^{-9})	< 1.7

a) Dry membrane after conditioning at 25 °C and 40 %RH.
b) Intrinsic ion conductivity of DURAION® polymer in OH-form at 60°.
c) Swelling of dry[1] membrane equilibrated in DI-water.
d) Dry[1] 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 60°C. Internal testing conditions and solely intended for reference purposes.
g) Tolerances: -5µm lower limit +10µm upper limit

CHARACTERISTIC PERFORMANCE DATA



cathode: Pt/C catalyst on carbon paper (0.5 mg_{Pt}/cm^2) and DURAION® Ionomer
anode: double-layered stainless-steel fiber felt
electrolyte: 1M KOH, both electrodes are fed
pressure: ambient

APPLICATION RECOMMENDATION

Property (Unit)	Recommendation[b]
Temperature (°C)	50 - 70
Current Density (A/cm^2)	0.5 - 1.5
Electrolyte Concentration[a] (Molar)	0.5 – 1.0
Differential Pressure (bar)	0 - 35

a) In case of KOH. When using a different electrolyte, the performance of our membranes might differ.
b) Parameters are interdependent and should be carefully selected.

ORDER 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.

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.

Evonik Operations GmbH
High Performance Polymers
Paul-Baumann-Straße 1
45772 Marl, Germany

Dr. Christian Schnitzer
christian.schnitzer@evonik.com
evonik.click/aem-technology/en

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