

Grade Rt Anion Exchange Membrane For Alkaline Water Electrolysis And Carbon Dioxide Reduction

Item Number: PL-GM01



Introduction

Optimize your electrochemical research with this premium Grade RT anion exchange membrane, engineered for high efficiency alkaline water electrolysis and carbon dioxide reduction, delivering superior mechanical strength, stable conductivity, and exceptional operational stability up to sixty degrees Celsius.

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Application	Description	Key Benefit
Alkaline Water Electrolysis	Splitting of water into hydrogen and oxygen in basic media for zero-emission energy generation.	High hydroxide conductivity reduces cell voltage requirements and increases hydrogen production efficiency.
Electrochemical CO2 Reduction	Conversion of carbon dioxide into valuable chemical feedstocks, hydrocarbons, or synthetic fuels.	Selectively transports carbonate and bicarbonate ions, ensuring optimal carbon conversion efficiency.
Electrochemical Cell Research	Benchtop testing and validation of novel electrocatalysts, gas diffusion electrodes, and flow cell designs.	Higher mechanical strength prevents accidental tearing during frequent cell disassembly and reassembly.
Chloride-Based Electrolysis	Investigations into chloride ion transport and preliminary chlor-alkali validation tests.	Stable chloride ion conductivity ensures consistent performance and accurate scientific data collection.
Industrial R&D Feasibility Studies	Low-volume, preliminary testing of commercial-scale electrochemical processes.	Cost-effective and highly reliable material properties allow for accurate scaling projections and risk reduction.

Parameter	Specifications (Item Number: PL-GM01)
Nominal Thickness	50 μm
Maximum Operating Temperature	60°C
Primary Applications	Alkaline water electrolysis, Carbon dioxide (CO ₂) reduction
Shipped State	Dry, with single-side inert plastic backing liner
Mechanical Performance	Higher mechanical strength than standard Grade 60 membranes

Temperature (°C)	In 1M KOH	In 1M KCl	In 1M KHCO ₃
20°C	~80 mS/cm	~30 mS/cm	~25 mS/cm
40°C	~90 mS/cm	~40 mS/cm	~30 mS/cm
60°C	~115 mS/cm	~50 mS/cm	~40 mS/cm
80°C (Peak Test)	~140 mS/cm	~70 mS/cm	~55 mS/cm

Target Application	Pre-Treatment Process Step-by-Step
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Alkaline Water Electrolysis	<ol style="list-style-type: none">1. Immerse the membrane with its backing liner in a 1M KOH solution bath at room temperature.2. Soak for 12 to 72 hours.3. Replace the electrolyte with fresh 1M KOH solution multiple times during the soaking period to ensure thorough activation.4. The inert plastic backing liner will naturally peel off during immersion; discard the liner and assemble the active membrane into the cell.
Carbon Dioxide (CO₂) Reduction	<ol style="list-style-type: none">1. Hydroxide Treatment: Fully submerge the membrane in a 0.1M to 0.5M KOH or NaOH solution for 6 to 12 hours. This step expands the membrane pores and significantly improves subsequent ion exchange kinetics.2. Carbonate/Bicarbonate Conversion: Transfer the membrane into a 0.1M to 0.5M aqueous carbonate or bicarbonate solution (e.g., potassium bicarbonate dissolved in deionized or distilled water) for 48 to 72 hours.3. Rinsing: Thoroughly rinse the membrane with deionized or distilled water to remove excess surface electrolytes.4. Cell Assembly: Mount the fully converted membrane into the electrochemical CO₂ reduction apparatus. <i>(Note: The hydroxide step can be omitted, but doing so will require a significantly longer total immersion time to complete the carbonate conversion).</i>