Hydrophilic Carbon Paper Gas Diffusion Layer For Fuel Cells And Electrochemical Systems

Item Number: PL-TZ01

Introduction

Highly conductive hydrophilic carbon paper optimized for fuel cells and electrochemical systems. This gas diffusion layer prevents catalyst flooding, enhances gas distribution, provides structural MEA support, and delivers outstanding thermal and electrical conductivity for advanced laboratory research applications.

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Application	Description	Key Benefit
Proton Exchange Membrane Fuel Cells (PEMFC)	Acts as the primary gas diffusion layer between the flow channels and the catalyst-coated membrane.	Prevents water flooding at high current densities, maintaining stable fuel cell voltage output.
Direct Methanol Fuel Cells (DMFC)	Facilitates simultaneous liquid methanol transport and carbon dioxide gas bubble evacuation.	Accelerates mass transfer kinetics and prevents gas-lock within the porous electrode structure.
Redox Flow Batteries (RFB)	Serves as a highly conductive electrode substrate for electrolyte flow distribution and reaction.	Maximizes specific surface area and reduces electrical resistance, enhancing battery energy efficiency.
Water Electrolyzers (PEM/AEM)	Operates at the anode and cathode interfaces to manage gas evolution and water input supply.	Enhances bubble detachment and maintains mechanical contact under high differential operating pressures.
Electrochemical CO2 Reduction	Provides a stable gas-liquid interface for the selective reduction of carbon dioxide at the cathode.	Delivers uniform reactant gas distribution to the catalyst layer, enhancing product selectivity.
Custom Laboratory Reactors	Integrates easily into non-standard electrochemical cells and diagnostic testing systems.	Offers easy adaptability, custom sizing, and reliable execution of analytical measurements.

Parameter Class	Property	Specification Value (Model PL-TZ01)
Physical Properties	Base Material	High-Purity Carbon Fiber
	Hydrophilic Treatment	Yes (Weakly Hydrophobic Surface Balance)
	Thickness (Nominal)	0.28 mm ± 0.02 mm
	Basis Weight	120 g/m²
	Porosity	78%
Electrical & Thermal	Through-Plane Resistivity	< 8.0 mΩ·cm²
	In-Plane Resistivity	< 2.5 mΩ·cm
	Thermal Conductivity	0.28 W/(m·K) (Through-plane)
Mechanical Properties	Tensile Strength (Machine Direction)	> 0.8 kN/m
	Compressive Strain	< 10% (at 1 MPa pressure)
	Flexural Rigidity	Excellent (Optimized for MEA support)
Operating Limits	Max Operating Temperature	250°C
	Chemical Compatibility	pH 0 to 14