High Conductivity Carbon Cloth For Fuel Cells And Battery Electrodes

Item Number: FZ27

Introduction

Engineered for high performance electrochemical systems, this high conductivity carbon cloth delivers exceptional through plane conductivity, superior gas permeability, and reliable tensile strength, making it the ideal gas diffusion layer substrate for advanced fuel cells, supercapacitors, and flow batteries.

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Application	Description	Key Benefit
Proton Exchange Membrane Fuel Cells (PEMFC)	Functions as a gas diffusion backing layer supporting electrocatalyst layers against flow field plates.	Minimizes water flooding and electrical contact resistance, sustaining high power density during continuous dynamic load cycling.
Vanadium Redox Flow Batteries (VRFB)	Serves as a porous electrode substrate facilitating liquid electrolyte flow and redox reactions of vanadium species.	Promotes deep electrolyte penetration with low hydraulic pressure drop and resists degradation in aggressive acidic electrolytes.
Electrochemical Supercapacitors	Utilized as a flexible, conductive current-collector backing for high-capacitance active material coatings.	Reduces equivalent series resistance (ESR) and accommodates continuous mechanical bending in flexible energy storage devices.
Direct Methanol Fuel Cells (DMFC)	Operates as an anode and cathode gas/liquid diffusion medium managing liquid fuel delivery and CO2 gas release.	Balances mass transport dynamics to prevent fuel crossover while maintaining high electronic conductivity.
Electrocatalytic Water Splitting	Acts as a robust 3D conductive platform for loading oxygen and hydrogen evolution reaction (OER/HER) catalysts.	Provides open pathway architectures for rapid gas bubble detachment and low overpotentials under high current densities.
Metal-Air Battery Electrodes	Deployed as an air-breathing cathode substrate allowing continuous oxygen diffusion and structural support for catalysts.	Maintains dimensional stability and high electronic percolation paths throughout prolonged atmospheric discharge-recharge cycles.
Electrochemical Sensors & Biosensors	Serves as a high-purity conductive substrate for immobilizing enzymes, metal nanoparticles, or conductive polymers.	Ensures low background noise, high signal-to-noise ratios, and reliable analytical reproducibility in analytical testing.

Parameter	Unit	Test Method	Value (FZ27)
Product Identifier	—	—	FZ27
Thickness	mm	TECLOCK SM-114	0.33 ± 0.03
Areal Weight	g/m²	ASTM D-646	120
Air Permeability	sec	Gurley Method	< 10
Through-Plane Resistance	mΩ·cm²	ASTM C-611 (Modified)	< 5
Tensile Strength (MD)	N/cm	ASTM D-828	10
Tensile Strength (XD)	N/cm	Standard Tensile Test	5
Fiber Matrix Architecture	—	Visual / Microscopic	Woven Carbon Fiber
Chemical Compatibility	—	Laboratory Assessment	Stable in acidic, alkaline, and organic electrolyte media