3D Structured Open Cell Aluminum Foam Battery Electrode Substrate And Experimental Material

Item Number: FZ58

Introduction

This high-purity 3D structured open-cell aluminum foam serves as an advanced battery electrode substrate and acoustic material, offering exceptional active mass loading, high electrical conductivity, superior weather resistance, and stable sound absorption for demanding laboratory and industrial applications.

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Application	Description	Key Benefit
Battery Electrode Substrates	Current collector for lithium-ion, sodium-ion, and solid-state battery R&D	Enables ultra-high active material mass loading and low local current density for high rate capability.
Supercapacitor Current Collectors	Continuous 3D framework for pseudocapacitive and EDLC active material deposition	Drastically reduces internal equivalent series resistance (ESR) and improves cycling rate performance.
Architectural Acoustic Ceilings & Walls	High-fidelity sound absorption panels for conference halls, broadcast studios, and auditoriums	Delivers an average absorption coefficient ≥ 0.6 with zero fiber shedding and low light reflectivity.
Highway & Railway Sound Barriers	All-weather, moisture-resistant acoustic barriers along transportation corridors	Retains acoustic absorption ≥ 0.6 even when wet or dusty, with high structural weatherability.
Thermal Management & Heat Exchangers	Forced-convection heat sinks and fluid phase-change thermal dispersion media	High surface-to-volume ratio maximizes convective heat transfer in compact physical footprints.
Electrocatalytic Flow Reactors	Porous, high-surface-area catalyst supports for water splitting and CO_2 reduction	Open-cell structure minimizes fluid pressure drop while providing extensive catalytic active sites.
Impact Energy Absorption Shields	Crushable structural cores for crash protection, packaging, and blast mitigation	Progressive plastic cell-wall deformation absorbs substantial kinetic energy under constant stress.

Parameter Category	Specification Detail	Value / Attribute
Product Identification	Model / Item Number	FZ58
Material Composition	Base Alloy Matrix	High-Purity Aluminum Alloy
Structural Morphology	Pore Type	Interconnected Open-Cell 3D Reticulated Network
Physical Dimensions	Standard Thickness	4.0 mm
Dimensional Customization	Thickness & Sheet Dimensions	Fully customizable upon customer specification
Acoustic Performance	Average Sound Absorption Coefficient	≥ 0.6 (Stable under wet, dry, or dusty conditions)
Sound Insulation	Acoustic Transmission Loss	> 24 dB(A)
Flammability & Fire Resistance	Fire Rating / Combustibility	Non-combustible (Metallic Aluminum Base)
Environmental Stability	Weather & Corrosion Resistance	UV-resistant, moisture-impervious, anti-aging
Surface Optical Properties	Finish & Reflectance	Diffuse matte, low-reflectance, non-glare finish

Parameter Category	Specification Detail	Value / Attribute
Surface Treatment Options	Protective Exterior Finish	Advanced multi-pass spray-baked outdoor-grade coatings
Environmental Compliance	Secondary Pollution & Recyclability	100% Recyclable, 100% Fiber-Free, Zero Dust Dispersion
Processing Compatibility	Laboratory Cell Fabrication	Compatible with doctor-blade slurry coating, dip coating, electrodeposition, and roll pressing