High Purity 30Mm Etched Aluminum Foil For Supercapacitors And Advanced Energy Storage

Item Number: FZ18

Introduction

Engineered for advanced supercapacitors and energy storage devices, this 30μm etched aluminum foil features a specialized honeycomb microstructure that minimizes internal electrical resistance, strengthens active material adhesion, optimizes thermal dissipation, and ensures exceptional high current charge discharge cycling performance across demanding industrial environments.

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Application	Description	Key Benefit
Electric Double-Layer Capacitors (EDLC)	Core cathode and anode current collector for high-power symmetric and asymmetric supercapacitor cells.	Minimizes internal resistance (ESR) and maximizes high-rate pulse charge/discharge power density.
Hybrid Energy Storage Modules	High-power current collector for ultra-fast charging transit buses, rail regenerative braking, and industrial cranes.	Enhances active material anchoring against rapid mechanical shock and cyclic thermal expansion.
Aluminum Electrolytic Capacitors	Substrate for high-reliability, low-impedance industrial power supply filtering and decoupling circuits.	Delivers uniform specific capacitance distribution and superior dielectric oxide film growth stability.
Pulse Power and Grid Stabilization	Current collection in high-rate energy discharge systems for frequency regulation and industrial UPS systems.	Accelerates core heat dissipation and maintains mechanical integrity under extreme transient current surges.
Micro-Grid Voltage Regulators	High-cycle capacitive storage systems deployed in harsh ambient and fluctuating load environments.	Prevents interfacial degradation and reduces capacity loss across thousands of dynamic charge cycles.
Advanced Battery-Capacitor Hybrids	Dual-function current collector substrate pairing capacitive carbon cathodes with battery-type anodes.	Provides robust peel strength and low mass resistivity to optimize combined energy-power performance.

Parameter	Unit	Standard Specification	Typical Measured Value	Test / Compliance Basis
Product Code	—	FZ18	FZ18	Standard Catalog
Nominal Foil Thickness	μm	30	30	Micrometer / Gravimetric
Aluminum Purity	%	≥ 99.6	≥ 99.95	Direct Spectrometry
Micro-Morphology Structure	—	Honeycomb Porous (1000x Peak)	Honeycomb Porous (1000x Peak)	SEM Micrograph Inspection
Through-Hole Penetration	—	Present (Porous)	Present (Porous)	Optical / Fluid Permeability
Mass Resistivity	Ω·g/m²	≤ 0.17	0.0294	Four-Point Probe Method
Tensile Strength	kg/cm	≥ 2.5	3.0	Tensile Mechanical Testing
Bending Resistance (Flexibility)	Cycles	≥ 70	90	Standard Bend Fatigue Test
High-Temperature Elongation	%	≥ 2.0	3.0	Elevated Temperature Tensile
Surface Roughness (Rz)	μm	≥ 3.0	5.0	Surface Profilometry
Active Layer Peel Strength	N/mm	≥ 0.5	1.0	180° Peel Adhesion Test

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Quality & Compliance Standards	—	GB/T5230-1995 / IEC	GB/T5230-1995 / IEC	National & International Specs

Capacitance Grade Classification	Unit	Standard Specification Range	Typical Nominal Performance
Grade 20 (Standard)	μF/cm²	20 ± 2	20
Grade 20 (High Density)	μF/cm²	25 ± 2	23
Grade 50	μF/cm²	30 ± 2	30
Grade 80	μF/cm²	40 ± 2	40

Condition Parameter	Operational Limit	Recommended Best Practice
Maximum Ambient Storage Temperature	< 30 °C	Maintain in climate-controlled cleanroom or dry room storage
Maximum Ambient Relative Humidity	< 70% RH	Store in hermetically sealed moisture-barrier packaging with desiccant
Handling Precaution	—	Use clean lint-free gloves; avoid surface contamination and mechanical creasing