

Nickel Foam For Battery Electrodes And Fuel Cell Materials

Item Number: FZ57



Introduction

Engineered for high performance electrochemical energy storage systems, this open cell nickel foam provides high electrical conductivity, uniform three dimensional porosity, and thermal stability for next generation battery electrodes, fuel cell materials, catalyst supports, and demanding filtration applications.

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Application	Description	Key Benefit
Secondary Battery Electrodes	Utilized as the positive and negative current collector substrate in Ni-MH, Ni-Cd, and nickel-carbon composite lithium-ion batteries.	Significantly increases active material loading capacity, lowers internal resistance, and doubles electrochemical rate performance.
Fuel Cells & Electrolyzers	Deployed as gas diffusion layers (GDL), porous transport layers (PTL), and bipolar flow field materials in hydrogen fuel cells and alkaline water electrolysis.	Ensures uniform gas/liquid distribution, superior interfacial conductivity, and minimal overpotential during high-current electrolysis.
Chemical Catalysis & Supports	Serves as a direct catalyst or high-surface-area catalyst carrier for chemical synthesis, methanation, exhaust gas purification, and volatile organic compound (VOC) abatement.	Maximizes contact efficiency between reactant streams and active catalyst sites while minimizing system pressure drop and operational energy consumption.
Thermal Management & Heat Pipes	Integrated into heat exchangers, condenser cooling cores, and capillary wick structures for advanced two-phase cooling loops and electronic heat dissipation.	Provides exceptional thermal dissipation ($>3 \text{ W/(m}^2 \cdot \text{K)}$) and robust capillary action to prevent localized thermal runaways in dense power modules.
Industrial Multiphase Separation	Applied as coalescing and separation media in high-efficiency oil-water separators, air filtration units, and corrosive industrial liquid scrubbers.	Delivers durable chemical resistance against acids and bases alongside a high through-hole volume ($\geq 98\%$) for continuous, non-clogging separation.
Distillation Column Packings	Serves as structured or random packing in chemical distillation, fractionation columns, and absorption towers.	Greatly enhances vapor-liquid mass transfer efficiency, reduces column height requirements, and withstands harsh solvent environments.
Electromagnetic & Acoustic Shielding	Installed in specialized enclosures, aerospace chassis, and acoustic dampening panels requiring lightweight EMI mitigation and noise suppression.	Achieves up to 90 dB EMI attenuation and broadband acoustic absorption while adding negligible structural weight to the assembly.
Industrial Combustion Burners	Functions as the permeable surface matrix for premixed gas burners, radiant surface heaters, and industrial drying equipment.	Promotes uniform flame propagation, prevents flashback, and maintains high structural stability under thermal radiation up to 1100°C .

Parameter	Specification (Item No. FZ57)
Base Material	High-Purity Metallic Nickel (Ni)
Pore Size Range	0.1 mm - 10 mm
Pores Per Inch (PPI)	5 - 120 PPI (Standard High-Density: 90 - 120 PPI / Pore size 0.1 - 0.3 mm)
Porosity	60% - 98%
Through-Hole Rate (Open Porosity)	$\geq 98\%$
Bulk Density	0.1 - 0.8 g/cm ³

Parameter	Specification (Item No. FZ57)
Specific Gravity	0.2 – 0.3
Thickness Range	0.3 mm – 25 mm
Standard Dimensions	1000 mm × 1000 mm × 1 mm (Custom geometries, rolls, and strips available)
Tensile Strength	8 – 50 MPa
Compressive Strength	250 kPa
Mechanical Strength	2 – 7 MPa
Continuous Operating Temperature	Up to 500 °C
Peak Temperature Resistance	> 1100 °C (Non-oxidizing / inert conditions)
Heat Transfer Coefficient	> 3 W/(m ² ·K)
Electromagnetic Shielding	Approximately 90 dB
Corrosion Resistance	Resistant to various industrial acids, alkalis, and organic solvents
Recyclability	100% Recyclable metallic scrap