

Polyvinylidene Fluoride PvdF Powder Lithium Battery Cathode Binder

Item Number: CL33



Introduction

Premium polyvinylidene fluoride PVDF powder optimized for lithium battery cathode binder applications, offering exceptional chemical inertness, high mechanical adhesion, minimal moisture absorption, robust thermal resistance, and consistent dispersion performance across advanced energy storage research and commercial cell manufacturing workflows.

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Application	Description	Key Benefit
Lithium-Ion Cathode Slurry Preparation	Dissolved in NMP and blended with LiFePO ₄ , NMC, LCO, or NCA active materials and conductive carbon black to form homogeneous coating slurries.	Prevents slurry phase separation and ensures uniform active mass loading across metallic current collector substrates.
High-Rate Cell Electrode Calendering	Used in high-power cylindrical, prismatic, and pouch cell electrodes subjected to intense mechanical roll-pressing and compaction forces.	Mitigates microcracking and foil delamination during high-density calendering, preserving electrode microstructure.
Solid-State Battery Composite Cathodes	Serves as a polymeric structural matrix holding solid electrolyte particles and high-capacity cathode chemistries in continuous contact.	Accommodates mechanical stress and volumetric changes while sustaining intimate particle-to-particle ionic transport pathways.
Electrospun Polymeric Separator R&D	Processed via electrospinning or phase inversion to generate porous non-woven membranes and separator coating layers.	Delivers superior chemical resistance to organic solvents, high electrolyte wettability, and robust thermal shrinkage resistance.
Silicon-Graphite Anode Matrix Modification	Blended into hybrid anode formulations to provide an elastic, electrochemically stable fluoropolymer binding network.	Assists in dampening the extreme mechanical stress and delamination forces associated with silicon particle lithiation expansion.
Supercapacitor & Pseudocapacitor Electrodes	Binds activated carbon, transition metal oxides, and MXenes to nickel foam or etched aluminum substrates for rapid energy discharge.	Ensures stable low-impedance electrical contact without degrading under rapid electrostatic cycling and high current densities.

Parameter Category	Specification Parameter	Test Standard / Condition	Value / Unit
Product Identification	Base Product Identifier	-	CL33
Packaging Options	Net Weight per Pack	Sealed Moisture-Barrier Packaging	100 g / pack, 500 g / pack
Physical Properties	Density	ISO 1183	1.78 g/cm ³
	Water Absorption	ISO 62 (Method 1, 24 h at 23°C)	< 0.04%
	Melt Flow Index (MFI)	ASTM D 1238 (230°C, 21.6 kg)	1.3 g/10 min
Thermal Properties	Thermal Stability (1% Weight Loss)	TGA in Air	375 - 400 °C (707 - 752 °F)
	Linear Thermal Expansion Coefficient	ASTM D 696	120 - 140 × 10 ⁻⁶ K ⁻¹
	Thermal Conductance	ASTM C 177 (at 23°C)	0.2 W/(m·K)
	Specific Heat Capacity	At 23°C & 100°C	1.2 - 1.6 J/(g·K)
Electrical Properties	Surface Resistivity	ASTM D 257 / DIN 53483 (Voltage <1 V, after 2 s -500 V, 23°C)	1 × 10 ⁻¹⁴ Ω/sq

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	Volume Resistivity	ASTM D 257 / DIN 53483 (Intensity = 10 mA, after 2 s, 23°C)	$1 \times 10^{14} \Omega\text{-cm}$
Fire Resistance	Flammability Classification	UL-94	Compliant Standard Class
	Limiting Oxygen Index (LOI)	ASTM D 2863 (Sheet thickness 3 mm)	44%