Lithium Rich Cathode Lithium Compensation Additive Lno Lfo Powder For Ncm Nca Lfp Lithium Ion Batteries

Item Number: CL07

Introduction

High performance lithium rich cathode lithium compensation additives including LNO and LFO powders engineered to dramatically improve first cycle coulombic efficiency offset initial capacity loss and extend cycling stability across high energy density NCM NCA and LFP battery chemistries

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Application	Description	Key Benefit
Silicon-Carbon (Si-C) Anode Battery Cells	Integrated into NCM/NCA cathodes paired with high-expansion Si-C anodes to supply sacrificial lithium during initial SEI formation.	Overcomes severe first-cycle irreversible capacity loss, increasing total usable cell energy density by up to 15%.
High-Capacity NCM & NCA Ternary Cells	Mixed into high-nickel ternary cathode formulations during slurry preparation for automotive pouch, prismatic, and cylindrical cells.	Increases initial coulombic efficiency (ICE) and improves capacity retention during high-rate and elevated-temperature cycling.
Lithium Iron Phosphate (LFP) Systems	Utilized alongside iron-based cathode materials (LFO variants) to supplement active lithium in energy-dense LFP cell designs.	Enhances discharge capacity retention over thousands of extended charge-discharge cycles in stationary energy storage systems.
Solid-State Battery Formulations	Employed as a active lithium source in all-solid-state lithium cell R&D to compensate for solid-solid interface lithium consumption.	Maintains solid electrolyte interface conductivity and prevents rapid capacity degradation in solid-state architectures.
Extreme Fast-Charging (XFC) Batteries	Applied in cells optimized for rapid charging profiles where aggressive SEI growth accelerates early active lithium depletion.	Stabilizes long-term capacity retention under high-current pulse regimes and prevents lithium inventory exhaustion.
Advanced Battery Materials Research	Used in university and corporate laboratory research for precise stoichiometry control and pre-lithiation studies.	Provides reproducible, reliable lithium pre-doping metrics for novel cathode alloy development and testing.

Specification Parameter	CL07-LNO (Li2NiO2 Grade)	CL07-LFO (Li5FeO4 Grade)
Chemical Formula	Li2NiO2	Li5FeO4
Target Cathode Compatibility	NCM, NCA Ternary Systems	LFP, Ternary Cathode Systems
Theoretical Lithium Specific Capacity	486 mAh/g	867 mAh/g
Reversible Specific Capacity	~90 mAh/g	~0 mAh/g (above 2.7V)
Primary Decomposition Voltage Window	3.5 V – 4.5 V	3.5 V – 4.0 V (Phase 1), 4.0 V (Phase 2)
Particle Size Distribution (D10)	< 5.0 µm	Tailored / Sub-micron options
Particle Size Distribution (D50)	10.0 µm – 15.0 µm (Customizable)	Uniform morphology
Particle Size Distribution (D90)	< 30.0 µm	Uniform morphology
Residual Lithium Hydroxide (LiOH)	< 3.0 wt%	Low residual alkali control
Residual Lithium Carbonate (Li2CO3)	< 1.0 wt%	Ultra-low carbon impurity
Synthesis Process Route	Mixing -> Precursor -> Sintering -> Crushing/Sieving/Demagnetization	One-step calcination sintering
Cycle Retention (25°C, 0.5C/1C @ 400 Cycles)	Standard: 72.39% | +3% Additive: 85.02% (+15.50% boost)	Enhanced cycling stability
Cycle Retention (45°C, 0.5C/1C @ 300 Cycles)	Standard: 84.98% | +3% Additive: 88.44% (+5.09% boost)	Superior high-temp stability

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Demagnetization / Magnetic Impurity Removal	Included in final processing stage	Included in final processing stage