

Lithium Ion Secondary Battery Cathode Material Lithium Nickel Cobalt Manganese Oxide

Item Number: CL01



Introduction

High performance lithium nickel cobalt manganese oxide cathode material for advanced lithium ion secondary batteries engineered with tight stoichiometric balance ultra low moisture and optimized particle distribution to maximize electrochemical capacity tap density and cyclability across demanding energy storage applications

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Application	Description	Key Benefit
Electric Vehicle (EV) Power Cells	Integration into high-energy cylindrical (e.g., 18650, 21700, 4680) and prismatic cell designs for automotive battery modules.	High volumetric energy density, dependable thermal threshold stability, and prolonged cycle life under rapid charge-discharge profiles.
Stationary Energy Storage Systems (ESS)	Formulation into large-format prismatic and pouch cells for utility-scale renewable grid stabilization and industrial uninterruptible power supplies (UPS).	Exceptional structural stability during long-term cycling, reducing system degradation and replacement frequency over multi-year operations.
Premium Consumer Electronics	Cathode active material for compact, high-capacity lithium-ion polymer batteries powering smartphones, laptops, drones, and wearable smart devices.	High tap density and uniform packing that enable ultra-thin, flexible electrode designs with maximum runtime per unit volume.
Battery R&D and Prototyping	Standardized reference cathode material for academic research, full-cell balancing experiments, electrolyte additive evaluations, and solid-state battery studies.	Reliable batch-to-batch chemical homogeneity, certified particle consistency, and predictable electrochemical baseline data.
Industrial Power Tools and Robotics	Utilization in high-drain secondary cells driving robotic automation systems, automated guided vehicles (AGVs), and heavy-duty cordless power equipment.	Superior rate capability, low internal impedance, and structural resilience under continuous high-current discharge pulses.
Specialty and Aerospace Battery Design	Development of mission-critical secondary cells requiring high specific energy coupled with strict environmental and safety compliance.	High chemical purity with tight trace impurity controls to eliminate random localized failure mechanisms in extreme operating environments.

Technical Parameter Group	Specific Metric / Analyte	Standard Requirement	Analytical Testing Method
Identification & Model	Product Identifier	CL01	Analytical Inspection
Packaging Configuration	Standard Packaging	500 g / bag (Sealed Protective Liner)	Gravimetric Standard
Appearance	Physical Morphology & Condition	Black solid powder, free of impurities, agglomerates, lumps, or oversized particles	Visual & Optical Inspection
Major Chemical Composition (%)	Lithium (Li) Content	7.3 ~ 7.9 %	Inductively Coupled Plasma (ICP)
Major Chemical Composition (%)	Cobalt (Co) Content	21.00 ± 1.00 %	Inductively Coupled Plasma (ICP)
Major Chemical Composition (%)	Manganese (Mn) Content	16.60 ± 1.00 %	Inductively Coupled Plasma (ICP)

Technical Parameter Group	Specific Metric / Analyte	Standard Requirement	Analytical Testing Method
Major Chemical Composition (%)	Nickel (Ni) Content	20.60 ± 1.00 %	Inductively Coupled Plasma (ICP)
Trace Impurities (µg/g)	Copper (Cu)	≤ 20 µg/g	Inductively Coupled Plasma (ICP)
Trace Impurities (µg/g)	Iron (Fe)	≤ 30 µg/g	Inductively Coupled Plasma (ICP)
Trace Impurities (µg/g)	Zinc (Zn)	≤ 20 µg/g	Inductively Coupled Plasma (ICP)
Trace Impurities (µg/g)	Sulfur (S)	≤ 3500 µg/g	Inductively Coupled Plasma (ICP)
Particle Size Distribution (µm)	D10	≥ 2.5 µm	Laser Particle Size Analyzer
Particle Size Distribution (µm)	D50 (Median Diameter)	7.5 ± 1.0 µm	Laser Particle Size Analyzer
Particle Size Distribution (µm)	D90	≤ 16.0 µm	Laser Particle Size Analyzer
Physical Properties	Specific Surface Area (BET)	0.25 ~ 0.45 m²/g	Gas Adsorption Method
Physical Properties	Tap Density	≥ 2.2 g/cm³	Tap Density Tester
Chemical Stability & Moisture	Moisture Content	≤ 500 µg/g	Karl Fischer Titration
Surface Chemistry	Soluble Lithium Dissolution	≤ 0.25 %	785 DMP Titrino Automatic Potentiometric Titrator
Surface Chemistry	pH Value	≤ 12	pH Meter
Regulatory & Safety Standard	Hazardous Substances Compliance	Fully compliant with SJ/T 11363-2006 requirements	Standard Laboratory Audit & Verification