

Solid State Electrolyte Lithium Aluminum Germanium Phosphate Lagp Powder Li1.5Al0.5Ge1.5Po43 Nasicon Material

Item Number: FZ63



Introduction

High-purity 3N5 solid-state electrolyte Lithium Aluminum Germanium Phosphate powder features a pure NASICON crystal structure with room-temperature ionic conductivity reaching $3-6 \times 10^{-4}$ S/cm, primary particle size $\leq 2\mu\text{m}$, and ultra-low trace impurity levels ideal for advanced solid-state battery cell manufacturing research.

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Application	Description	Key Benefit
All-Solid-State Lithium Batteries	Fabricated into dense ceramic separator discs or cold-pressed electrolyte pellets to replace liquid organic electrolytes.	Eliminates thermal runaway risks, prevents lithium dendrite penetration, and enables high-voltage operation.
Polymer-Ceramic Composite Membranes	Blended with polymer matrix networks (such as PEO, PVDF, or PAN) to form flexible hybrid solid electrolyte sheets.	Combines the mechanical flexibility of polymers with the high ionic conductivity and thermal stability of ceramics.
High-Voltage Cathode Coatings	Applied as a thin interfacial protective layer on cathode active materials such as NCM, NCA, or LNMO powders.	Suppresses parasitic side reactions, reduces transition metal dissolution, and lowers interfacial charge-transfer resistance.
Hybrid Solid-Liquid Cells	Integrated as a semi-solid ceramic barrier or coated separator layer in advanced lithium-ion battery configurations.	Improves cell safety under abuse conditions while maintaining fast-charging capabilities and cycle life.
Electrochemical Solid Sensors	Formulated as a fast ion-conducting substrate for gas, chemical, or ion-selective analytical detection devices.	Delivers rapid potentiometric response, high ionic selectivity, and long-term chemical durability in aggressive environments.
Battery R&D Benchmarking	Serves as a standard reference material for evaluating solid electrolyte sintering behavior and interface kinetics.	Ensures reproducible empirical data across academic literature and industrial pilot-scale prototyping.

Parameter	Specification / Value
Item Number	FZ63
Material Name	Lithium Aluminum Germanium Phosphate [Li1.5Al0.5Ge1.5(P04)3] Powder
Short Designation	LAGP
Chemical Formula	Li1.5Al0.5Ge1.5(P04)3
Molar Composition Ratio	Li : Al : Ge : P : O = 1.5 : 0.5 : 1.5 : 3 : 12 (mol)
Material Purity (wt%)	$\geq 99.95\%$ (3N5 Grade)
Crystal Phase	NASICON Phase (Matches PDF# 80-1923)
Primary Particle Size (D50)	$\leq 2 \mu\text{m}$
Room Temperature Ionic Conductivity (25°C)	$3 \sim 6 \times 10^{-4}$ S/cm
Powder Color / Appearance	Fine White Powder
Iron (Fe) Impurity Level	≤ 28 ppm
Sodium (Na) Impurity Level	≤ 26 ppm

Parameter	Specification / Value
Silicon (Si) Impurity Level	≤ 25 ppm
Magnesium (Mg) Impurity Level	≤ 20 ppm
Zirconium (Zr) Impurity Level	≤ 18 ppm
Calcium (Ca) Impurity Level	≤ 17 ppm
Copper (Cu) Impurity Level	≤ 16 ppm
Potassium (K) Impurity Level	≤ 15 ppm
Barium (Ba) Impurity Level	≤ 15 ppm
Nickel (Ni) Impurity Level	≤ 10 ppm