

Litfsi Lithium Bis Trifluoromethanesulfonyl Imide Electrolyte For Lithium Sulfur Battery Applications

Item Number: FZ51



Introduction

Engineered for advanced lithium sulfur battery research, this ultra pure LiTFSI electrolyte in DME DOL solvent delivers superior ionic conductivity, outstanding electrochemical stability, and customizable formulations with LiNO3 additive for demanding coin cell and pouch cell testing protocols.

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Application	Description	Key Benefit
Lithium-Sulfur (Li-S) Coin Cell Testing	Baseline electrolyte for evaluating novel sulfur-carbon composite cathodes, sulfurized polyacrylonitrile (SPAN), and functional separator coatings in CR2032/CR2016 architectures.	Maximizes active sulfur conversion kinetics and provides reproducible Coulombic efficiency data.
Lithium Metal Anode Interphase Research	Investigation of symmetric Li Li and asymmetric Li Cu stripping/plating overpotentials and dendrite morphology under ether-based solvation.	Forms a stable, uniform passivating SEI that minimizes continuous electrolyte consumption.
Polysulfide Shuttle Mitigation Studies	Quantitative analysis of intermediate lithium polysulfide (Li2Sx) dissolution, migration, and retention mechanisms in liquid-cell configurations.	High solvent compatibility enables accurate bench testing of physical polysulfide-trapping barrier layers.
Multi-Layer Pouch Cell Assembly	Scaled evaluation of free-standing sulfur cathodes and ultra-thin lithium metal foils under uniform stack pressures in prototype pouch cells.	Low surface tension ensures thorough electrolyte penetration and complete separator wetting across large electrode areas.
In-Situ Electrochemical Characterization	Liquid medium for operando UV-Vis, Raman spectroscopy, electrochemical impedance spectroscopy (EIS), and cyclic voltammetry (CV) during redox reactions.	Minimizes background spectral interference and provides stable baseline response across cyclic scans.
Solid-Liquid Hybrid Cell Interfacial Wetting	Interfacial modifying agent applied between solid-state electrolyte membranes and porous composite cathodes to eliminate high contact resistance.	Bridges solid-solid interfacial voids, facilitating smooth Li-ion transport across hybrid cell architectures.

Specification Parameter	Standard Formulation (FZ51-A)	Passivated Formulation (FZ51-B)	Custom Formulation (FZ51-C)
Product Item Number	FZ51-A	FZ51-B	FZ51-C
Main Lithium Salt	Lithium bis(trifluoromethanesulfonyl)imide (LiTFSI)	Lithium bis(trifluoromethanesulfonyl)imide (LiTFSI)	LiTFSI / Specified Lithium Salts
Salt Concentration	1.0 M (mol/L)	1.0 M (mol/L)	0.5 M – 2.0 M (Customizable)
Solvent Composition	1,2-Dimethoxyethane (DME) : 1,3-Dioxolane (DOL)	1,2-Dimethoxyethane (DME) : 1,3-Dioxolane (DOL)	DME:DOL or Alternate Ether/Carbonate Solvents
Solvent Ratio	1:1 Volume Ratio (V%)	1:1 Volume Ratio (V%)	Customizable Volumetric/Weight Ratios
Functional Additives	None	1.0 wt% Lithium Nitrate (LiNO3)	LiNO3 / Film-Forming Additives per Requirement
Electrochemical Window	0.0 V – 3.0 V vs. Li/Li ⁺ (Li-S Typical)	0.0 V – 3.0 V vs. Li/Li ⁺ (Li-S Typical)	Dependent on Custom Matrix Composition
Moisture Content (H ₂ O)	≤ 20 ppm	≤ 20 ppm	≤ 10 – 20 ppm (Ultra-Dry Standard)
Current Collector Compatibility	Carbon-coated Al / Nickel / Stainless Steel	Carbon-coated Al / Nickel / Stainless Steel	Substrate-dependent Configuration
Operating Environment	Inert Gas Glovebox / Dry Atmosphere	Inert Gas Glovebox / Dry Atmosphere	Inert Gas Glovebox / Dry Atmosphere

Specification Parameter	Standard Formulation (FZ51-A)	Passivated Formulation (FZ51-B)	Custom Formulation (FZ51-C)
Storage Conditions	Sealed airtight under Ar/N ₂ , cool & dry space	Sealed airtight under Ar/N ₂ , cool & dry space	Sealed airtight under Ar/N ₂ , cool & dry space
Packaging Options	100 mL / 250 mL / 500 mL / 1 L Bottles	100 mL / 250 mL / 500 mL / 1 L Bottles	Research Scale to Pilot Bulk Volumes