

Lithium Battery Environmental Testing Services | LionBattery Lab

SKU / Model: Not specified

PRODUCT OVERVIEW

Specification Testing Capability Testing Category Environmental Battery Testing Test Samples
Cells / Modules / Battery Packs Battery Chemistry Li-Ion / NMC / LiFePO4 and compatible
chemistries High-Temperature Operation Available Low-Temperature Operation Available
Temperature Cycling Available Humidity Testing Available Thermal Shock Available Altitude /
Low Pressure Available Vibration Testing Available Mechanical Shock Available Temperature
Storage Available Corrosion / Environmental Exposure Where applicable Voltage Monitoring
Cell & Pack Level Current Monitoring Charge & Discharge Temperature Monitoring Cell / Pack /
Test Environment Capacity Measurement Ah Energy Measurement Wh BMS Monitoring Where
applicable Data Logging Available Pre/Post Inspection Available Graphical Test Data Where
applicable Test Report Detailed Technical Report Test Conditions Customer/Test-Method
Specific Applications EV / E-Bike / Solar / UPS / Drone / Robotics / Industrial

TECHNICAL SPECIFICATIONS

Chemistry: Li-Ion
Product Category: BATTERY TESTING REPORTS

PRODUCT DESCRIPTION

Lithium batteries can experience significant changes in performance and reliability when exposed to extreme environmental conditions. LionBattery Testing Lab provides environmental testing services for lithium-ion, NMC, LiFePO4 and other compatible battery systems to evaluate battery performance, durability, safety and functional behavior under controlled environmental conditions. Our environmental testing services can be customized for battery cells, modules, battery packs and BMS-equipped systems according to the required application, specifications and applicable test standards. Environmental Battery Testing Services 1. High-Temperature Operation Testing Evaluate battery performance and functional behavior under elevated temperature conditions. The test can monitor: Battery voltage Charge/discharge current Capacity Energy Cell voltage variation Cell temperature BMS operation Protection response High-temperature testing helps identify thermal-performance limitations and abnormal battery behavior. 2. Low-Temperature Operation Testing Test battery performance under low-temperature conditions to evaluate its ability to operate safely and consistently in cold environments. Testing may include: Discharge performance Capacity retention Voltage behavior Internal resistance changes Cell temperature BMS protection Charging performance where applicable 3. Temperature Cycling Battery samples are exposed to repeated temperature changes between defined high and low temperature conditions. Temperature cycling can help identify: Performance degradation Cell imbalance Electrical connection problems BMS sensing issues Housing and sealing problems Mechanical stress caused by thermal expansion and contraction 4. Humidity Testing Evaluate battery and enclosure

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performance under controlled humidity conditions. Depending on the test requirement, monitoring can include: Electrical performance Insulation behavior Connector condition Corrosion indicators Moisture ingress BMS functionality Enclosure integrity

5. Thermal Shock Testing Thermal shock testing evaluates the response of battery components to rapid transitions between different temperature conditions. This can help identify potential failures caused by rapid thermal expansion and contraction of cells, electrical connections, housings, seals and other components.

6. Altitude / Low-Pressure Testing Evaluate battery performance under reduced atmospheric pressure to simulate operation at elevated altitude. Testing can assess: Battery electrical performance BMS functionality Enclosure behavior Connector performance Insulation characteristics Temperature behavior Pressure-related mechanical effects

7. Vibration Testing Battery packs and modules can be evaluated under controlled vibration conditions to assess mechanical durability. Testing may evaluate: Cell and module integrity Welded connections Busbars Connectors Wiring BMS mounting Enclosure integrity Electrical continuity

8. Mechanical Shock Testing Mechanical shock testing evaluates battery resistance to sudden mechanical impacts or shock conditions according to the defined test procedure. The battery can be inspected before and after testing for: Physical damage Electrical performance Cell voltage variation BMS functionality Wiring and connector condition Enclosure damage

9. Temperature Storage Testing Battery samples can be stored at defined temperature conditions for a specified duration and subsequently evaluated for performance. Post-storage evaluation may include: Open-circuit voltage Capacity Energy Cell voltage balance Internal resistance BMS functionality Physical condition

10. Corrosion & Environmental Exposure Where applicable, environmental exposure testing can be performed to evaluate the durability of battery housings, connectors, terminals, fasteners and other exposed components. Testing requirements can be defined according to the intended application and applicable test methodology.

What We Monitor During Testing Depending on the test, LionBattery Testing Lab can monitor and record: Pack voltage Cell voltage Charge current Discharge current Battery capacity Energy Cell temperature Pack temperature BMS protection status SOC Fault conditions Electrical performance Physical condition before and after testing

Suitable Battery Systems Our environmental testing services can be used for: Lithium-ion battery cells NMC battery packs LiFePO4 battery packs Battery modules EV battery packs E-bike batteries Electric scooter batteries Drone and UAV batteries Robotics batteries Solar energy storage batteries UPS batteries Industrial battery packs Custom battery systems Prototype and R&D battery packs

Environmental Testing Report A detailed test report can be provided depending on the selected testing package. The report may include: Sample identification Battery specifications Test method Test temperature Humidity conditions Pressure/altitude conditions where applicable Vibration/shock parameters where applicable Test duration Voltage and current data Temperature data Capacity and energy results Pre-test inspection Post-test inspection Test graphs Observations Test conclusion Test conditions and acceptance criteria can be customized according to the customer's battery specifications, application requirements and applicable testing standards.

Why Choose LionBattery Testing

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Lab? Controlled Environmental Testing Evaluate battery behavior under defined environmental conditions. Comprehensive Measurements Monitor electrical, thermal and functional battery parameters. Battery & BMS Expertise Testing can cover both battery pack performance and BMS behavior. Detailed Technical Reports Receive structured test data and observations for engineering and validation purposes. Application-Focused Testing Testing can be configured for EV, e-bike, drone, robotics, solar, UPS, industrial and other battery applications. Report Verification Test Battery Performance Under Real-World Conditions Validate how your battery performs under temperature, humidity, altitude, vibration, shock and other environmental conditions with LionBattery Testing Lab.