Battery Test Chambers

Reach-In & Walk-In

Russells Technical Products battery test chambers are equipped with safety features conforming to industry safety standards, enabling testing to a variety of conditions and specifications, including extreme temperature cycling, humidy, altitude, and vibration integration.

Battery test chambers from RTP can be used across the spectrum of testing applications, including lithium ion, battery packs, lead acid batteries, modules, and more. From smaller applications within a reach-in chamber to jobs necessitating a walk-in or drive-in test system, our battery test chambers are designed to safely test to your exact specifications.

AVAILABLE BATTERY CHAMBER SAFETY FEATURES:

- Light and audible alarm warning
- Overheat protector with sensor
- Drip tray for electrolyte leakage
- Cooling mechanism for sample plate (liquid nitrogen)
- Gas detection sensors and alarms
- Pressure relief vent (low flow)
- Auto-reset blow-out port
- Reinforced door latches
- Port restraint to secure silicone port plug
- Intrinsic barriers
- Fire detection & suppression systems
- Purging system with inert gas
- Minimal spark interior construction
- Electric door lock

TYPICAL CHAMBER PERFORMANCE:

- **Temperature Range:** -73°C to +180°C (-100°F to +356°F)
- **Humidity Range:** 5% to 95% RH within the bounds of a +85°C (+185°F) max dry bulb and a +4°C (+40°F) min dewpoint*
- **Altitude Range:** Consult factory

*extended ranges available

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Common Types of Battery Tests

TEST DESCRIPTION	PASSING CRITERIA
Short-Circuit Test	No explosion or fire
Abnormal Charging Test	No explosion or fire
Forced-Discharge Test	No explosion or fire
Shock Test	No explosion, fire, or leakage
Vibration Test	No explosion, fire, or leakage
Heating Test	No explosion or fire
Temperature Cycling Test	No explosion or fire
Low Pressure Test (Altitude Simulation)	No leakage

Our expert application engineers will work with you to select the right chamber and features to meet your specific testing needs safely and efficiently.

The safety standards for lithium-ion batteries under EUCAR, UL, CSA, or IEC describe the requirements for the construction and testing of lithium-ion batteries. Testing of batteries involves potentially destructive tests, which can lead to hazards like fire and explosions, compromising the safety of the test engineers.

EUCAR HAZARD LEVELS define the outcome of cell level safety testing. However, you also need to understand the capacity of the cells being tested and likely hazard level to determine if the chamber can contain a cell failure. A large capacity cell being tested with a likely hazard level 4 result can create an overpressure in a small test chamber, which could cause a failure of the test chamber itself, endangering testing personnel.

	DESCRIPTION	CLASSIFICATION LEVEL & EFFECT
0	No effect	No effect, no loss of functionality
1	Passive protection activated	No defect; no leakage; no venting, fire or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. Cell reversibly damaged. Repair of protection device needed.
2	Defect/damage	No leakage; no venting, fire or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. Cell irreversibly damaged. Repair needed.
3	Leakage, mass change <50%	No venting, fire or flame; no rupture; no explosion. Weight loss < 50% of electrolyte weight (electrolyte = solvent + salt)
4	Venting, mass change ≥50%	No fire or flame; no rupture; no explosion. Weight loss ≥ 50% of electrolyte weight (electrolyte = solvent + salt).
5	Fire or flame	No rupture; no explosion (i.e. no flying parts).
6	Rupture	No explosion, but flying parts of the active mass.
7	Explosion	Explosion (i.e. disintegration of the cell).