russells technical products

BATTERY TEST CHAMBERS

Expertise

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

SPECIALIZED

ENVIRONMENTAL TEST CHAMBERS TO MEET YOUR BATTERY TESTING NEEDS

BATTERY TEST CHAMBERS

Our 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, humidity, vibration, and altitude.

Russells Technical Products battery test chambers are used in a wide range of battery testing applications including lithium ion, battery packs, lead acid batteries, modules and more.

Whether you need a reach-in chamber for smaller applications, a walk-in, or a complete drive-in system, our battery test chambers are designed to safely test to your exact specifications.

CONTACT US NOW

(616) 392-3161

info@russells-tech.com

1883 Russell Court
Holland, MI 49423

HAZARDS ASSOCIATED WITH BATTERY TESTING

The EUCAR Hazard Levels define the outcome of cell level safety testing. These levels are normally used to describe the outcome of tests such as overcharge as part of the cell specification.

DESCRIPTION	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).

The EUCAR hazard levels are also used to describe the safety level for cell test chambers. However, you also need to understand the capacity of the cells being tested and the likely hazard level in order to determine if the chamber can contain the cell if it does fail. A large capacity cell being tested with a likely hazard level 4 result could create an overpressure in a small test chamber, the failure of the test chamber could itself endanger personnel.

COMMON TYPES OF BATTERY TESTS

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 that can lead to hazards like fire and explosion, which can compromise safety.

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 or fire or leakage.
Vibration Test	No explosion or fire or leakage.
Heating Test	No explosion or fire.
Temperating Cycling Test	No explosion or fire.
Low Pressure (Altitude Simulation) Test	No leakage.

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

REFERENCES

- ISO 12405-4:2018: Electrically propelled road vehicles – Test specification for lithium-ion traction battery packs and systems – Part 4: Performance testing
- IEC 62133-2: Safety Testing for Lithium-Ion Batteries UL 60079-11: Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety ‘i’
- EG BEV&FCE July 2019 Battery requirements for future automotive applications
- UL 1642: Lithium Batteries

Our battery test chambers are built to your custom specifications. Contact us today to get started on your next battery test chamber.