

CTS chambers for Lithium Ion battery testing.

Environmental test in Lithium Ion based batteries in an ordinary chamber carries some risks. Risks can include the simple leakage of fluids and gases through to the risk of fire that is difficult to extinguish and ultimately explosion.

Working with clients and the battery industry CTS have developed various levels of additional protection at an integral part of their specialised chambers.

Within Europe the EUCAR body (www.eucar.be) is heavily involved with setting guidelines and standards for automotive battery powerpack testing. Current members and participants include those shown below



CTS chamber options include safety devices to cover all the following guidelines established by EUCAR as shown below.

Guidance safety risk levels for testing

Hazard Level	Description	Classification Criteria & 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 Δ mass < 50%	No venting, fire or flame*; no rupture; no explosion. Weight loss <50% of electrolyte weight (electrolyte = solvent + salt).
4	Venting Δ mass \geq 50%	No fire or flame*; no rupture; no explosion. Weight loss \geq 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).

Options include...

1. Safety temperature limiter max.
2. Door locking system
3. Venting duct
4. CO-Sensor
5. Flushing device with N₂, LN₂ or CO₂ (LN₂/CO₂ also for cooling)
6. Membrane for overpressure
7. N₂-Inertisation (till O₂ <3%)



All these can be integrated into the test chamber you specify. Shown here is an example of an explosive release pressure relief system with connection for external ducting.

Many other options are possible.



Talk to us at QTP Environmental and we will help you make sensible decisions about testing batteries and the risks.

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