

What are EUCAR Hazard Levels?

EUCAR is the European Council for Automotive R&D of the major European passenger car and commercial vehicle manufacturers. The EUCAR Hazard Levels are used to gauge the level of danger associated with handling batteries and the outcome of tests performed on the cells. These outcomes are classified under the commonly known EUCAR Hazard level table. What classifications apply to handling energy storage devices?

The EUCAR Hazard Levels have been defined by EUCAR to classify the hazards presented to batteries and describing the consequences of them. Unitemp provides Espec cabinets that meet these hazard levels up to and including EUCAR 6.

Hazard classification 0 | No effect

No effect & No loss of functionality

Hazard classification 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.

Hazard classification 2 | Defect/damage

Same as hazard classification 1; however, the cell is damaged irreversibly and must be replaced.

Hazard classification 3 | Leakage, loss of mass < 50%

No venting, fire, or flame; no rupture; no explosion. Weight loss <50% of electrolyte weight (electrolyte = solvent + conducting salt)

Hazard classification 4 | Leakage, loss of mass > 50%

No fire or flame; no rupture; no explosion. Weight loss > 50% of electrolyte weight (electrolyte = solvent + conducting salt)

Hazard classification 5 | Fire or flame

No rupture; no explosion (e.g., no flying parts)

Hazard classification 6 | Rupture

No explosion, but flying parts of the active electrode mass

Hazard classification 7 | Explosion

Explosion (e.g., disintegration of the cell)

Testing in line with industry standards

Common test standards for lithium ion battery cells or modules:

Especially battery test chambers meet all market-relevant standards, such as DIN EN IEC or ISO.

- DIN EN IEC 62660-1: Secondary lithium-ion cells for the propulsion of electric road vehicles
- UL 1642 – Standard for Lithium Batteries
- UL 2580 – Batteries for use in Electric Vehicles
- IEC 62660-2 – Reliability & Abuse Testing for Lithium Ion Cells in Electric Vehicles
- SAE J2464 – EV & HEV Rechargeable Energy Storage System Safety & Abuse Testing
- UN/DOT 38.3 – Lithium batteries during shipping