

Checklist for the test requirements and the test procedure according to P911 or LP906 ADR 2019

### Transport of unsafe (critical) lithium ion batteries according to SP 376 using P911 or LP906

According to P911/ LP906 ADR 2019, the packaging must meet the following additional test performance requirements in case of a thermal reaction of the cells or batteries:

- a) The outside surface temperature of the completed package shall not have a temperature of more than 100 °C. A momentary spike in temperature up to 200 °C is acceptable;
- b) No flames shall occur outside the package;
- c) No projectiles shall exit the package;
- d) The structural integrity of package shall be maintained; and
- e) The packaging shall have a gas management system (e.g. filter system, air circulation, containment for gas, gas tight packaging etc.).

To ensure that the dangerous goods packaging meets these requirements, the following information on the battery is mandatory.

#### Battery Properties

Manufacturer				
Type designation of the manufacturer				
Dimensions (L x W x H) [mm]				
Mass [kg]				
	Battery	Module	Cell	
Nom. Voltage [V]				
Nom. Charge [Ah]				
Nom. Energy [Wh]				
Quantity				
Circuit	__s__p	__s__p		
Cellular chemistry (cathode)	NMC <input type="checkbox"/>	LCO <input type="checkbox"/>	LFP <input type="checkbox"/>	NCA <input type="checkbox"/> Other <input type="checkbox"/>
Type of cell	cylindric <input type="checkbox"/>	prismatic <input type="checkbox"/>	Pouch <input type="checkbox"/>	
Cell Orientation	horizontal <input type="checkbox"/>	vertical <input type="checkbox"/>		
Casing Material				
Note: Please add a technical data sheet and a drawing of the battery to the completed checklist.				

Contact, Function

Date, Signature, Stamp

## Explanation

Based on the battery properties the Genius Group can determine whether the requested battery is comparable to existing real-life packaging fire tests, or whether the verification of a new real-fire test must be performed with the requested battery and suitable packaging to ensure the requirements of P911 or LP906.

## Recognition Procedure

If a positive real fire test with a comparable battery for a package exists, a recognition procedure is possible. This also applies if several batteries are requested by the customer. If these batteries are comparable with each other, only the most dangerous must be fire-tested in one package.

A comparable battery exists if the following criteria are met (all points must be fulfilled):

- same cell chemistry (e.g. LCO, NMC, LFP or NCA)
- same type of cells (prismatic, pouch, etc.)
- maximum 80% of the nominal energy of the battery (according to SV 348 ADR)
- comparable housing (construction, housing material, size, geometry, openings)
- same or lower mass and comparable design
- same or lower cell capacity (nom. charge)
- same arrangement of cells (horizontal, vertical)

## Batteries not safe for transport

If the requested battery or cell meets one of the following criteria, this lithium-ion battery or cell is considered to be unsafe (critical) for transport:

- Identified by the manufacturer for safety reasons as defective
- clearly damaged or significantly deformed housing
- leaking or the pressure relief device has activated
- temperature changes, such as measurable temperature increases in the switched-off state, tarnish on metal parts or melted or deformed plastic parts
- contains defective cells identified by the battery management system (BMS)
- defects, which cannot be diagnosed before transport
- fire or smoke is visible

If you have any questions or require further information, please do not hesitate to contact us by e-mail ([info@genius-group.de](mailto:info@genius-group.de)) or by telephone on 03375/24 60 980. We are pleased to help you.