

## **Guidelines for sending lithium accumulators and batteries**

July 2011

**Shipments exceeding the limits mentioned in these guidelines are governed by stricter ADR regulations, and their sending must be agreed on separately with Itella. Likewise, Itella should be contacted when planning the transportation of accumulators to be disposed of, since they are governed by separate regulations. When necessary, Itella's safety adviser will provide help in identifying the applicable regulations.**

**The sender is responsible for correct categorization and the resulting packing, markings and documents according to the applicable ADR laws.**

Lithium accumulators and batteries (hereinafter referred to as "batteries") have become more common in recent years. As an element, lithium is a metal, and when lithium reacts with water, explosive hydrogen gas is created. Blows and short-circuits suffered by batteries have caused accidents and near misses. In the new transport regulations, batteries are grouped into metal batteries and ion batteries, and they have separate regulations due to their structure and safety measures.

- Usually, lithium metal batteries (UN 3090) are not rechargeable. A lithium button cell battery (watches, calculators) is a typical example. In case of fire, it is more difficult to extinguish metal batteries than ion batteries.
- Lithium ion batteries (UN 3480) are usually rechargeable. A mobile phone battery is a typical example. Larger batteries are used as the power sources of a wide range of equipment.

There are different regulations for sending batteries separately from the equipment, and for sending batteries as installed in the equipment.

- For both aforementioned battery types, there are second UN numbers for situations where the batteries are not sent alone (UN 3091 and UN 3481).
- Packing with equipment is similar to when sending just batteries.
- If the battery is included in the device, the battery is usually well-protected, and the packing regulations are not equally strict.

Applicable legislation sets out exemptions that may be applied in sending consumer electronics, for example:

- In the ADR legislation for land transport, said exemptions are specified under special regulation 188.
- The Part 1 shipment method is referred to in air transport.
- The transport must always observe applicable airline-specific and country-specific requirements.

The exemption may be applied when the energy in the battery is limited

- A lithium metal cell or a lithium compound cell: the amount of lithium is 1 g maximum
- A lithium metal battery or a lithium compound battery: the total amount of lithium is 2 g maximum
- A lithium ion cell: nominal power 20 Wh
- A lithium ion battery: total nominal power 100 Wh

Cells and batteries, excluding those installed in equipment, must be packed in an interior package that fully protects the cell or battery. They must also be protected against short-circuit.

**Cells and batteries installed in equipment must be protected against damage and short-circuit, and unintentional start-up of the device must be prevented.**

All handling units, **excluding units containing button cell batteries installed in equipment (including circuit boards) or, units with a maximum of four cells installed in equipment or a maximum of two batteries installed in equipment**, must be marked as follows:

- A marking that the handling unit contains lithium metal cells or lithium ion cells, or lithium metal batteries or lithium ion batteries
- A marking that the unit is to be handled with care, and that the unit is flammable in case of damage to it
- A marking that special measures must be observed in case the unit is damaged, including inspection and re-packing; and
- A telephone number for additional information
- The allowed maximum gross mass of an individual handling unit is 30 kg, excluding batteries installed in equipment and batteries packed with equipment.
- A shipment comprising such handling units must include a transport document in Finnish, and the document must provide the aforementioned information. It is recommended to place the transport document outside the handling unit in a plastic pocket so that it stays with the shipment.
- There are no other requirements in force.
- For example, an individual laptop computer with the battery inside needs no markings. If the battery is not installed in the equipment, the above regulations are to be observed.
- In these cases, the Itella service used may be selected freely.

In practice, the above handling unit marking may look like this:



In domestic transport, the texts are in Finnish. If the transport is part of an international transport, the texts may be in English.

Until further notice, batteries, or equipment containing batteries, or equipment packed with batteries, cannot be transported as airmail. This is to be observed in international traffic and long domestic distances. We will monitor for any changes regarding this.

For more details, please contact Pauliina Auveri, Itella's ADR safety adviser, [pauliina.auveri@itella.com](mailto:pauliina.auveri@itella.com), tel. +358 20 452 0092

Sources: Body of laws: Vaarallisten aineiden kuljetus tiellä (2011) [road transport of hazardous substances] ADR 2011  
Litium-akkujen ja –paristojen uudet ilmakuljetusmääräykset, Vantaa, March 11, 2009, DgmFinland Oy [new air transport regulations for lithium accumulators and batteries]