



## Transport of Lithium Ion Batteries (< 100 Wh) with Implementation of the Exemption Regulations of the Dangerous Goods Act - Guideline for Manufacturers of Power Tools and Garden Machinery -

Lithium ion batteries are classified as "Dangerous Goods" in international transport law. Therefore many regulations for the carriage of dangerous goods are relevant to them. The safe carriage of dangerous goods is important for shippers and transport companies.

The following notes, based on recommendations of EPTA<sup>1</sup>, ZVEI<sup>2</sup> and IVG<sup>3</sup>, have been produced to ensure a capable and standardised approach to the regulations for the carriage of lithium ion batteries for cordless power tools and garden machinery, up to 100 Wh. Simplified requirements apply to these batteries, due to exemption regulations in the dangerous goods act.

The following documents are applicable:

Means of Transport	Exemption Regulation
Road	ADR Special Provision SP 188
Rail	RID Special Provision SP 188
Inland waterways	IMDG Special Provision SP 188
Air	IATA Packing Instruction
- Lithium ion batteries (UN 3480)	- PI 965, Part II
- Lithium ion batteries packed with equipment (UN 3481)	- PI 966, Part II
- Lithium ion batteries contained in equipment (UN 3481)	- PI 967, Part II

For every commercial shipment of lithium ion batteries, it is the responsibility of the sender to comply with these provisions.

In contrast, lithium ion batteries with energy of more than 100 Wh must be treated as Class 9 Dangerous Goods. The requirements applicable to them are not subject of this guideline. Class 9 shipments need extensive additional safety requirements in relation to packaging, labelling and accompanying documents.

This guideline applies to ground transport, inland waterways and transport via air freight.

This document represents the status as of 01.01.2013. Local authorities are responsible for the interpretation and implementation of the relevant regulations. They can, at their discretion, make decisions differing from this guideline. Therefore, despite the greatest possible care during the revision and composition of this guideline, no liability can be assumed for the content and the completeness of this document.

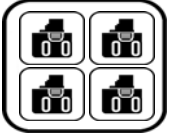


<sup>1</sup> European Power Tool Association

<sup>2</sup> Zentralverband Elektrotechnik- und Elektronikindustrie e.V., the German Electrical and Electronic Manufacturers' Association

<sup>3</sup> Industrieverband Garten e.V., the German Garden Industry Association

## 1 Which packages with lithium ion batteries are affected?

All packages with lithium ion batteries are affected.

	Content of the package	Requirements for transport
	<p><b>LITHIUM ION BATTERIES</b></p> <p>Only battery in sales package or several batteries in bulk package</p>	<ul style="list-style-type: none"> <li>- labelling</li> <li>- accompanying documentation</li> <li>- packaging protected against short circuits</li> <li>- max. quantity of single package: road, rail, inland waterways: 30 kg air: 2 batteries</li> <li>- several product packages may be packed by stretch film on a pallet</li> </ul>
	<p><b>LITHIUM ION BATTERIES PACKED WITH EQUIPMENT</b></p> <p>Unit(s) with one or two additional batteries enclosed in sales package (e.g. case)</p>	<ul style="list-style-type: none"> <li>- labelling</li> <li>- accompanying documentation</li> <li>- packaging protected against short circuits</li> <li>- max. weight of single package: -air: 5 kg (battery weight)</li> </ul>
	<p><b>LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT</b></p> <p>Unit(s) with battery (installed or plugged into device) in sales package (e.g. case), without any additional batteries enclosed</p>	<ul style="list-style-type: none"> <li>- road, rail, inland waterways: none (even if several product packages are packed in one package)</li> <li>- max. weight of single package: -air: 5 kg (battery weight)</li> </ul>
	<p>Prototypes (without proven compliance with test criteria UN 38.3)<sup>4</sup></p>	<p>These batteries have to be shipped as "Class 9 Dangerous Goods"</p>

## 2 How must batteries be labelled? (SP 188, b)

Batteries have to be labelled with their energy in watt-hours (Wh). This applies only for "batteries" (several electrically connected cells), not for single "cells".

Batteries that are installed in a tool permanently without a separate outer casing must be labelled on the tool.

## 3 What is meant by "Lithium ion batteries contained in equipment"?

Cells or batteries are "contained in equipment" when they are built into the tool permanently or attached to it, e.g. a machine with an inserted battery.

<sup>4</sup> Guideline Tests and Criteria Part III Subsection 38.3

#### 4 What requirements apply to "inner packaging" for batteries that are not contained in equipment? (SP 188, d)

If the battery itself is protected so as to prevent short circuits, the battery casing meets the requirements of an "inner packaging". In this case, an additional "inner packaging" (e.g. a plastic bag) is not required.

#### 5 What requirements apply to the stability of the package? (SP 188, h)

The package must be designed in a way that a 1.2 m drop will not result in a short circuit. No release of "Contents". Contents are the dangerous substances in the lithium ion battery (e.g. electrolyte).

After the drop test, a violent rupture, even without release of the contents, will result in the battery being refused for transport, because the risk of short circuits will be increased.

Batteries and battery products require several stability tests (drop tests etc.) during their development, therefore it is assumed that packed batteries pass a 1.2 m drop test. When packing batteries together with other products in one package, it must be ensured that these products don't damage the batteries.

#### 6 How must packages be labelled? (SP 188, f)

Every package<sup>5</sup> must be labelled on one side.

The label contains warnings and a telephone number, where additional information about the particular shipment can be obtained if necessary.

It is not necessary for the phone line to be manned beyond normal office hours. The phone number can be either the company or an external service provider.

The label must not be applied on the top or bottom of the package and must not be stuck over an edge.



It is recommended to apply the label on the sales packaging, so the tools can be shipped without further outer packaging.

It is not acceptable to apply the label on a stretch wrap without labelling the packages beneath, because in the dangerous goods act, a stretch wrap is not classified as "packaging" but a "means for safe transportation". The stretch wrap does not form a new package, but the stretched units/packages inside the wrap are still considered to be the "packages" and therefore have to be labelled separately.

If labelled packages are to be combined (e.g. by means of stretching or an outer package), an additional label is required on the outer packaging.

---

<sup>5</sup> Definition "package": "The complete product of the packing operation, consisting of the transport packaging (e. g. cardboard box) and its contents (e.g. the product and its sales packaging) prepared for dispatch"

**Labelling for road, rail, inland waterways:**

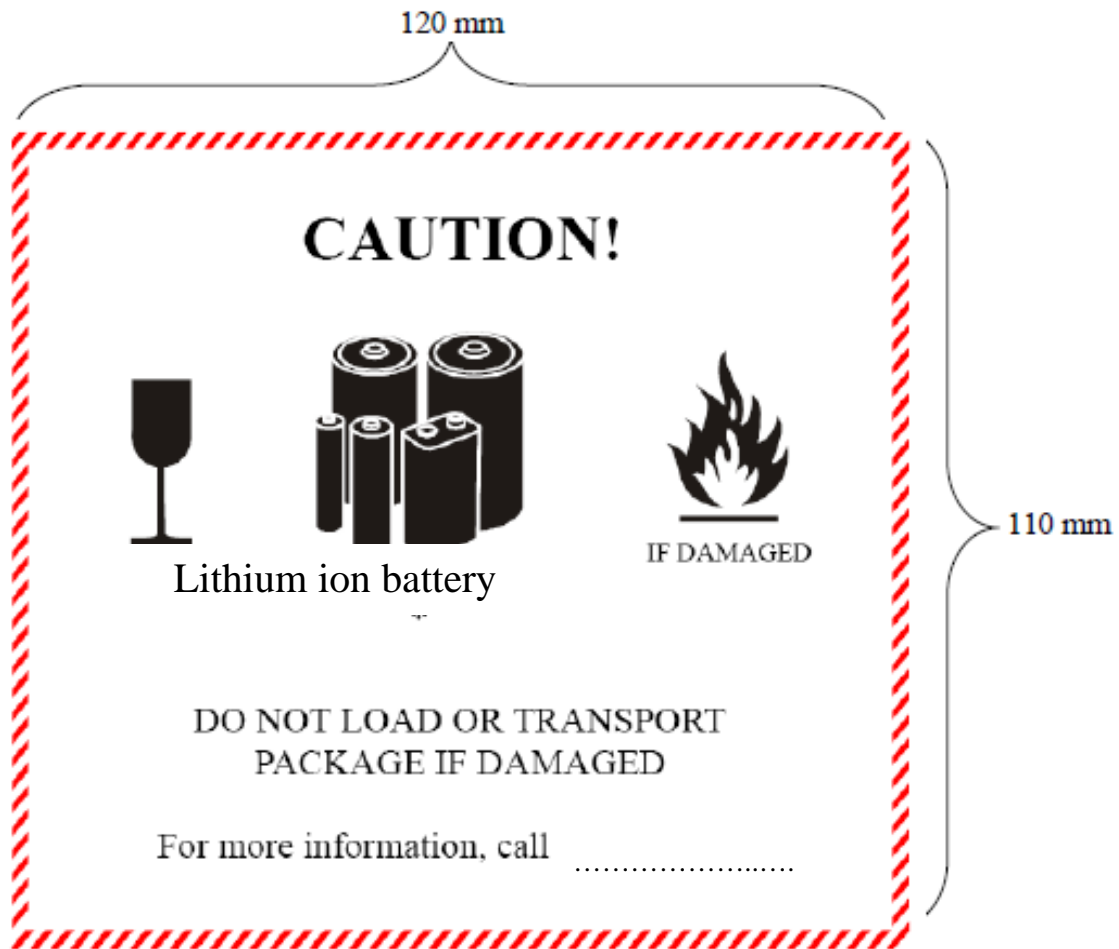
- Language: English
- Text field on the sales packaging can be small but must remain readable (e.g. 20 x 40 mm), and appropriate to the layout of the existing packaging.

**Example for labelling road/rail/inland waterways (according to SP 188):**

Lithium-Ion battery not restricted  
Handle with care  
Damaged package can cause fire  
Inspect package and arrange repack  
by qualified persons when required  
For more information, call .....

**Required labelling for air transport (also usable for other means of transport):**

(With air transportation, the original size and colour - black with a red rim - must be maintained.)



## **7 Which accompanying documentation is needed?** (SP 188, g)

### **Road/rail/inland waterways:**

The driver must be provided with information accompanying the goods. This information must be identical to the product label (cf. point 6) and must be provided on paper. No fixed format is specified for this.

A separate sheet, the packing list or the delivery note may be used for this purpose. The information can be printed, stamped or affixed.

Language: English or language of target country

### **Air:**

For air freight an analog accompanying documentation is required (for details see applicable IATA Packing Instruction)

Sample text:

- package contains lithium ion batteries
- package must be handled with care, fire hazard if package is damaged
- special procedure should be followed in the event of damage to packaging to include inspection and repacking if necessary
- telephone number for additional information ...

## **8 Are there any weight restrictions?** (SP 188, i)

Following quantity limitations for packages containing lithium ion batteries have to be respected:

- Packages containing lithium ion batteries as spare batteries or accessories (packaged without power tool)
  - road, rail, inner waterways: 30 kg (gross weight)
  - air: 2 batteries
- Packages containing lithium ion batteries "packed with equipment" or "contained in equipment"
  - road, rail, inner waterways: no restriction
  - air: 5 kg (battery weight)

## **9 What has to be considered for returned goods or reshipping by the customer?**

An information leaflet has been created for the trade.

In this leaflet can be found samples for labelling the packages.

The sender should enter their phone number on the label (24 h availability is not considered essential).

This information leaflet will be available for customers (e.g. Internet ZVEI and manufacturers, via sales organisation)

## **10 What instructions are needed for the employees involved?**

It is recommended that employees who are involved in packaging and transportation are instructed to ensure the correct process is followed.

It is not necessary to perform formal training for packaging and shipping of lithium ion batteries up to 100 Wh.

### **11 What must be considered when disposing of batteries?**

If the contacts of the battery are not protected by design they shall be insulated to prevent short circuits. A short circuit can result in fire. Batteries should be discharged in the product prior to disposal.

Disposing of batteries must fulfill national regulations. Use national authorized recycling systems for further information and requirements.

### **12 How can damaged batteries be transported?**

Damaged batteries are to be treated as dangerous goods class 9 (new special provision 661, prohibited for air transport).

### **13 What must be considered for transport in case of repair?**

The contacts of the battery must be insulated to prevent short circuits. No loose, electrically conductive small parts shall be present in the packaging, in order to eliminate the risk of a short circuit.

The machine must be packaged safely so that it cannot be switched on accidentally, e.g. by a sliding movement of the machine.

EPTA / ZVEI / IVG  
Frankfurt am Main  
6 December 2012